

AIR TRAILS

AVIATION FOR EVERYBODY

NOV. '41

Phil Powell

I DESIGN BOMBS
By Air Commodore Huskinson, R. A. F.

NOVEMBER
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Located in the very center and a very important part of Southern California's great aircraft industry, with its more than a billion dollars in unfilled orders, Curtiss-Wright Tec has come to be recognized as the nation's leading institution for the training of Aeronautical Engineers and Master Mechanics. Mr. Donald Douglas, President of the great Douglas Aircraft Company, chose this school for his own son's training, which pointedly indicates the high standing

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Curtiss-Wright Tec's career training is carefully designed to do just one thing:—**TO MAKE MONEY FOR YOU**, so upon graduation you can be independent and self-supporting for life. Our thousands of successful graduates have proven that Curtiss-Wright Tec training gets results and always pays, since it trained them in advance for the highest position they could ever expect to occupy. It can do the same for you.

This school has never guaranteed positions for its graduates, but practically every graduate has obtained immediate employment and is advancing rapidly. The demand for our graduates far exceeds the supply, and we honestly believe that every student who enrolls here will be able to obtain, with our assistance, immediate employment upon graduation.

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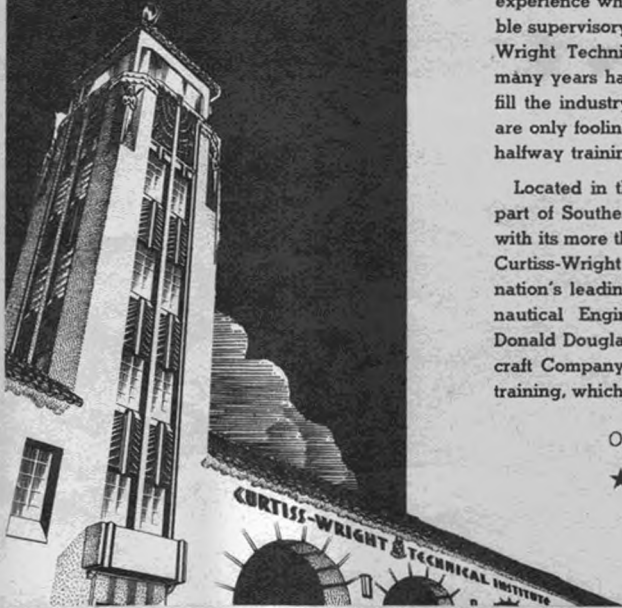
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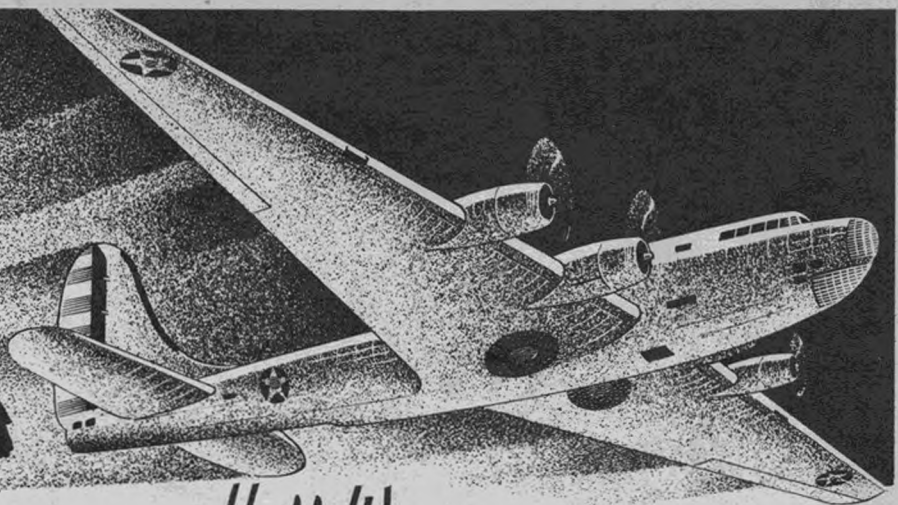
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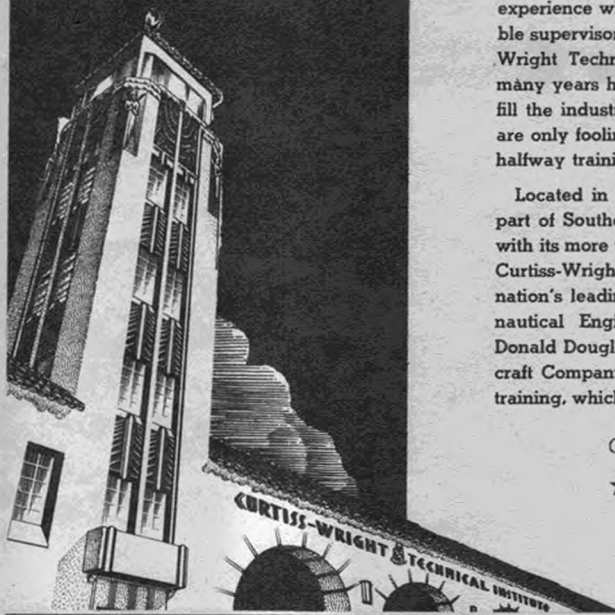
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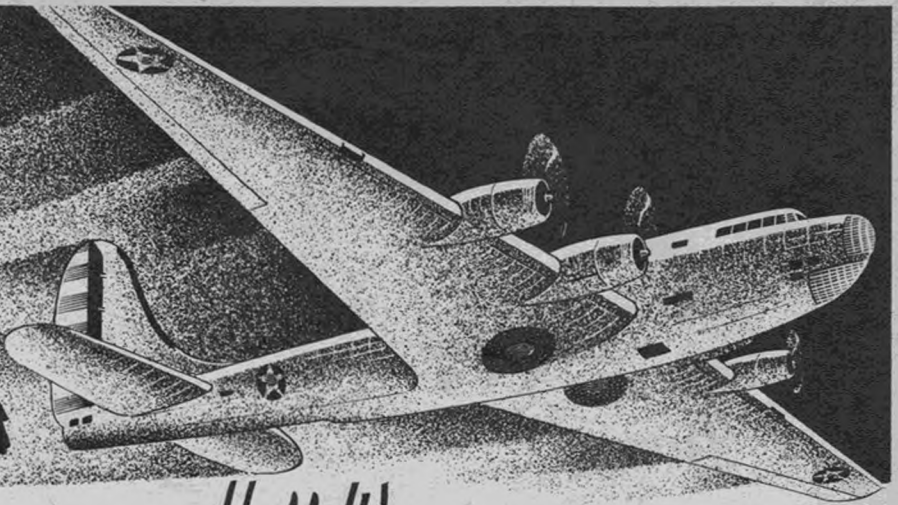
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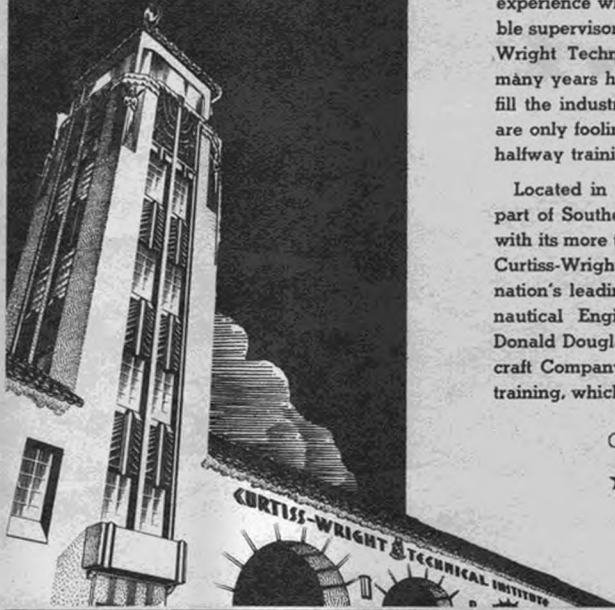
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Why Train for Temporary Jobs?

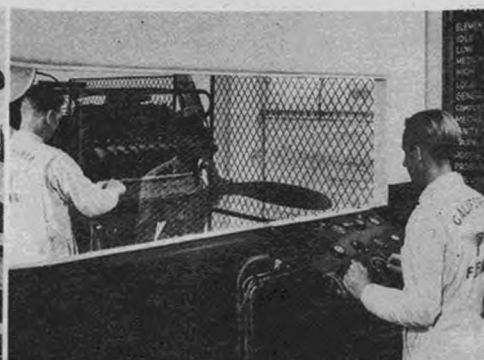
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Airline Pilots and Flight Instructors—Splendid positions as Airline Pilots and Flight Instructors everywhere in the nation are open to the California Flyers graduates. Starting salaries are \$200 to \$250 a month and more, advancement rapid and the future assured.



Master Mechanics—Airlines, Airports and Aircraft Plants everywhere need the man with this training. High starting salaries, rapid advancement and an opportunity to be in business for yourself, is the reward of the graduate.



Aeronautical Engineering—This is one of the most highly respected of Aviation careers and offers an unlimited future. California Flyers graduates stepping into splendid positions in companies of their choosing.

Aviation Careers Offer a Permanent Future at HIGH STARTING SALARIES

The future of an Aviation career does not depend upon the National Defense Program—but the future of a "job trained" man does. Secure the proper training now, prepare to step into a good salaried position and face the future knowing that there will *always* be a place for you in Aviation.

Actually the difference between a temporary job and a career may be only an extra few months of carefully selected training!

IT'S BETTER TO FACE THE FACTS NOW!

Consider what Government Approved and Industry Approved California Flyers training is doing for others—and can do for you. Graduates are receiving \$200 to \$250 a month and more to start. And as a result of sound, practical and concise courses, Maintenance and Master Mechanics graduates are stepping *directly* into positions after only 8 to 12 months of training. Instructors and Airline Pilots in 10 to 24 months and Aeronautical Engineers in 14 months. In only 4 months California Flyers graduates are earning the ever-increasing salaries being paid Production Mechanics and Aircraft Draftsmen. *Why accept less?*

Aviation—most important of all National Defense projects—needs and demands more California Flyers trained men, is requesting more than 20 times the number now enrolled. Serve your nation in its most vital industry—Aviation. (If you are of draft age—write California Flyers School of Aeronautics outlining your individual situation.)

Do not accept *unapproved* or job training when it costs no more to attend one of the nation's oldest and most highly respected aeronautical schools—a school with the highest Government Approval in every division in which approval is extended—a school selected by the U. S. Army Air Corps to train its aviation mechanics, and by the CAA to train pilots and instructors—a school with shops and laboratories among the finest equipped in the nation—operating one of the country's largest, modern civilian training fleets—and located directly on the famous Los Angeles Airport, test field in the Nation's Aviation Capital, the very center of America's great aviation industry. Yes, California Flyers School of Aeronautics is one of the nation's great aviation schools—*Check with any authority.* Get the complete story of Aviation as a career now,—mail this coupon today. →

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- Aeronautical Engineering
- Production Mechanics (Aircraft sheet metal)
- Instrument and Radio Beam Flying
- Instrument Technician
- Airline Piloting
- Aircraft Drafting
- Master Mechanics
- Airplane Engine Mechanics
- Airplane Mechanics

Name _____ Age _____

Address _____

City _____ State _____

WHAT'S YOUR QUESTION

QUESTION: Could you tell me where I could get plans for an airplane powered by a motor-cycle engine? W. B., Trenton, N. J.

Answer: Try writing to the J. W. Peterson Aircraft Co., 1139 Veto, Grand Rapids, Mich.

QUESTION: Could you give me the minimum price of a glider, single and two-place? Does one have to have a license to fly them? G. D., Manchester, N. H.

Answer: A single-place glider can be bought new for around \$650, a two-place ship for \$1,200. You must have a glider pilot's permit or license to fly them.

QUESTION: Do you recognize the airplane from the inclosed picture? It looks like an Ercoupe with a high wing. P. B. McC., New Haven, Conn.

Answer: The ship is manufactured by General Aircraft Co., Lowell, Mass. It is called the Skyfarer.

QUESTION: What are the performance and specifications of the Vultee BT-13 and the Fairchild XPT-23 trainers? E. A. K., Detroit, Mich.

Answer: The BT-13 has a span of 42 ft., length 28 ft.; weight empty 2,976 lbs., fully loaded 3,981 lbs. The top speed is 182 miles per hour,

cruising speed 170 m. p. h., landing speed 52 m. p. h. It is powered by a 450-h. p. Pratt & Whitney Wasp engine. The Fairchild XPT-23 has a span of 35 ft. 11 in., length 27 ft. 8 in. and is powered by a 240-h. p. Continental engine. As this is a brand-new airplane we have no further information regarding it.

QUESTION: Have three-view drawings of the Messerschmitt 109 and Blackburn Skua been published in Air Trails? If so, in what issue? E. A. K., Ozone Park, N. Y.

Answer: These plans were published in 1938, but the issues are not available any longer.

QUESTION: Could you let me have the specifications of the following planes: Boeing B-17, Curtiss P-40, Bell Airabonita, Lockheed P-38 and the Vultee Vanguard? H. M., Corona, N. Y.

Answer: The Boeing B-17 has a span of 103 ft. 10 in., length 67 ft. 10 in.; weighs empty 31,150 lbs., fully loaded 47,500 lbs. It is powered by four Wright Cyclone engines of 1,200 h. p. each. The maximum speed is supposed to be 300 m. p. h. or better. The Curtiss P-40 has a span of 37 ft. 4 in., length 31.7 ft.; weighs empty 5,381 lbs., fully loaded 6,780 lbs. It is powered by a 12-

cylinder liquid-cooled Allison engine developing 1,150 h. p. The top speed is 365 m. p. h., cruising speed 315 m. p. h. The Bell Airabonita has a span of 34 ft., length 29 ft. 9 in. It is powered by a 12-cylinder Allison engine of 1,090 h. p. The top speed is in the neighborhood of 400 m. p. h. It is almost identical with the Airabonita, the only difference being that the Airabonita has a two-wheel undercarriage. The Lockheed P-38 has a span of 52 ft., length 38 ft.; weighs fully loaded 13,500 lbs. It is powered by two Allison 12-cylinder engines of 1,150 h. p. each. The top speed is in excess of 400 m. p. h. Service ceiling is 35,000 feet. The Vultee Vanguard has a span of 36 ft., length 28 ft.; weighs empty 4,841 lbs., fully loaded 6,182 lbs. The top speed is 360 m. p. h., cruising speed 300 m. p. h., service ceiling 33,000 ft. It is powered by a Pratt & Whitney R-1,830 engine of 1,200 h. p.

QUESTION: Could you give me the address of the Pitman Publishing Co.? I would like to buy their books, "Elementary Aerodynamics," by D. C. Hume, and "Preliminary Airplane Design," by R. C. Wilson. R. J., Norwalk, Calif.

Answer: The address of the Pitman Publishing Corp. is 2 West 45th St., New York City.

QUESTION: Would you please tell me where I can obtain pictures of last World War airplanes? L. S., Dundas, Ontario, Canada.

Answer: You can buy such pictures from Aircraft Photo Service, Dept. A, 3 Myrtle Court, Bridgeport, Conn. They cost 4 cents each. Write for their catalogue.

QUESTION: May I please have specifications of the following bombers: the B-24, B-25 and Catalina flying boat? Would also like to have the addresses of Allison, Pratt & Whitney and Curtiss-Wright. I. T., Edgemere, L. I., N. Y.

Answer: The Consolidated B-24 has a span of 110 ft., length 64 ft. The gross weight is 40,000 lbs. It is powered by four Pratt & Whitney engines developing 1,200 h. p. each. The maximum speed is about 300 m. p. h. The Consolidated Catalina flying boat has a span of 104 ft., length 65 ft. 2 in. The gross weight is 27,413 lbs. It is powered by two Pratt & Whitney Twin Wasp engines of 1,050 h. p. each. The maximum speed is 199 m. p. h., cruising speed 179 m. p. h. Cruising range is in excess of 3,000 miles. The North American B-25 has a span of 67 ft. 6 in., length 51 ft. 5 in.; weighs empty 16,000 lbs., fully loaded 24,000 lbs. Has a top speed of 308 m. p. h., cruising speed 259 m. p. h., service ceiling 25,400 ft. It is powered by two Wright Cyclone engines developing 1,600 h. p. for take-off. Allison Division, General Motors Corp., is located in Indianapolis, Ind. The Wright Aeronautical Corp., Division of Curtiss Wright Corp., is at 132 Beckwick Ave., Paterson, N. J. Pratt & Whitney Aircraft Divi-

sion, United Aircraft Corp., is in East Hartford, Conn.

QUESTION: Could you tell me something about the Brewster Buffalo and Bermuda? W. R. H., Hatboro, Pa.

Answer: The Buffalo is a low-wing single-seater all-metal fighter monoplane, having a span of 35 ft., length 25 ft. 6 in. It is powered by a Wright Cyclone air-cooled radial engine developing 1,000 h. p. The top speed is about 340 m. p. h. The Bermuda is a two-place midwing all-metal monoplane dive bomber with a span of 47 ft., length 38 ft. 10 in. It has a gross weight of 12,256 lbs. and is powered with a 1,275 h. p. Wright Cyclone. We do not know the performance of this ship.

QUESTION: Please give me the name and specifications of the ship pictured on the inclosed clipping. Would it be possible for this ship to be dived at a speed of 500 m. p. h., starting the dive at 12,000 feet? D. H., Wilkes-Barre, Pa.

Answer: The ship is an old Boeing P-12E fighter, with a span of the upper wing of 30 ft., bottom wing 26 ft. 4 in.; fuselage length 20 ft. 8 in. It weighed empty 1,983 lbs., fully loaded 2,674 lbs. The maximum speed was 184 m. p. h., cruising speed 165 m. p. h., service ceiling 28,000 ft. It was powered by a Pratt & Whitney Wasp of 500 h. p. The terminal velocity of the ship was lower than 500 m. p. h., so it could not be dived at that speed.

QUESTION: Could you tell me the speed of the North American XP-51? S. K., Cincinnati, Ohio.

Answer: Sorry, no official figures as to the performance of this ship have been released. It should do better than 360 m. p. h.

QUESTION: Would you please give me the names and addresses of a few companies manufacturing light planes? L. P. C., Reserve, La.

Answer: Aeronca Aircraft Corp., Middletown, Ohio; Akron Aircraft, Inc., Akron, Ohio; Culver Aircraft Corp., Wichita, Kan.; Engineering & Research Corp., Riverdale, Md.; Interstate Aircraft & Engineering Corp., El Segundo, Calif.; Luscombe Airplane Corp., West Trenton, N. J.; Piper Aircraft Corp., Lock Haven, Pa.; Porterfield Aircraft Corp., Kansas City, Mo.; Rearwin Aircraft & Engines, Inc., Kansas City, Kan.; Stinson Aircraft, Wayne, Mich.; Taylorcraft Aviation Corp., Alliance, Ohio.

QUESTION: Could you tell me the names of the airplanes on the inclosed pictures? Also, have you any information on the Spitfire II? How does it differ from the Spitfire I? Is the April 1941 issue of Air Trails available? R. S., Whitewater, Wisc.

Answer: The four-engined ship is a Junkers Ju-90 40-passenger transport; the single-engined job is a Heinkel He-70 4-passenger airplane. Sorry, we have no information on the Spitfire II. You can still get the April 1941 issue by sending 15 cents to Mr. Clifford of our circulation department.



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I DESIGN BOMBS

BY AIR COMMODORE HUSKINSON, as told to
SQUADRON LEADER HECTOR BOLITHO

One of Britain's most important men-behind-the-scenes talks shop—discussing English bombs from all angles.

THE Nazis have done many dastardly and a few foolish things during this war: none more foolish than the bombing of Buckingham Palace and the bombing of Air Commodore Huskinson.

The bombing of Buckingham Palace, coming at a time when the East End was suffering its most melancholy attacks from the enemy, served only to bring the king and his people together. The bombing of Air Commodore Huskinson filled an otherwise amiable, if dynamic man, with such venom that when he lay in hospital, in danger of losing his sight, he told the nurse that all he wanted was to get back to his desk and design more bombs.

The air commodore is working at his desk again. In an office beside the river Thames (which he is likely to set on fire with his vitality) he is making bigger and better bombs already, to avenge himself on the enemy.

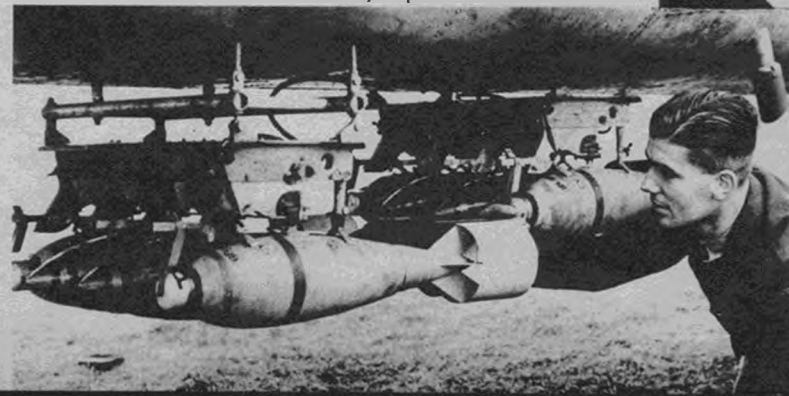
As much as anything, the air commodore is like a bomb himself. A kindly bomb! But a bomb. From the moment that his door opens, you sense life on another scale; life running at a new tempo. The typewriter in the next office seems to be hammering at unusual speed. People come in and out as if running on a quick-motion cinema reel.

With the river for his background, and the far-away skeleton of a bombed building to remind you of the purpose of his department, you find the air commodore sitting, still forced to wear smoked spectacles, but moving and speaking with such zest that you suffer from a kind of blast for the first few minutes. Then you settle down and realize that you are talking to a man whose mind is incapable of humbug; a man tolerant with good argument, but intolerant with fools, and devoted to his work with almost fanatical intensity.

I am not a good interviewer. The questions I rehearse going up in a lift always seem to fly off like

(Continued on next page)

Destination: escort vessels. These small bombs are slung beneath an R. A. F. bomber used to attack enemy ships off Danish coast.



Above—Air Commodore Huskinson, R. A. F., at his desk; below, the work of some of his bombs on German oil tanks at Dunkirk.

I DESIGN BOMBS

(Continued from preceding page)

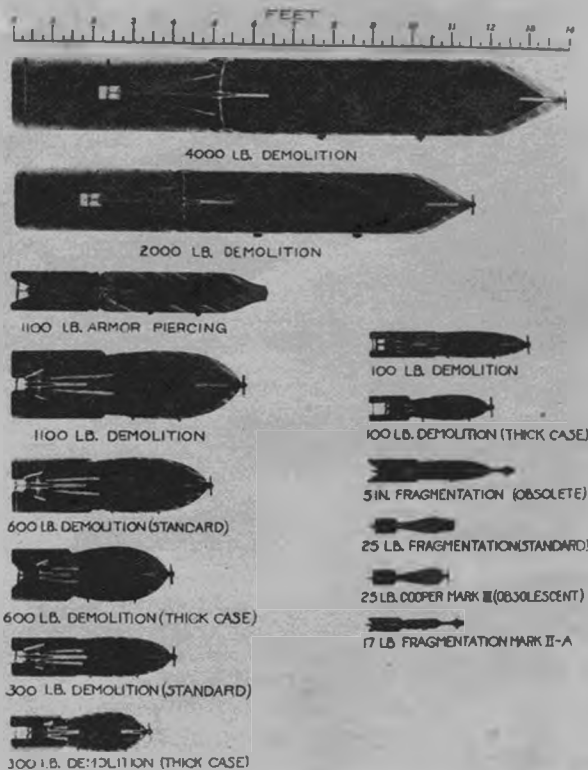
thistledown when I try to ask them. I asked, a little foolishly. "I would like some facts about the work done in your department." The answer came, like a stick of bombs. "We produce all types of incendiaries, smoke floats, navigation aids, ideas for the balloon barrage, transport winches, motorboats, rescue craft, engines of motorboats, armament for motorboats, armor-plate protection, all guns of every size and caliber, turrets of every size and caliber, and all ammunition; that is, armor-piercing ammunition, ball ammunition, tracer ammunition, incendiary ammunition, bomb racks, bomb carriers, fuses of every description, and all bombs—what would you like to know about?"

Rather weakly, I said, "Bombs, please."

"Would you like to know a little of types of bombs—as much as I dare tell you for print? As you know, the purpose of bombs differs. So you have many types for many purposes. For the attack of troops in the open, you need a bomb of say twenty pounds and so designed that it will break up, on detonation, into several thousand fragments. All these fragments are projected with such velocity that they cause the maximum of damage to personnel. These bombs require fuses with very rapid action. That is obvious because, if the bomb penetrated into concrete before detonating, the fragment effect would be lost. So a nose fuse is used with these antipersonnel bombs. It has a simple striker, held by a shear pin which is driven in on impact with the ground. These fuses have rapid action, being practically instantaneous, and therefore the bombs form a very small crater.

"Now we come to the bombs which we favor, which we use in our increasing attacks on the industrial plants of Germany. These weigh from 250 to 500 pounds, and their body is much stronger—it is made of steel. It must have this added strength, as it may be required to penetrate concrete floors, without breaking up, and still remain intact for detonation when it reaches, say, the ground floor of the target. The fragments produced are, of course, much heavier, and designed to do real damage to plant and walls of buildings.

Made in America. These various U. S. types are paralleled by the R. A. F. designs, although latter are based upon more recent air-war knowledge.



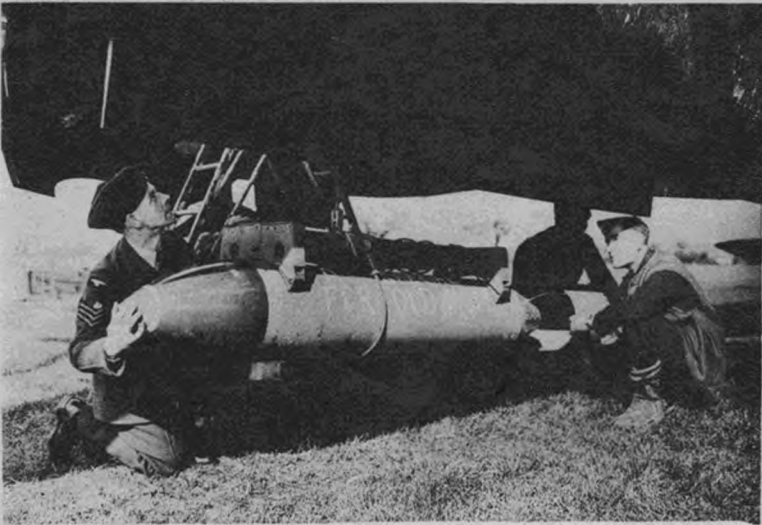
Practice makes perfect bombing. These practice bombs are forerunners of the real thing to be handled later by this R. A. F. student bombardier.

"We come to heavier bombs, the type we use for attacking warships. These are normally designed on lines very similar to the armor-piercing shell. The body of the bomb must be heavier and a highly streamline form is necessary so that we can get the high velocity needed to penetrate armor. The armor of today is mighty thick, and it takes some penetrating. In such attacks, with such bombs, it is important to have the added advantage of dropping from a great height, to gain the necessary velocity.

"Of course," said the air commodore, "we don't work on the same lines as the enemy. The Germans use a different type of bomb, with a very light case and containing a larger portion of explosives. This is the type of bomb he used for his day attacks on civilians in this country, before we taught him that daylight bombing was too costly.

"These bombs depend on blast for their damaging effect. There are enough gaps in the buildings of our towns to show you this, without my explaining any more. Just as the thickness of the bomb cases varies in these types, so does the proportion of explosive vary, in relation to the total weight. In the case of the antipersonnel bomb, favored by the Germans, it will be in the order of thirty parts per hundred. The armor-piercing bomb will fall to fifteen parts per hundred, whereas the blast bomb may contain sixty parts per hundred."

Air Commodore Huskinson opened a little book, at which he glanced for a second. Then he pressed a bell which was the signal for a trapdoor to open. He gave some instruction to the clerk whose head appeared—an instruction which assured me that he was one of those rare men who can think of two subjects at the same time. Then he went on to talk of fuses. "You will appreciate," he said, "that the attack of such diverse targets demands considerable elaboration of the methods employed for detonation. You see, these antipersonnel bombs must operate practically instantaneously. So they must have a direct-action nose fuse. But this is not so with general-purpose bombs—those used for industrial plants, of which I told you. They have to detonate at ground level, so a short delay is required.



"A special for old nasty" is inscribed on this one-ton bomb being loaded into a Whitley heavy bomber about to leave for Germany.



This stick of bombs being released over Vichy by R. A. F. plane shows method of dropping. Smaller bombs are dropped from wing racks; big ones from within.

"To cover all these varying conditions, fuse timing may vary from instantaneous to as much as ten seconds delay. Then there are the specialized fuses, used on account of their nuisance value. Then you have those menacing bombs which have forced so many people to be evacuated from their houses—those bombs that may not detonate for as long as a hundred hours after arrival. Many of these bombs have been dropped by the Germans on the English countryside and in our cities. They are usually supplied with an antidisturbance fuse which will detonate the bomb if it is roughly handled. The risks from this add to the valor of our bomb-disposal crews. They are great men. Yes, great men. And they are, usually men with imagination, which makes their courage all the more wonderful."

On the wall of the air commodore's office was a big print, showing the inside of a bomb. I was so conscious of being in hush-hush land that I had not dared look at anything. But he directed me to look at it. "You see," he said, "a bomb consists of four essential parts. You have first the *body* or *container*, made usually out of steel, of varying thicknesses, according to its purpose. Then you have the *main explosive filling*, which usually consists of a mixed explosive, known as amatol and containing nitrate of ammonia and T. N. T. The third part is the *detonator*, which initiates the main filling when struck by the striker. Then you have the fourth part, the *pistol*, which is purely a mechanical device to strike the detonator cap on impact with the ground." Thus the chart on the wall became clear to me.

I asked Air Commodore Huskinson then if he could safely give me some idea of the time employed in experimenting with bombs before they can be used. He said: "Modern bombs require development for a long period, a very long period, before they are considered sufficiently reliable to be handed over to the service. We cannot allow the aircraft in action to run one risk by using new types of bombs of which we are not absolutely certain. That is obvious, isn't it? This development covers the production of what we call ballistic dummy bombs which are dropped from aircraft to test their accuracy in flight. We fill full-scale bombs with high explosive, and these are detonated statically on the ground. This is in order to take measurements of the blast, the pressure, the fragmentation—that is, the velocity, size and quantity of the fragments produced. Then similar trials are carried out with different high-explosive fillings so that we may compare the effects of each performance. Then live bombs are dropped from the air on various targets, to check the functioning of the fuses, the damage caused, and the size of the crater produced."

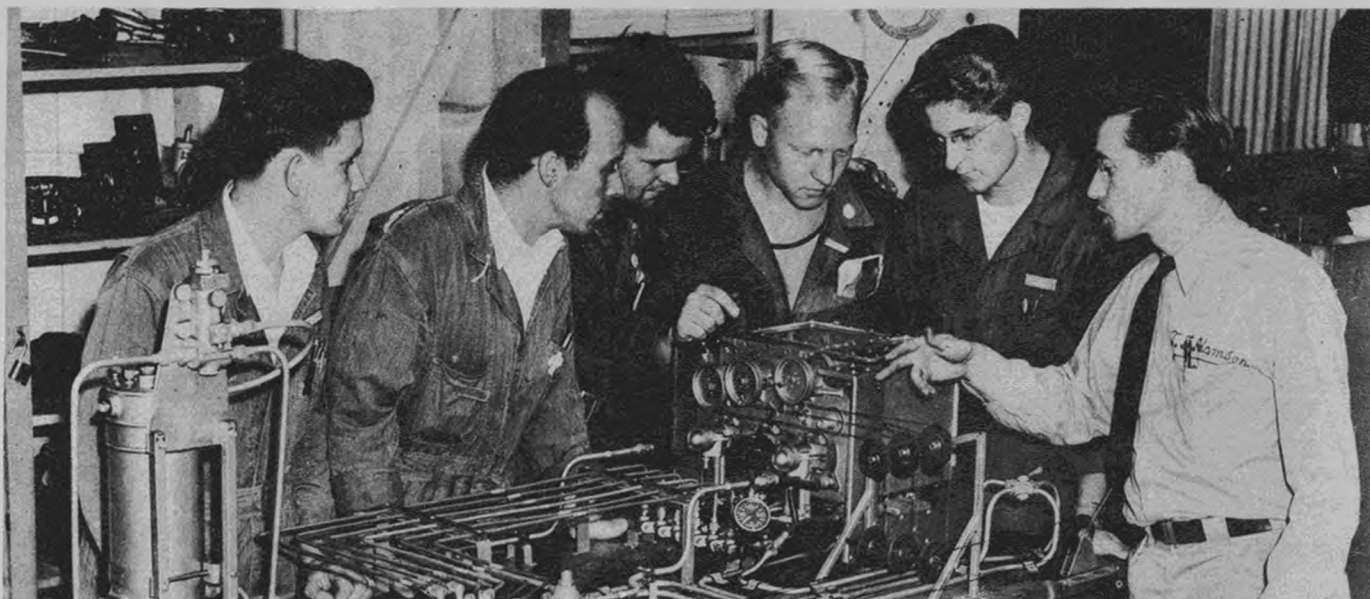
I dared then to ask a question. "Does it matter what sort of climate bombs are used in? Are they affected by temperature?" The air commodore did not apparently think my question idiotic. "Yes," he said, "it is essential for bombs to remain in good condition when stored in a hot climate for a number of years. We



Handle with care! These 500-pound bombs are being stacked by worker in R. A. F. ammunition store. Circular stabilizer fin has proven best.

have therefore to go through storage tests under various tropical conditions."

Methods of bomb release naturally are dark secrets. Upon this matter the air commodore looked mysterious and waved my questions aside. But he said: "The methods of carriage and release have, of course, developed enormously from those old days when they threw grenades over the side of the aircraft. The methods of today are complicated. As you know, bombs may now be dropped singly or in what we all call a salvo, or at predetermined time intervals, in what is now popularly known as a stick. The bombs may be suspended from an eye bolt situated at the nose of the aircraft. This is vertical stowage. Or they may be suspended from a lug at the side of the bomb over the C. G. This is horizontal stowage. The bombs are released (Turn to page 28)



Author, fourth from left, who reports on fate of graduates from his particular school. (Side light: He walked 4,000 miles to attend school.)

P. S.—THEY GOT JOBS BY JOHN A. SARKAUSKAS

After aviation school—what? Here are varied case histories.



Sherman W. McBain, C-W Tech grad now at Vultee, confers with his family.

THE generally accepted knowledge that our government-approved aviation training schools are delivering thoroughly qualified young men to the aviation industry is directing many young footsteps away from home firesides to distant horizons where stand the leading airplane colleges of today. Many come on their own initiative, determined to join hands with the world's newest big-time industry; others come due to the wise counseling of parents. Young, noticeably green fledgelings just out of high school mingle with men in their twenties, thirties and even forties at the school registration desk, emphasizing the fact that age places no marked restrictions on the man who wants to acquire the necessary aero-

nautical training so vital to future success.

One year later, as an average, these same men take a parting glance at their school, and with diploma in hand knock at the gates of the industry, ready for a job. And now the questions come: How does this year of instruction affect their lives? What do they think of their training venture? What happens to these boys? These questions I shall answer from my own vantage point as a student mechanic, here in the heart of the aviation industry.

Three years ago, out on the plains of Colorado, some 180 miles east of Denver, a husky farm youth industriously worked his chores. For nineteen years he had (Turn to page 26)



Ray Gelvin landed a job a month after graduation. Engine expert.



Carburetor, ignition expert, Don Teel has important repair job.



Lockheed researcher Ira Richardson schooled at Curtiss-Wright Tech.



Service men are in demand. Graduate DeHaan went right to work.

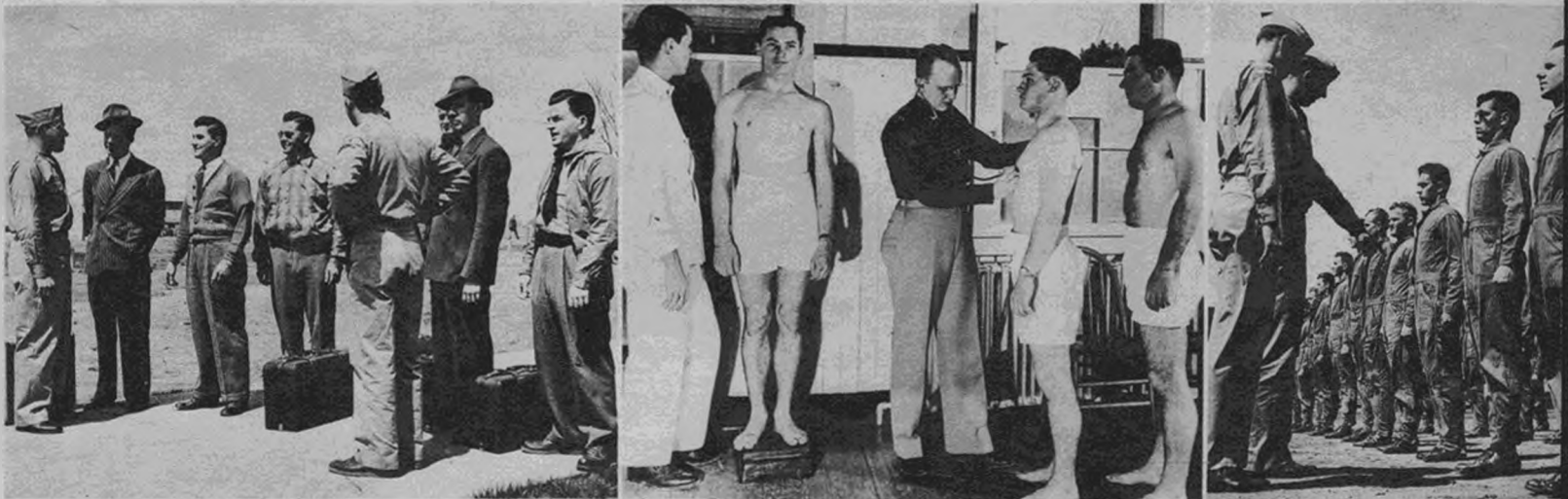


These cadets are signing in at a window where a check is kept of flights. Army will soon train 30,000 cadets annually. There were 325 trained in 1939.

JOHNNY GET YOUR WINGS

The entire story of air corps training in exclusive pictures, from elementary field to advanced, from fledgling to pursuit or bomber pilot.

PRIMARY TRAINING



You're in the army now—almost. Fledglings are met at gate by upper classmen. Course—30 weeks.

Breathe deep. Perfect physique is essential. Maximum height and weight: 6 ft. 2 in., 180 lbs.; minimum: 5 ft. 4 in., 115 lbs.

"Processing," fitting for uniforms and drill take five weeks.

Continued on next page



All primary training is carried on at the civilian flying schools. This one is the Darr Aero Tech at Albany, Georgia. Basic and advanced is handled by the army.

250 h. p. Continental engine of this Stearman primary trainer is started by cranking inertia starter. Small flywheel stores energy to kick over engine.

Each instructor has four primary students. Before flying he uses earth as a blackboard to diagram maneuvers. 28 elementary schools give six-week primary course.

Three-pointer. Primary schools in three areas feed cadets to basic centers: Randolph Field, Texas; Moffett Field, California; Maxwell Field, Alabama.

PRIMARY TRAINING



JOHNNY GET YOUR WINGS

Continued from preceding page

BASIC TRAINING



Endless rows of North American basic trainers make imposing picture at Randolph. Rarely are they idle. Randolph trains 12,000 pilots a year.



At primary, lieut. has two circles on shoulder; capt. three; major a diamond, private nothing.

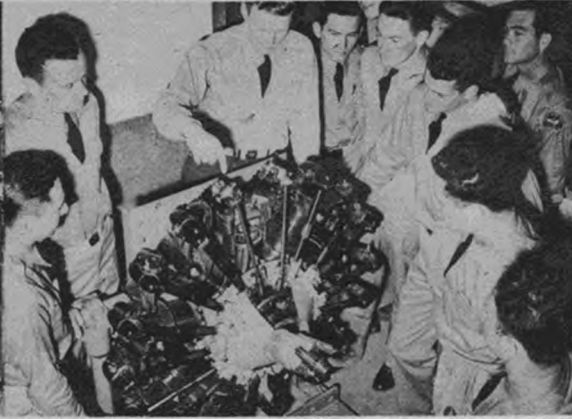
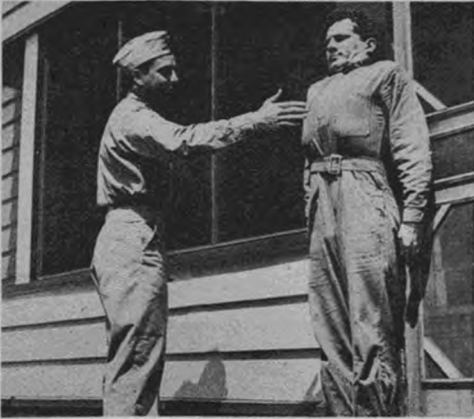
Kiwi at Albany primary field must wear goggles around neck—when he isn't flying—and heavy flying jacket closed at top.

The boys must have their hazing, which is natural, since most of them come from college. Kiwis fly the "beam."

"Bracing" is old army favorite. Lower classman throws out chest, must show three chin wrinkles.

Elementary engine instruction is given the primary flight students. Flying cadets who fail may later train for other duties.

The neophyte at privately operated schools gets plenty of skull work. Here a class studies aerodynamics.



Continued on next page



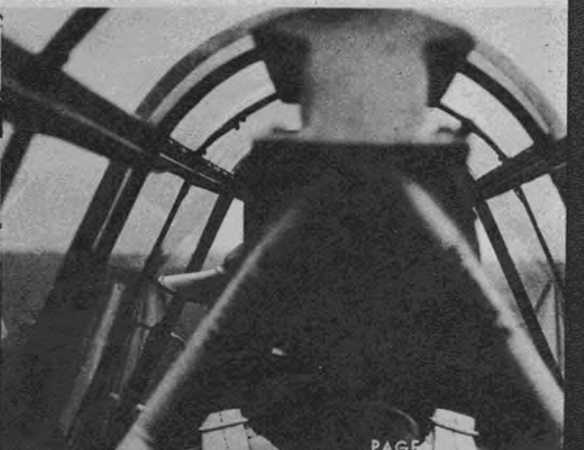
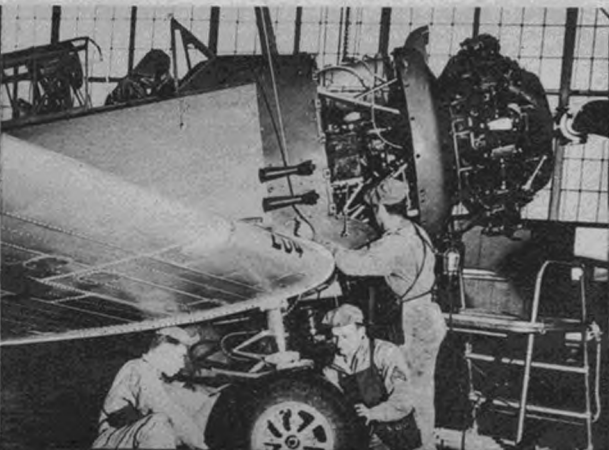
The boys at Randolph Field have dubbed their army haircuts the "Randolph Rip." Of the 12,000 yearly crop there, 7,500 will be multi-engined pilots, and 4,500 fighter pilots.

Basic-training students receiving their flight gear. Ten weeks are required for basic training. Including Randolph Field, there are 21 air-corps-operated basic fields.

Don't be alarmed. It's not a fire. Pressurized soapy steam cleans grease and oil.

Ten men on the ground for one in the air. Ground crews at Randolph condition planes that fly total of 40,000,000 miles yearly.

Pilot looking to left reveals the visored cap worn to shield eyes from sun. Tube pylon is protection in turnover.





Over vast Texas plains wheel training formations of BT-9s. Partly open wing slot in left foreground preserves smooth flow of air over tip at steep flight angles.



Every man a weather man. Flight cadets meteorology class at Randolph receives instruction in weather maps, cloud formations, the winds aloft, etc.

Code room. Radio class takes test in International Code. Instructor in background "sends." Of a typical group of 20, only 10 will emerge as military pilots.

It's this way. Instructor in navigation class shows how to use flight calculator for solving various problems of dead reckoning. Note computer on desk.

BASIC TRAINING



JOHNNY GET YOUR WINGS

Continued from preceding page

ADVANCED TRAINING



Chief pilot of pursuit training flight gives last-minute instructions for rendezvous. Ships are Republic P-35 single-seaters. Advanced training at Kelly takes ten weeks.

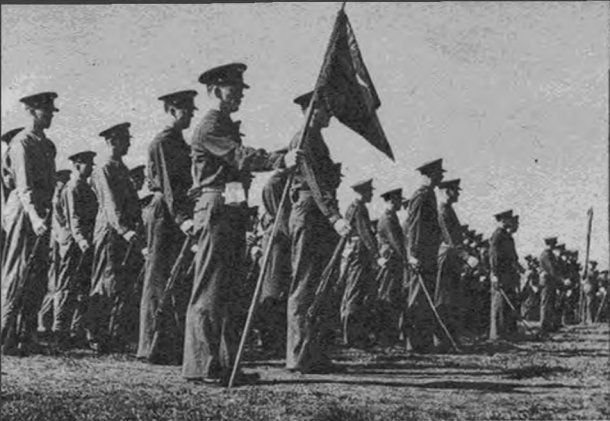


Student bomber pilot, left, gets tip from instructor. Advanced pursuit, gunnery, and bombardment are done at Barksdale Field, La., among others.

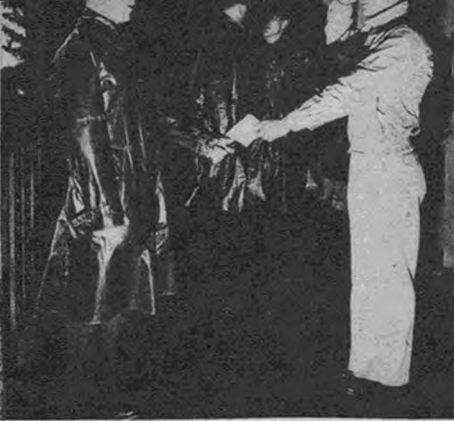
Pilots must be familiar with their weapons, capable of completely disassembling either .30-caliber machine gun, foreground, or the heavy .50-caliber one in the rear.

Gee, real bullets! At Barksdale the student gets his first taste of actual gunnery. Practice guns on this North American advanced trainer are .30s.

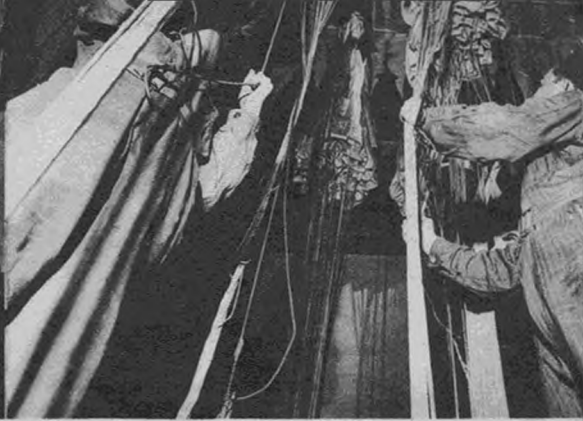




Drill. At basic schools guns are used in drilling. At primary schools drilling is done without guns. Guns are Springfields.



Discipline is essential to morale. This cadet learns how to present himself to a commanding officer.

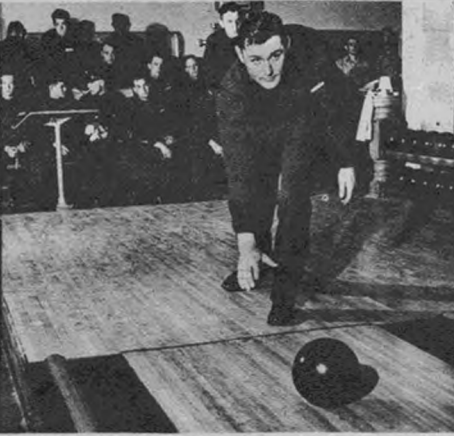


Parachutes are hung up in "chute room" to air every sixty days; drop-tested with dummy every two years.

Randolph barracks, like all army barracks, are spotless. Four cadets bunk in a room. One bed inverted makes double-decker.

All work and no play would make Jack a dull boy. Randolph has numerous recreation facilities.

Cadets invite their best girls to tea dances. Military pilot must have adequate relaxation from tension.



Bombardier. Left, instruments and release switches. Sight mount in front.



Prospective bomber pilot learns types of bombs and their uses. Various light fragmentation bombs foreground. 100-lb. practice bombs rear.



The group moves on to see how the 100-pounders are attached. Bombs can be dropped in any combination.

Through flat plate-glass panel bombardier looks down from his nose perch.

Blind-flying training at Kelly Field is done with this battery of Link trainers. Mechanical "crab," foreground, traces the pilot's course.

In ready room student pilots look over terrain map to plan practice raid. In Randolph area are 32 training fields.





NAVIGATING OUR BIG BOMBERS

BY SLOAN TAYLOR

The navigators are the boys who get them there. Here's how they work—described in terms of a rendezvous with an enemy aircraft carrier unit steaming this way 1500 miles at sea.

FIRST call was sounded at 5:45 a. m. that morning at Mitchel Field, L. I. Fifteen minutes later, as the notes of reveille came from the loud-speaker of the post radio, twelve officers of the G. H. Q. Air Force hastened through the drizzling rain to headquarters. They were the commissioned personnel of three Boeing B-17 Flying Fortresses.

In the office of the commanding general the adjutant informed them in crisp, sharp words that the fleet of a coalition of hostile nations was 900 miles off the Atlantic coast. The fleet was heading toward the United States on a mission to land an expeditionary force somewhere between North Carolina and Massachusetts. Then he gave them their orders:

"You will intercept the fleet and sink it. Here—"

The adjutant picked up some charts marked with the position of the fleet at that hour and handed them to the three captains commanding the B-17s. He gave them the estimated speed of the fleet and told them their Boeings would be revved up and ready to take off at 8 a. m.

The B-17s took off on the dot of 8 a. m., although the drizzling rain had increased to a downpour so heavy that the officers and men were forced to use closed cars to go out to their ships. They flew out to sea, completed their mission, and returned to Mitchel on scheduled time after passing through one cold front on the way out and two coming back.

That hop, made on May 12, 1938, during the General Headquarters Air Force May maneuvers, was acclaimed the most spectacular tactical achievement of the air corps up to that time. The New York-bound Italian liner *Rex* represented the hostile fleet, and the success of the B-17s in finding that lone ship 750 miles at sea was cited as conclusive proof of two air corps contentions: one, the air corps had become this country's first line of defense, and two, there should be a seat for a navigator in every long-range bomber.

The flight of the three B-17s through three cold fronts—three are as many as the average air-line pilot encounters in a year—demonstrated the skill of the officers at the controls; but spotting the fast-moving *Rex* that far out at sea was a triumph in aerial long-range navigation. This writer is permitted to make that statement because he was a passenger on one of the B-17s—No. 21, which was flown by A. Y. Smith, then a captain of the air corps.

At 10:30 o'clock that morning, when the formation was nearly 400 miles out, the navigation officer was asked how much longer it would take to reach the *Rex*. He consulted his computer and the figures he had just taken in shooting the sun. He replied: "We'll be over her at 12:30." Examination of the log of the flight leader's ship after the hop revealed that the official time the formation began a descent from five thousand feet to salute the *Rex* was 12:29 p. m.

The vital part aerial navigation played in the mission of the B-17s was duly pointed out to the war department, with a recommendation that emphasis be placed on this phase of military flying. That was done, but when the vast expansion of the air corps was ordered in the summer of 1940, there was no one in Washington who could answer this question: "Where are you going to train enough navigators to keep pace with plane and pilot production?"

Credit for escape from this jitter quandary goes to a clear-minded member of the air corps who dropped a gentle hint that he believed Pan American Airways might be willing to handle the job. By virtue of more than ten years of transocean flying at that time and conquering all sorts of weather over the sky-scratching terrain of South America, Pan American had developed a corps of the most efficient aerial navigators and airway meteorologists in the entire world, the clear-minded individual averred.

The war department approached Juan T. Trippe, president of the Pan American Airways System, and when President Trippe told them he could set up a school in Miami, Fla., and start training navigators for the army in less than two months, the sigh of relief that swept through Washington was as lusty as a gust from an N. A. C. A. wind tunnel.

On August 12, 1940, the Pan American Airways Navigation Section—a nonprofit school—opened its portals to fifty khaki-clad cadets. When they completed the stiff twelve-week course and were commissioned second lieutenants in the air corps reserve, another class of fifty reported for training. Then, six weeks later, with the second class only halfway through the course, a third class entered, and from then on a new class checked in every six weeks. But beginning with the fifth class, the number of students was upped to one hundred, and by last summer, less than one year after starting from scratch, Pan American was turning out competent navigators at the rate of one hundred every six weeks.

The first Pan-Am-trained navigators called for foreign service were those who were graduated last March. They were sent to Puerto Rico, the Panama Canal Zone, Hawaii, Alaska and the Philippines. But for our example of what the U. S. army air forces expect of these young gentlemen, let us take a twenty-three-year-old graduate in the first group, and let's call him Second Lieutenant Jack.

Some of Lieutenant Jack's classmates were sent to Douglas Field, Salt Lake City, Utah; some to Lowry Field, Denver, Colo.; some to Langley Field, Va. But let us assume that the 992nd Squadron of the First Air Force 10th Bombardment Wing was based at a field in New England, and that is where they sent Lieutenant Jack. At the New England post, Lieutenant Jack experienced the thrill of navigating Ship 7 in the (Turn to page 30)

NEW RECRUITS FOR R.A.F.

Watch these latest British ships
—they're extra fast and furious.



Nightmare. Bristol Beaufighter, by builders of famous Blenheim bomber, is very effective night fighter. Fast, armed with four cannon and six machine guns.

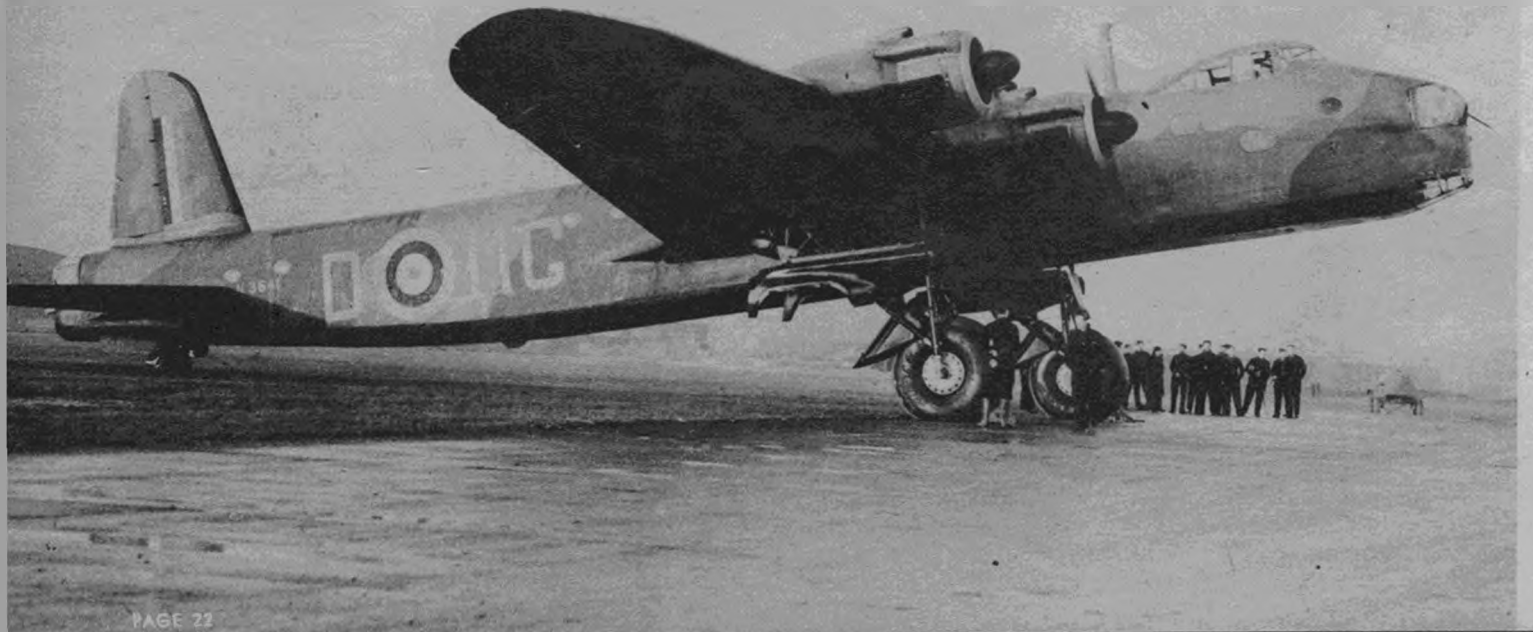


Newest dive bomber. This Brewster Bermuda carries 1,000-lb. bomb within fuselage. Has twice range of German types, powered turret.



Vengeance indeed. Vultee's new dive bomber for Britain has crew of two. Carrying bombs in fuselage gives cleaner lines and better performance. Heavily armed.

This 99-ft.-wingspan Stirling long-range four-engine bomber is only 12 feet wider than long. Has four double-row Wright Cyclones totaling over 6,000 h.p.



PLEASE CHECK WEATHER CAREFULLY BEFORE LEAVING. IF WEATHER SEEM AT ALL DOUBTFUL, OR IF YOU ARE UNFAMILIAR WITH THE TERRAIN, CHECK YOUR ROUTE WITH FIELD INSTRUMENTS AND THE MANAGEMENT.



It won't be long now—the shirttail, we mean. Tailfeathers Club initiation. Left to Right—Mancini, Harris, author-victim, Headstrom, Bowes, Newman.

6-DAY SOLO

BY AVERAGE GUY

Proving an average guy can really learn to fly in less than a week and have a swell time doing it.

SIX days ago I'd never flown a plane alone. Today I am not only a man, various individual opinions to the contrary, but a pilot. Beyond the fact that I have flown solo, that last statement is a masterpiece of overstatement, but let's look at the record.

This year I decided to take a week of my vacation to learn to fly, just like that. The neighbors muttered to each other behind their fences and my six-year-old daughter tapped her forehead and pointed to me whenever the subject was mentioned in public.

I must confess that ten years ago I had a few flights in a glider, since then have gingerly held the stick of several light planes while the owners visibly sweated, and have flown many thousands of miles in commercial and military ships, but never had I had any serious instruction in the actual mysteries of power-plane flying. As to physical qualifications I'm about normal, I drive a car, like sports, and can't eat radishes. Beyond that, the general picture would fit almost any chap around 36. The mental qualifications are a matter of opinion. As an aviation writer I've read books on flying and have a basic knowledge of how and why a plane flies. . . . But let's get on to this six-day adventure.

I arrived in Lock Haven, Pa., home of the Piper Cub planes, where I was to learn this business of flying, last Saturday afternoon. After nine hours on the train I was more ready for bed than a flying lesson, but the gang that met me at the station would hear none of it. After checking in at the hotel I was driven to Cub-Haven Airport and introduced to my instructor for the day, Alvin Headstrom, and NC35489. This last introduction was most important, for this was to be my ship during the stay. The Piper J-3 trainer groaned as I climbed into the rear seat and (Turn to page 32)



Swing club in session. Instructor Headstrom teaches author the gentle art of spinning the prop without losing sections of your anatomy.



World's most patient man, Instructor Hall inspects author's belt in the cabin of faithful old NC35489, the Piper Cub J-3 trainer used.



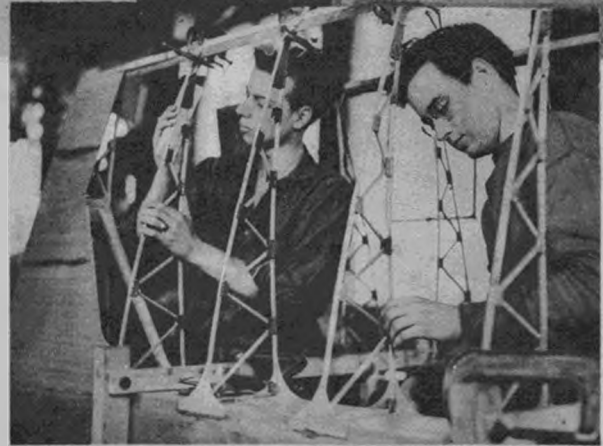
Congratulations, you made it! Charlie gives the author the glad hand for bringing NC35489 back in one piece from his solo flight.



Henry Stiglmeier, right, shown with brother Herman (both outstanding glider pilots) used to be well-known model builder. Now he's flying ships himself.

FROM MODELS TO GLIDERS

BY ALEXIS DAWYDOFF



Old stuff to model builders. The construction of all-wood gliders and sailplanes presents no problems to skilled model-plane makers.



All-wood wagon. This home-built sailplane is modeled after the Prueffling with a special wing. Harland Ross flew it to an altitude of 7,000 feet.

Model makers are "naturals" to build and fly sailplanes. Why not give the boys a hand?

RECENTLY two friends of mine, both members of a large glider club, purchased a cracked-up sailplane. Their jobs did not permit them to spend any time repairing their ship, and taking it to an airplane repair shop was beyond their means. It so happened that one of the members of the club was a young boy who, until the time he joined the group, used to be a model builder of some note. This youth volunteered to work on the glider in his spare hours, with the result that in a short time the two partners were able to fly the ship without going into hock for the repair bill.

The quality of his work was as good as that turned out by the factory which built the sailplane, and the repair entailed reading of blueprints as well as the use of considerable ingenuity, inasmuch as the ship was of foreign construction and plans for a number of parts were not available. This boy had, actually, never worked on full-size aircraft; his knowledge of construction and his inventiveness were a result of building and designing model airplanes.

On a number of occasions I've joined in the talk fests of model builders, and I've always been amazed by their knowledge of aerodynamics, theory of flight and meteorology. Expressions like "Reynolds number," "L over D," "lift curves," and the like were not just words flung around to make an impression. The boys did know what they were talking about. They knew all about thermals, how they occurred, and the best location for them. I've often gone away from these model sessions thinking to myself: "There's a bunch of fellows who will make excellent glider pilots and designers."

These model builders have confessed to me a number of times that their next ambition is to fly motorless planes. I can well see the point. Having successfully built and flown model airplanes, they quite naturally want to experience the thrill of piloting a real plane. Seeing the model plane soar in a thermal, after its engine has stopped, they want to soar themselves, because they understand that it is the purest type of flying, requiring piloting skill, knowledge and ability to find rising upcurrents with which they are already acquainted through watching their models soar.

Herein lies one of our greatest opportunities to advance flying, an opportunity so far ignored. All other countries (Turn to page 22)

known the farm as his home, his world, and he loved it. The usual farm problems were there: broken wagons, needed repairs to the house and barns, damaged fences, an old car and a tractor that would run—sometimes. By the time he was out of high school his dad had noticed that the family car and the field tractor, both long past a just retirement age, were running better than ever. With even more pleasure he observed ever-declining repair bills. He encouraged the boy's interest in mechanics, and with wonder watched the skill the youngster applied to groaning engines. While working in the fields, the youth saw huge twin-engined United Mainliners twice a day roar overhead, silhouette their wings against the Colorado sky, and gradually sink into the flat horizon.

Now let's jump to the time when he garnered all his finances, persuaded friends to loan him a like amount, and in the autumn of 1940 set out to enter Curtiss-Wright Technical Institute of Aeronautics at Glendale, California. Although without even a nodding acquaintance with an airplane engine, he chose the specialized engine course, an eight-month training. He found it more than interesting. Following graduation last July, one of the largest repair stations on the West coast lost no time in placing him on the pay roll. One month later the civil service commission of Sacramento placed an attractive bid for his services. Today he is there.

Before he left for his new duties, I chanced to ask Ray Gelvin of Wray, Colorado, how he felt about it all.

"Aw, shucks," he replied, "I'm not the only guy who's got a good job. Look at the other fellows who graduated with me and before me and where they've gone to." And he proceeded to relate a litany of names and aircraft companies.

"Just how did all this start?" I queried.

"You mean airplanes?" he came back. "Well, the United Air liners were always flying over our farm, and doggone it if I didn't get a hankerin' to take the engines out of those silver-winged sausages to see what made them go."

Multiply Ray Gelvin's case by the hundreds and you find one answer to the tremendous increase of qualified aircraft workers during the last few years.

Contrary to popular belief, no special brand of intelligence is necessary to understand the construction and operation of modern aircraft. The average American high-school education is sufficient for this school's aeronautical engineering course, and is not required or necessary for any mechanical course. Time in college may be beneficial, but beyond the standard school training of today, individual initiative counts most in aviation.

One of my acquaintances, a distinct newcomer to things aeronautical, was listening to a class lecture

where the topic was surface covering. Before the lecture was ten minutes old, up went his hand with the question: "If you please, sir, just what hide of what animal is used in the covering of wings?"

The instructor controlled his emotions rather well and asked for more detail. "Well," replied the youth in all seriousness, "you keep saying about the skin on the wings, the skin on the fuselage, and all that."

Probably not all students enter aviation with such a decidedly limited aeronautical knowledge, but their number is high. Their recovery, on the other hand, is equally astounding. The youth mentioned above now ranks with the leaders of his particular class.

The presence of the numerous aircraft factories in southern California is one of the most compelling factors in the attendance of this particular aviation school. Fully eighty-five percent of my fellow students come from outside the State's borders. Here in the very heart of the industry one is not far from modern developments, a decided advantage. The California climate may also come in for consideration. Then, too, being away from home has its good points. In new and congenial atmosphere, one is apt to concentrate better on new problems. The usual home and community distractions are missing. Still, because of this, timid souls might begin to wonder how a young person, having lived all his life within walking distance of his front door, can readily adjust himself to a change in living so far from the paternal roof. Take the case of Don Teel.

Back in February, 1940, Don left Lansing, Michigan, to study aviation in southern California. Expecting to find a spacious dormitory where the student body resided, Don found his room and board instead arranged for him in one of the pleasant private residences of Glendale, near the school, and at a very low figure. In his own words, he was "at home, although home was 2,000 miles away." He chose the master aviation mechanic's course so, as he put it, he would "get the whole works."

His first months were filled with ever-mounting wonders. What amazing possibilities one could realize from a sheet of aluminum alloy, the many and varied projects that could be created out of certain types of steel, hollow and sheet, the knack of riveting, the painstaking accuracy of template making, the delicate art of torch welding, all impressed themselves firmly upon young Teel. Later months brought the various divisions of the conventional aircraft to be analyzed in minute detail: the formation of wing structures and the reason for the airfoil contour, the fuselage and tail group, the controls, instruments, electrical wiring, surface covering, hydraulics, landing-gear assembly, rigging and thorough inspection procedures, and a clear knowledge of the theory of flight and Civil Air Regulations. Intermingled with practical work were lectures in the

classroom and on the apron of the adjoining airport. Toward the last third of his one-year course, Don was transferred to engines. Here was the very heart of the airplane. As the days went by, Don found himself gradually mastering the intricacies of both radial and in-line engines, together with the various types of propellers. Here again daily lectures solved puzzling problems.

February of 1941 rolled around and Don, diploma in hand, lost no time in changing his status from student to employee. He couldn't very well have refused, since the industry had requested his services some months previously. He is seriously optimistic about the future, and solemnly declares his career in aircraft is a permanent one.

Like many, many graduates, Don has found his future here in California. Others have gone so far as to thoroughly insure permanence on the coast. They have married California girls, bought homes and have settled down near their place of employment.

Yet many graduates have returned home to present their diploma before the Eastern and Middle Western branches of the aviation industry. Records prove conclusively that their success duplicates that of the California converts.

Yet the diploma-made trails after graduation do not always lead to hangar and drafting-room duties. A number have gone further and occupied the pilot's seat in the cockpit. An instructor at Randolph Field, a Pan-American Clipper engineer, a dozen Eastern pilots, a score of Canadian youths and even an RAF officer in England head the list of graduates who have branched into flying.

Another type of student who approaches the entrance gates of the aviation school with serious intent is the young man who, though apparently set for life in some other line, decides to "pull stakes" and set off in quest of a more appealing career. The word "career" is used since that is primarily the aim of all leading aviation schools like CWT: the molding of career men. Take the picture as it has appeared to me to date. Personal observations and contact have revealed former musicians, a newspaper reporter, garage service men, photographers, truck drivers, electricians, office, hotel, pharmacy and soda-fountain clerks, a pilot, a taxi driver, farmhands, a sheepherder, a movie actor, an Alaskan fur trapper, a miner, and numerous salesmen—all training side by side as aviation mechanics and engineers.

One example, from scores, is Ira Richardson, at present experimental engineer in Lockheed's huge Burbank plant. As field engineer engaged in Diesel electric installation, Richardson traveled the length of the hemisphere from Chile, South America, to Point Barrow, Alaska. Choosing a master aviation mechanic's course, he found that a number of electrical applications fitted well with airplane electrical systems which in turn led

him into the mastering of more complicated set-ups of modern ships. Today, in an excellent position, he forecasts great things for future aviation; and he continually finds pleasant surprises on his weekly pay check.

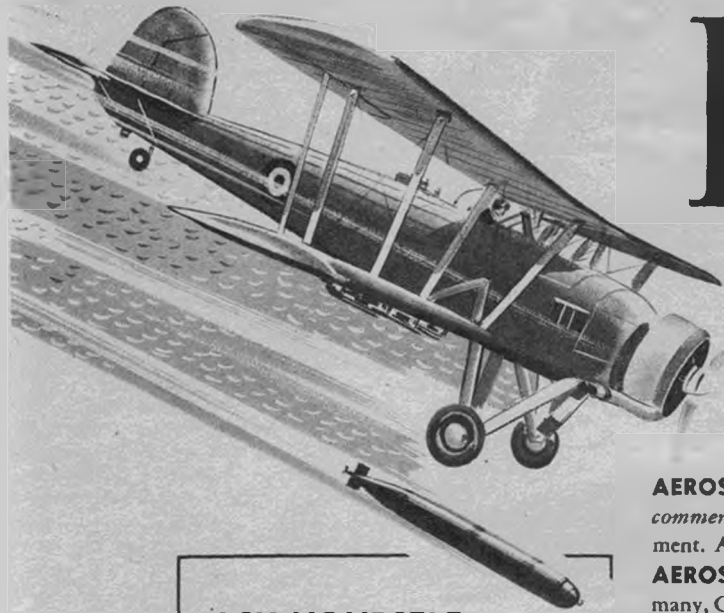
There are instances recorded where young graduates, immediately after leaving school, sailed for distant shores to work on special contracts offered by a foreign government. Three years ago, because of a Curtiss-Wright Tech engineer's diploma, Sherman W. McBain, together with six other fellow graduates of the same school, sailed for Sweden. Their contract, arranged through the good offices of our school placement bureau, called for one year of designing for the Swedish government. While in the course of his duties in the town of Linköping, he gained the acquaintance of a California businessman and his daughter. The inevitable happened, and as soon as McBain returned to Los Angeles, a wedding and honeymoon followed in quick succession. Later he reported for work at the giant Douglas plant at Santa Monica. At present he is employed nearby by Vultee Aircraft as layout man. His salary has advanced with him. Vultee's latest, the Vengeance, has many hours of his work incorporated in its structure.

On the personal side, Mr. and Mrs. McBain share an attractive Los Angeles home with seven-and-a-half-months-old Gregory W., who takes unconcealed pride in personally testing the strength of his father's gas-model airplanes. That the aircraft industry has provided them with comfort and happiness, as it has thousands of others, is readily admitted by McBain. Without reservation, he views with high hope the trend of today's youth if they get expert preliminary training.

"There is no doubt about it," he states with conviction, "the best training you can get is indispensable. Your entire future stems from that one period of preparation. In my opinion, aviation presents the best pay and the greatest opportunities of all modern industries. It may be an old tale now, but I'll still say the young man will get into real aviation far quicker, reach higher, and then be far more satisfied with his career if he turns down very short, or 'free' job courses and makes whatever sacrifice necessary to get sound career training."

To me, who have six more weeks left of a twelve-month master aviation mechanic's course, it sounds fine. Maybe I will land a good job and progress the way I've long planned. Maybe I'll join the ranks of those graduates, who are legion, and who in a few months report promotion after promotion with corresponding salary increases, and a future undreamed of. But, from the other side of the fence, I've thoroughly enjoyed the training process, the gradual climb from riveting to general inspection, the type of training that readily permeates one's whole being, and, because so interesting, stays.

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From Models To Gliders

(Continued from page 24)

have encouraged youths to go from model building into gliding. The youth of Russia, Germany, France, Poland, Czechoslovakia progressed naturally from building models to motorless flight. They've not only flown gliders and sailplanes, they've also been encouraged to build them from plans available to all clubs and organizations at a minimum price. This is very difficult, if not impossible, here, because our gliders are constructed mostly of metal tubing, and some entirely of metal, while the European ships are wooden. Metal requires welding by skilled aircraft welders, and there are very few of them among boys of model age. Wood is their natural medium. There is no reason in the world why a good utility or secondary sailplane could not be designed sturdy enough, and C. A. A. approved plans should not be made available, so that groups would have opportunity to build gliders under proper supervision.

As things stand now, aircraft metals are harder and harder to obtain. Some glider manufacturers are considering substituting metal for wood. And unless the government gives financial support to the motorless sport in America, which at the present writing seems pretty remote, the manufacturers will have to depend mostly on possible army orders. This undoubtedly will help the now-existing glider factories, but it will impose quite a hardship on private glider flying. It will be difficult for clubs and private owners to obtain ships suitable for their purpose. Gliders built for the armed forces will be far too expensive, and a good workable type which can be used by private organizations will be practically nonexistent because the factories will be too busy designing and building ships for the army, navy and marines.

The solution, therefore, would be to design one or two types of ships, preferably of wood, have the plans approved by the C. A. A. and made available for construction to groups who have an experienced and dependable leader. We would like to see model-building clubs; form advanced groups in which the senior members would construct such a glider under supervision of a suitable person, to see such groups acquire an instructor through the co-operation of a local glider club, or better yet, acquire membership in this club, because, at present, it is the only way flight instructions can be had. The

difficulty of obtaining glider ports will require such groups to meld into an already existent glider club in order to use its flight facilities. However, the benefits will not be one-sided by far. The glider clubs will benefit from this added membership of skilled young boys wise in construction problems, bristling with good ideas, and many an improvement in glider and sailplane design will undoubtedly result. And a number of excellent soaring pilots will be turned out who will later be absorbed by the aviation industry as well as the military air forces.

NEWS AND EVENTS

The London Times, under the date line of July 4, 1941, quotes: "The usual type of German glider used in the attack of Crete had an empty weight of about 1,800 pounds, and an all-up flying weight of 4,500 pounds. It was made of tubular steel, with wooden wings, and there were flaps on the trailing edge. Most of the gliders had a wing spread of eighty feet and were fifty feet long. They carried between ten and twelve men armed with submachine guns, two radio sets, six Tommy-guns and two machine guns. Average number of gliders towed by each airplane was two, though it is possible for six to be towed by one Ju.52 troop carrier."

Another contingent of six army air corps officers is being trained in glider flying at Elmira, N. Y. The first group graduated from the Elmira Area Soaring Corp. School just previous to the National Soaring Contest. The course takes three weeks and is very popular with the army boys. Bill Putnam, who took second place at the national meet, has joined the school as instructor.

Joe Steinhauer, who operates the Motorless Flight Institute at Rubin-kam Airport, Chicago, Ill., has moved to Gliderport-Chicago, Chicago Chicago Heights, Ill. Leeds Mitchell, business manager of the school, writes that they are operating to capacity, even turning away many students.

Lewin B. Barringer, Golden "C" pilot and author of the book, "Flight Without Power," organized the Southwest Soaring Club at Phoenix, Ariz. Club members are Lewin Barringer, president; Fred Riggins, vice

president; Roy M Taylor, secretary and treasurer. The club has purchased a two-place Cinema sailplane.

At the annual meeting of the stockholders of Bowlus Sailplanes, Inc., the following were elected as officers of the organization: Albert C. Essig, president; William Hawley Bowlus, vice president; H. D. Carey, general manager; Melvin Scudder, treasurer; J. Stanley McCauley, secretary. Some of the directors elected were Donald Douglas of the Douglas Aircraft Co.; Reuben Fleet, president of Consolidated Aircraft Co.; Carl Squier, vice president of Lockheed Aircraft Corp., and others.

The two-place Schweizer sailplane purchased by Jack Brookhart, Allen Van Name and Winthrop Block from the Airhoppers Gliding and Soaring Club was recently test-flown at Elmira by Emil Lehecka. Later it was flown by Nelson Shapter of the airworthiness section of the C. A. A., prior to being granted its airworthiness certificate. This ship will carry more instruments than any other sailplane in the country. It will be equipped, among other things, with directional gyro, thermal sniffers, new type of electric variometer and turn indicator, as well as a two-way radio.

Herman Kursawe put in four and a half hours of soaring in his Kirby Kite at the Wurtsboro, N. Y., gliderport. The pulley-tow method used by him and Frank Schellhorn proved to be a great time saver, necessitating less crew than the winch method.

The recent flood of publicity on gliding created quite a situation among glider clubs. They were swamped by letters from newspaper and magazine readers asking for particulars to join the organizations. Most clubs have not the equipment to expand membership, and shortage of materials makes it practically impossible to buy gliders. The only hope is use of wood, or that orders from the army and navy will put glider manufacturers on priority basis, and that the government recognize the importance of gliding to our national defense.

And in conclusion, do not miss the December issue of Air Trails, which will carry pictures and descriptions of most American sailplanes and gliders.

I Design Bombs

(Continued from page 13)

by a mechanical release gear, usually operated by an electrical relay."

We went on to the question of bomb sights. He became secretive again and would say no more than: "These sights are extremely complicated, and I won't say much about them. But you can say that the sight, in essentials, consists of two parts. First, the means of sighting, which is usually comparatively sim-

ple. Second, the calculating machine, which determines the line of sight in terms of aircraft speed and direction relative to the ground, height, shape and weight of bombs, et cetera."

Air Commodore Huskinson then told me some interesting facts about German bombs. "Their policy, as I said at the beginning, is largely in favor of concentrated attacks on ci-

vilian population. Their designs therefore vary largely from ours. The greater proportion of the bombs dropped here are of the blast-bomb type. This is essentially a light-case bomb containing a high proportion of high explosive and is designed to produce considerable blast damage, together with little fragment damage.

"The fusing of these bombs is of (Turn to page 30)

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I Design Bombs

(Continued from page 28)

interest, as the German employs a very complicated electrical fuse. The basic principle lies in the use of a condenser charged electrically as a source of energy.

"You see," said the air commodore, drawing a pencil over his blotting paper to illustrate his description, "impact with the ground closes an inertia switch and shorts the charge through a wire bridge, thus firing the fuse head. For safety reasons, there must be a delay after the bomb leaves the aircraft before the fuse becomes alive. This is obtained by using two condensers. There is a reservoir condenser which is charged on leaving the aircraft. The charge of this is allowed to leak through the other condenser by means of a high-resistance connection. It is this time, re-

quired for the charge to build up from the firing condenser, that gives the required delay."

The air commodore said: "But there is a great disadvantage in this electrical fusing. It means that the electrical means of initiating is essential in all cases. This is inconvenient, especially when specialized fuses, such as the long delay fuses we were talking about, are used. These long delay fuses of the Germans consist of a normal electric fuse, so arranged that closing of the circuit starts a clockwork mechanism, which releases a striker, on the alarm-clock principle, at a set time. This fuse is usually associated with an antisturbance fuse, similar to the standard fuse, except that it has a very long arming time (fifteen minutes) and a

very sensitive inertia switch."

The air commodore ended his talk with the punctual decision of a dentist withdrawing his drill. But that is perhaps unkind. One could say that the facts he told me were only part of the experience of talking with him. It is his zeal, as much as his information, that remains with me now. Since the day I talked to him, I have felt refreshed confidence in those mighty bombs that fall, night after night, over Germany. Their construction may be secret, but one feels that the ingredient which makes all the difference is the high explosive of energy that goes into them from Air Commodore Huskinson's office. I now know what Lord Beaverbrook meant when he talked of "beautiful bombs."

Navigating Our Big Bombers

(Continued from page 21)

thirteen-plane formation of B-17E's on numerous day and night training hops out to sea and up and down the Atlantic coast.

The work was long and exacting, but for Jack the job was duck soup by reason of the thorough training he had received at Miami in the subjects necessary to know. These included celestial navigation, swinging the compass, correcting the compass, dead reckoning, star identification, and co-ordination of radio and direction-finding bearings. In addition, the school had given him fifty hours of navigation exercises over the Gulf of Mexico and the Caribbean, sixteen of the hours being at night. Another circumstance that made the job a cinch for Jack was the fact that the B-17E's were equipped with panoramic sextants, which required only one reading instead of the ten usually necessary with a hand-held sextant.

Jack's serious but easy manner of handling his work quickly clicked with the squadron commander, Major X. And, after six months, the major selected Jack to navigate the lead ship.

Soon after Jack's advancement, there reached the field a report that a foreign aggressor, notorious for striking without declaring war, had threatened a "token" bombing of New York. The report was confirmed by intelligence officers of G-2, and all leaves were canceled. Then the war department issued a special order for "all bombardment, attack and combat units to stand by, fully armed and ready for action."

Two nights after the order had been read at retreat and posted in operations, a breathless orderly rapped on the door of Jack's room in bachelor officers quarters at 10:30 p. m. "The major wants you to report at once with your gear at Hangar 34, lieutenant."

As Jack streaked across the parade field he saw other officers of the 992nd running toward the hangar. On the tarmac in front of Hangar 34 were all fifteen ships of the squad-

ron, the thirteen active and two reserve. The major was standing in a corner of the hangar, checking off the names of the officers as they arrived. When the last came in, buttoning his tunic, the major waited for absolute silence. The officers detected beneath his calm a tension full of meaning.

"An aircraft carrier, 1,432 miles out and slightly north of the forty-first parallel, was sighted at 4:30 this afternoon by a Pan American clipper en route to Lisbon. The carrier was proceeding in this direction, and when the clipper radio asked for identification there was no answer. Twenty miles beyond the carrier, and following it, the clipper saw four destroyers. The destroyers also refused to answer a request for identification.

"Two hours later, at 6:30 p. m.," the major continued, "a coast guard patrol plane sighted the carrier, then being escorted by the destroyers, 1,376 miles out and still proceeding in this direction, which would indicate a speed of twenty-eight knots. They refused to answer the coast guard plane's questions about their identification and purpose for being at that position."

The major looked at Jack. "What's your weather conditions out there, lieutenant?"

"Clear and unlimited for about 500 miles, sir. Then squally conditions over a 250-mile area, and seventy-five miles beyond that about 120 miles of cumulus, down as low as 1,200 at some points and extending up to 20,000. The reports were made by coast guard air and sea patrols at 21:15."

The major studied a pad on which he had jotted down the data reported by Jack. Suddenly he seemed to make up his mind. He gave no hint of what had been puzzling him, but the officers knew he had been estimating the chances the formation would have of catching the carrier before it reached the overcast of cumuli.

"You will take off in three-ship

formations and rendezvous at Montauk Point, the eastern end of Long Island," the major said. "Then you will proceed in a V due east to the squall, and follow me over it. You will then proceed to the cumulus overcast, where I will signal for an in-line formation, the interval between ships to be five miles, with the course continuing straight east."

The major paused, and the officers watched him intently, knowing that he wanted their closest attention. "Now get this, and underscore it—under no circumstances shall there be any radio communication whatsoever from any ship until you get orders from me. Do you understand?"

The officers nodded, but in every mind there was the question of how the plane finding the carrier could notify the others.

"I know what you are thinking," said the major, "and here's the answer." He reached into a carton standing against the wall and took out a small music box. "I have fifteen of these, one for the commander of each ship. They work this way." He turned a tiny crank, and within the little tin box sounded the melody of "Yankee Doodle," high-pitched and jerky.

"The commander of the ship finding the carrier shall operate this instrument in his radio transmitter for fifteen seconds. Then he shall identify his ship by announcing the identification letters of a commercial broadcasting station, such as WEA, WABC, WJZ, WOR and so on. Here are lists of the station identifications each of you will use. All planes, when they hear this signal, shall assemble on the plane sending the message. By this procedure the carrier will not be able to intercept radio communication that would reveal our presence and enable it to have fighters in the air to meet us. All right, let's go."

It was 11 p. m. when the bombers started out of the field. The moon was not due to rise until 3:30 a. m., Eastern time, at the point the formation was heading for, so the planes

few lights burning to the cumulus overcast, as prearranged. Then the major signaled with his wings for an in-line formation, and they switched off their lights and peeled off, one by one, right and left, and entered the overcast at 12,000 feet, climbing like weird specters.

A few minutes after they entered the white-out, the major went back to Jack's desk, which was in a tightly shut cabin where he could have a light for his reckonings. Customarily, Jack sat at a folding table behind the copilot's seat.

"What track are you making, Jack?"

"Exactly due east, sir. Ground speed is 26 miles. There's a slight head wind, but not much, and it may not increase."

"What's the rate of interception?"

Jack looked at a sheet containing the figures of the plane's ground speed and rate of drift and the reported speed and track of the carrier. "About 292 miles an hour, if she holds her track and speed, sir."

"Get another speed line as soon as possible," the major said, and returned to his seat on the left of his copilot captain and took over the controls.

During the flight through the clear weather on the way out, Jack had determined his ground speed and drift by checking both with his drift indicator. He obtained his ground speed by checking gaps between the whitecaps and his drift by dropping magnesium flares every half hour and sighting them with the indicator. Half an hour before entering the overcast he had made a fix on Arcturus, Vega and Altair. But now, in the thick mist of the clouds, the sighting methods were not usable to obtain the new speed line ordered by the major. His alternatives were radio co-ordination or dead reckoning.

Jack was opposed to using dead reckoning under the conditions then prevailing, so he dialed in the Naval Radio Station at Arlington, Va. He intercepted a message that made him catch his breath.

"All stations off the air at once. Stop all broadcasting until permission is given to resume. Authority of the United States Navy."

It was easy to understand what had happened. The stations had been silenced to prevent air raiders from the carrier from using radio co-ordination to find their way directly to their objective. But the action also put Jack on a spot. Now he had only dead reckoning to use in carrying out the major's orders.

Jack began to get nervous. Dead reckoning was all right for a mariner on the sea under conditions like these, but in a formation of bombers flying in a line front at 260 miles an hour it was dangerous business, even if they were five miles apart. An error of a few minutes or degrees would not be serious to a ship at sea, but even a couple of seconds off in this formation might cause the paths of two of the 36,000-pound planes to cross tracks with an annihilating crash.

Jack's hand shook as he fumbled for a handkerchief to wipe his face. He looked quickly at his aperiodic compass. Yes, she was holding her

track. But what about Ship 2 on the right and Ship 3 on the left? Were they holding their tracks? Or, were they drifting over toward Jack's ship?

It occurred to Jack that he might appeal to the major to throttle back to avoid the possibility of a collision. No, not that, because the major had given him his orders and expected him to carry them out. He asked instead:

"Would it be practicable, sir, to go up in the thinner stuff? Up there we can make a fix by shooting the moon. It's up now."

The major gave him a look of friendly confidence. "As you say, lieutenant."

Ten minutes later Jack reported to the major that they were true on their course and that they should be on the meridian with the carrier in twenty-five minutes, if the carrier had held her track and speed. The major nodded, and Jack took his regular seat behind the copilot.

The twenty-five minutes passed, and ten more, and now, at their altitude of 20,000 feet, they could see the ruddy brow of the sun emerging from the indigo sea, but there was no trace of the carrier or her convoy. Jack made a careful check of his observations, noticing that the major was looking around at him.

"She must have changed her course, sir," Jack volunteered. "I'm sure that—"

The major removed his earphones, motioned his copilot to take the controls and started to get up and look at Jack's figures. But there was a yell from the radio operator. The major recovered his earphones in haste. It was the music signal.

All hands waited tensely for the identification letters. The pilots of fourteen ships braced themselves for a sharp ninety-degree turn, north or south, depending on which ship would send the message. It came from No. 15, which was flying on the extreme left of the formation, indicating the carrier and convoy were thirty-five miles north of the course originally reported.

The major caught Jack's eye and gave him an approving wink as he began speaking into the transmitter.

"No. 1 calling No. 15," said the major.

"No. 15. Go ahead, No. 1."

"What's the situation there?"

"No. 15 reports twenty fighters on the carrier's flight deck, sir. Two destroyers ahead of her, about half a mile, and two aft, about half a mile. The destroyers in each pair are about one mile apart, forming a square, with the carrier in the center. They are making about twenty-one knots."

"Neutralize those fighters, Fifteen. Go down as low as you have to, but get 'em."

"Fifteen willco."

"No. 1 calling No. 13 and No. 11."

"No. 13. Go ahead, No. 1."

"No. 11. Go ahead, No. 1."

"Proceed to carrier full throttle and join attack on carrier."

"Thirteen willco."

"Eleven willco."

The major then called Nine, Seven, Five and Three. He ordered Nine and Seven to take out the destroyers

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aft, Nine the one on the south, Seven the north. Five and Three were assigned to take the destroyers forward, Five the south and Three the north. "No. 1 calling all other planes," the major said, getting the attention of Two, Four, Six, Eight, Ten, Twelve and Fourteen of the right wing. "Proceed to the position of the carrier and stay at 20,000 until further orders."

The planes answered in rotation with "Willco," the term used briefly to report that orders have been understood and will be executed. The major took the controls and put the B-17E in a gradual power dive from 20,000 feet, and in a few minutes the officers in the control cabin saw a dim red glow in the deep-blue haze covering the sea.

"Good work," said the copilot, but the major did not answer. He was deaning over his wheel, scanning the sea for the destroyers.

"Fifteen calling No. 1."

"Go ahead, Fifteen."

"We let 'er have it all at once from 10,000, sir. She's on fire. Her anti-aircraft got our outboard port engine, but without the bomb load we can fly out here all day on three."

"Any vibration in your wing?"

"No, sir. I've feathered the prop and the wing's O. K."

"All right. Go up to 25,000 and stay there while we mop up."

"Thirteen calling No. 1."

"Go ahead, Thirteen."

"We missed with the first, but the second opened her starboard side, sir. She's got a bad list."

"Go upstairs, Thirteen. No. 1 calling for a report from Eleven."

"Eleven reporting, sir. One missed and one damaged her bow."

"Upstairs with the others, Eleven."

While the major was taking the reports, Jack spotted the destroyers, scurrying around like rats. He was in time to see the one in the southeast position lift her bow clear of the water as a 2,000-pounder struck aft of the funnels. She remained in the praying mantis attitude for a few seconds, then sank quickly by the stern into the foam.

Al into the front, the prop was cranked and we were off.

Once in the air, did we have fun! At least I did. Al said go ahead and fly it and try a few things. I tried straight and level flying and then a few mild banks and turns. Nothing horrible happened, so I tried a few more, and then at Al's suggestion attempted a few power-off stalls. They were fun. You close the throttle by pulling it back to idling speed, pull the stick back toward your belt buckle and let nature and the J-3 take their course. The nose climbs, the ship slows and just when you think nothing is going to happen it does. With a sort of pricked-balloon sensation the nose drops and there's the ground right ahead of you instead of below you.

Nothing else happens as long as you keep equal pressure on the two

"Roger, Seven," said the major. "Go up to 25,000 and stand by."

As he gave the order, two geysers appeared a mile to the north. When the spray settled the destroyer was still afloat and apparently undamaged.

"Upstairs, Nine," the major ordered, and he put his ship in a glide toward the destroyer Nine had missed. As he closed in for the kill, the wafer-thin destroyer zigzagged and twisted like a sunfishing cayuse. The major throttled back and spoke by interphone to the bombardier in the glass-enclosed nose directly beneath him.

"Ready?"

A moment after he got the answer the destroyer made a violent turn to port, and the major dipped his left wing, following it. The destroyer was slightly ahead when the two bombs, 4,000 pounds of explosive, were released from the bomb bay.

The major jammed his throttles forward and pulled up in a sharp chandelle to the left so his officers could see the effect of the bombs. They scored direct hits, and the major circled the huge spot of froth and bubbles that marked the grave of the destroyer. He gave the swirling water a parting glance, then turned to other business at hand.

Five and Three were still jockeying for positions from which they could, with fair certainty, pay their lethal respects to the two surviving destroyers. They let go about the same time, and all four bombs were effective.

"Roger, Five. Roger, Three," said the major, employing the expression used by the air forces for "O. K." He directed them to go aloft with the others while he circled back to see what further attention the carrier needed.

He found her starboard gunwales awash and some of her crew on crowded life rafts at a safe distance. Looking up through the overhead blister, the major saw that all of the right-wing planes had assembled. He called their numbers and ordered:

"Fly over the carrier in an echelon and drop your stuff. This is just

target practice for you guys, so show us what you can do from 30,000."

Every one of the fourteen bombs struck critical area, and the copilot remarked that the 992nd had mighty good men.

"Yeah," replied the major. "With a fixed target and Norden bomb sights. Let's go home."

He signaled for a V and reported by radio to base operations that the carrier and convoy had been encountered and immobilized. Operations informed the squadron that fifteen light bombers from the carrier had staged the "token" bombing of New York. Air-raid wardens had spotted them, however, and the area was blacked out when they arrived. The result was no casualties or property damage because the rattled enemy dropped his explosives in Lower Bay. The enemy formation was now on its way back to the carrier, operations said.

"Funny, we didn't see them on our way out," the copilot ventured.

"Most likely they passed under us in that squall or the overcast," the major said, and tuned in on a commercial station for more details about the raid. The broadcast, by an excited commentator, was listened to by the entire squadron.

"It was a dastardly deed, indeed," shrilled the commentator. "And how unfortunate that the dastards who committed this crime made a clean getaway. After committing this horrid crime, those brutal birdmen are now flying back to their carrion mother, the aircraft carrier, who is waiting for them safely at sea, unharmed, untouched, even unsuspected, and licking her lips for another such foray. I tell you, these dastards—"

The major couldn't take any more. He switched off. The major seldom laughed, and even now he was confining his amusement to a grim smile, although those about him were chortling in glee. Dryly, the major remarked:

"I can't help but think what a hell of a surprise is waiting out here for those dastards—if that is what that radio fellow called them."

6-Day Solo

(Continued from page 23)

rudder pedals and the stick centered left and right. The plane's nose rises right back to the horizon line and there you are. Al's nonchalance was colossal. I was enjoying myself immensely when he suggested we head home. Back at the field Al landed the ship and the first hop was over. I proudly presented my nice clean uncontaminated log book and the entry was made. This must be done after each flight and shows the date, make, model and number of plane, where the flight was made from and to where, maneuvers or incidents of flight, and then the instructor signs it to make it legal.

It is amazing how all-important these notations become to the student and how jealous he is of every minute. I now had a bit over an hour of flying, and back at the hotel jotted down my reactions. Not that

you can learn to fly from all the books in the world, but here are the reactions to my first instruction.

The ease of handling of the plane. Its remarkable stability when not being flown. The plane flies itself, all you do is change its course so that it either flies in a new direction or performs a maneuver.

The things I found out about my end of the deal were: keep wings level, keep the wings level and most important of all keep wings level. The plane will do that itself if you leave it alone—but you know me. I usually came out of a turn, stall or spiral with the horizon off-center. (Aside to Mr. Piper: Can't you build in an automatic horizon leveler?)

The next day, Sunday, I met Al at the field and we went for a morning spin. My really serious instruction was to begin Monday, but in the

meantime I was to get to the flying I liked, to be so much ahead. This morning we had a lesson in swinging the prop, and I really began to feel like an airman. The Franklin starts easily, usually on a few pulls through and a quick swing with the ignition on. You must be sure the chocks are in front of the wheels or the brakes on, or the brass hats in the Civil Aeronautics Authority become mightily annoyed and rightly so. To have even a light plane leap at you and chew off a few arms when the engine starts is not considered good ethics around an airport. Once I had learned the technique of starting the trainers I became an airport menace. No one could even get into a plane to get out of the sun without finding me grasping the prop and screaming, "Switch off?"

To proceed with the Sunday-morning flight. We took off and headed for Williamsport, down the river. On the way we gained a couple thousand feet of altitude and tried a few maneuvers. Al handed me an air map of the section and had me pick out various points along the way. Did you ever lose a city? I did, but finally found it right under my left wheel. Look there next time. After Williamsport passed slowly under our left wing, we climbed up and over the ridge of mountains to the right and over into the valley beyond, toward Harrisburg. Over the ridge it became bumpy and we decided to grab a little more altitude and went up through a mile-wide hole in the ceiling of scattered clouds above. We emerged into a world of white cotton, sunlight, and blue sky. Al, a true airman, turned with a grin and said, "Where can you find a sight like this, down there?" After a half hour of buzzing around at our leisure we picked a hole and started spiraling down, with Al handling the ship.

I had another lesson that afternoon with David Long, Piper engineer and instructor. More straight and level flying, easy turns. Corrections, suggestions, and comments by Dave did a lot to make my air work better and increase my confidence. His quiet directions and remarks smoothed out a few bad ideas I had.

My notes that night contained the following points to be remembered. Look everywhere for cities, even under the seat of your pants. Use stick and rudder pedals smoothly and together. Taxi slowly even if there is plenty of room. Always swing a prop as though the chap assuring you the switch is off is the world's biggest liar.

I now had over two hours of flying in my log book and was about to start with the serious business of really learning to fly in a week. Monday morning I met my instructor for the week, Charles Hall. (Pardon me while I take my hat off to him—for his uncanny knowledge of instruction, his patience and his skill. Fortunately is the student who encounters a Charlie Hall along the hectic and often bewildering road to his solo.) In the air once more with faithful NC35489, I began all over again, with straight and level flying, medium turns and banks and gentle spirals and side slips.

Once I could really fly the ship with an air of assurance, Charlie developed the cute trick of pulling the throttle back unexpectedly and making me pick a field to land in. This is fun, and mighty good practice—and besides, wasn't he there if I discovered at the last minute that the field wasn't so hot after all? I think one of the things that gave me confidence flying with Charlie was that he never took the controls unless he found it imperative.

By Monday evening, after two half-hour sessions of slips and review air work, I had a few more notes to add to my collection: In a slip, be definite about it and give rudder and stick together. When the throttle is closed for a practice emergency landing, pick your field and don't change your mind halfway in and head for a bigger and better one somewhere else.

I now had three hours and was ready Tuesday morning for my first real landing try. Gosh, did I hang onto the stick! Charlie must be a mind reader, for he'd look back and say in an amused tone, "Why the devil don't you relax?" And then I'd realize how tense I had been. I'd find my hand on the stick wet with sweat and my stomach muscles all tightened up.

Don't let anyone ever tell you you can learn to land a plane by reading about it. It has to be done in person. You must sort of feel your way down in a normal glide until over the runway, then come back on the stick to flatten your glide to a bit less than normal as you go forward. Keep it coming back so that the ship settles; ease up a bit if you feel the "bottom dropping out" and then come back again, as you keep the ship floating straight down the runway with your rudder.

As you settle down just off the surface bring the stick hard back—and I mean hard back—and hold it there. I couldn't get this "hard back" business to save my neck. Thought I was practically bending the stick, and she wouldn't "stick" once she was down. My inclination when she bounced, and apparently this is true of all students, was to push the stick forward to get the nose down again quickly. This is the logical thing to do, yet very wrong, for you only bounce harder than ever. Just ease up a bit, and the plane will come down again easy.

Instructor Hall made my landings very much easier by his genuine, or pretended, nonchalance. As I was feverishly watching the runway, checking the altimeter, and the air-speed indicator and trying to unloosen my stomach muscles, he was unconcernedly humming to himself, pointing out highway traffic or a particularly nice field of corn. (There was plenty of corn connected with my landing technique without having him point out more.)

Up and down we went, take-off and landing, take-off and landing, some good, some bad, and some awful. The take-offs were fun and I really did pretty well on most of them. You open the throttle, push the stick forward to get the tail up and let her roll down the runway wide open. You hold her right smack

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My method—"Dynamic Tension"—will turn the trick for you. No theory—every exercise is practical. And, man, so easy! Spend only 15 minutes a day in your own home. From the very start you'll be using my method of "Dynamic Tension" almost unconsciously every minute of the day—walking, bending over, etc.—to BUILD MUSCLE and VITALITY.

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In it I talk to you in straight-from-the-shoulder language. Packed with inspirational pictures of myself and pupils—fellows who became NEW MEN in strength, my way. Let me show you what I helped them do. See what I can do for YOU! For a real thrill, send for this book today. AT ONCE.

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CHARLES ATLAS
An untouched photo of Charles Atlas, holder of the title, "The World's Most Perfectly Developed Man."



in the middle of the runway (sounds easy) with the rudder, and when she feels light on her wheels, another feeling you can't learn from a book, you come back on the stick till she is off. Once off the ground you level off to let her sort of catch her breath and get up a bit of speed for the climb and then climb straight ahead.

Tuesday night I found I had totaled four and a half hours and only needed three and a half hours more before I had my eight hours required by law before I could legally go solo. Comments for the book were: In landing, come back with the stick easily until a few feet off, then come on back as she settles and then get that stick back hard, and hold it there till she stops rolling. Get off the runway as soon as possible, for there may be someone right behind. Before taking off, look all around for incoming planes.

Tuesday evening I had a date with the flight surgeon for the necessary medical exam before the solo. This went off without a hitch, and for the benefit of those worried about this angle of the learning-to-fly question, stop worrying. Any normal chap can pass this test as long as his eyesight is average and his sense of balance is normal.

That same night I went back to the airport and took the written examination required of student pilots before soloing. This examination consisted of twenty questions with several suggested answers. You check the number of the answer you select as correct. Seventy is considered passing grade and I drew an eighty-five. These are questions that are supposed to be of importance to a student pilot, and there are several sets of them which are handed out, so one student does not necessarily get the same set as the next fellow.

Wednesday morning instructor Hall and I once more did our merry-go-round routine about the airport and then tried a few stalls and forced landings. After lunch Charlie went to the airport office and drew two parachutes from Andy Mancini, who more or less keeps the hangar gang in line, and announced we'd learn a bit about spins as they must be understood before a solo is allowed. Power stalls and recoveries must also be mastered before solo.

Now about me and my spins. I'd rather not go into that, but did, along with Charlie, some barns, roads and a lot of unidentified Pennsylvania scenery. It is comforting to know that the modern light plane will not spin without coaxing, and if there's anything I hate to do it's coax something to do something it doesn't want to. A spin develops from a stall, either power on or off, and is not half as scaring as it is astonishing. One instant you are looking at the sky in a stall, and the next you are standing on your feet while the ground spins around like a colored phonograph record with your feet right over the little peg it sits on, on the turntable.

Charlie said to pick out a certain house, bridge or farmer's daughter, and when they had been around twice ease the stick forward a bit from the stall position of 'way back and touch opposite rudder. I got so interested in seeing the daughter spin

around I forgot to push opposite rudder and what happened from then on for a few seconds was nobody's business, least of all mine.

Wednesday evening I noted my reactions to spins and stalls: Forget the farmer's daughter and keep your eye on his barn. I entered the day's flight sessions in the log book and realized we had a half hour to go to the required eight hours. Nothing had been said about going solo, and of course your instructor won't turn you loose to solo even with a hundred hours unless you are "ripe," both from a mental as well as piloting angle.

On Thursday I had an early date with Instructor Hall early in the morning, for the air is smoother at that time of day. I arrived at the field about seven and found Charlie already there. I cranked old NC35489, and off we went for more round-the-field landings and take-offs. We made about three or four and they were all pretty fair. After about the fourth one we were all set to take off for another, when I'll be doggoned if Charlie didn't clamber out and say with a grin, "I'm going to solo you!"

I heard a far-off voice say, "Well, O. K., if you think I'm ready to."

Charlie looked right at me and answered this other guy's remark with: "I'm a married man, too, and I wouldn't send you solo if I didn't feel you were ready. Just go up and around the way we just did and forget I'm not with you—and good luck!"

The other guy said "O. K.!" and it dawned on me it was my voice that was doing the talking. I taxied out on the runway, gave her the gun, lifted her tail and scooted down the strip and into the air. About a thousand feet beyond the field as I was climbing up and around to the 600-foot level, it suddenly occurred to me for the first time that I could really see the instrument board in front of me. The reason was that there was no one in the front seat to hide it. For the first time I really noticed that the board was black-crackle finish and that some of the dials had red pointers and that—*Say, I'm flying alone! I'm solo!*

Scared? Nope! Worried about getting down? Nope! Tickled? You're darn tootin' I'm tickled! But now to make this landing the best yet. I can see better, watch the instruments better and furthermore this has got to be good.

I level off and start back along the field. There's Charlie's white shirt, a tiny dot beside the edge of the runway. The gang at the hangar are out front. Let's see, now, almost to the end of the field, throttle back, nose down and here we go. Guess we better go a bit farther out before we come back. Not a bad gliding turn, if I do say so. Over the river straight for the runway. Charlie is still squatting, but I bet he's ready to jump if I should head that way. Better start coming back on the stick. Looks about right right here, so haul her back easy, a bit more—remember, this has to be a good one. Almost down, ease off a bit, now back, and back *hard*—H-A-R-D!

With the familiar clunk of a landing that sticks we're down, roll to a stop and taxi off the runway and head back to the end where Charlie is now walking toward us waving his arms. I taxi up to him, a silly grin on my face, and he shakes hands with a picturesque congratulation that will always be remembered with pride.

It seems like tempting fate, but he says, "Let's see you go round again," so I do and make another landing right in the same spot. This time he says, "Let's go in town and get some coffee." O. K. by me, so he climbs in and we taxi up to the hangar.

Now let me explain a queer custom of the Cub-Haven gang. They have the weird habit of cutting off the shirttail of everyone who solos, inscribing on it the particulars of the solo and hanging it on the hangar bulletin board. They call it the Tailfeathers Club, and it's a very distinct honor to belong.

As we taxied up to the hangar we were met by a delegation headed by the chief shirttail-amputator, Mancini, armed with a pair of metal shears. With him were such assistant amputators as Al Headstrom, Bob Bowes, and Prof. Harris, ably assisted by Instructor Newman. Right on the spot out came the shirttail and off came several square inches of shirt. Whoopie, now I'm a member of the Tailfeathers Club and the "cokes" are on me!

While the symbol of my new-found wings was being inscribed for the bulletin board, Charlie and I drove into Lock Haven for a second breakfast. At the restaurant he wrote the precious word SOLO in my log book and signed my student permit making it a valid license. He also gave me some sound advice about flying and what to expect from now on. At least I think he did; I have some sort of a dim, hazy remembrance of that.

After coffee, we went back to the field. There upon the bulletin board was my shirttail suitably inscribed for all to see. I bought cokes for the gang and walked around in a personal haze for some time.

One well-known writer of a book on light-plane flying says that a first solo flight is no thrill. I cannot imagine any normal chap who has soloed agreeing with him. Perhaps that writer is just tired with life in general.

Soloing in under a week is certainly no record for men have soloed in as little as two hours, three hours, or a day, but it does convince me that any average guy can easily learn to fly in a week and have a couple of days left to get in some solo time afterward. Planes like the Piper J-3 trainer and other similar light training planes bring safety and ease of instruction right down to a level where Mr. Average Guy can really imitate the birds.

Over at Lock Haven my shirttail has been added to the collection of varicolored patches, some of which are lace trimmed, for there are tailfeathers from lady birds, too, but I brought away with me many memories of swell guys, swell flights, and confidentially, the rubber grip off the stick of the Cub I soloed in.



This lifelike Fairchild monoplane was built by Alfred Rusher of Olympia, Washington. Wing span is 8 feet 8 inches. Motor a ¼ h. p. James.



Over the waves. Joe Dellaire's 9-foot webfooted gas job takes off at a Detroit hydro contest. Note how model is planing on pontoon steps.

Model matters

Gordon Light's Dope Can. Moon's On The Field.

THE DOPE CAN. (By Gordon S. Light.) Stop watches for contest timing had always been a problem for the East Bay Aeroneers of Oakland, Calif. So they cooked up a special contest for club members with a fifty-cent entry fee and paid-up dues. In this way they were able to distribute five stop watches as prizes. Since it was a closed meet, the watches are still in the club, and the flight-timing bottle neck for large invitation meets has been cleared away.

Model building continues to gain recruits among the recruits. The Air Corps News Letter reports that the model club of the First Materiel Squadron of the Sixteenth Air Base Group, France Field, Canal Zone, has been working on a couple of "hush-hush" designs behind closed doors which should soon be in the air.

If he'll stop mumbling formulas and using that slide rule, we'd like to tell Professor Herr Foil that his "Flipper" glider in the September issue logged a flight of over a minute for Edwin Smull of Wilton Junction, Iowa. We wouldn't dare tell the prof that Douglas MacIntosh and Phil Klintworth of Lansing, Mich., do not believe he's a real person. They suspect some well-known model builder is merely using the name. Such nonsense!

September Dope Can cast plenty of doubts about the model effort of the Tulsa (Okla.) boys by saying the Kansas City crowd took away all the prizes at the Tulsa contest early in the summer. That was the Kansas City side of the story, and it didn't make the Tulsans feel very happy—as Bill Eddy of the Cloud Chasers pointed out. He said if we had looked at the complete results we'd have noticed that the local (Turn to page 50)



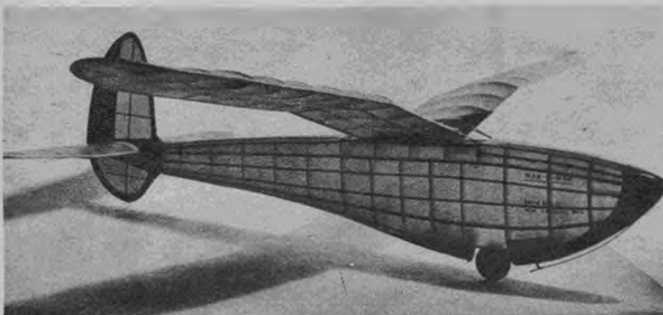
An Atom engine flies this novel biplane gas job. Edward Voss, its builder, reports some exceptionally fine flights.



The Buzzard Bombshell seems more adaptable to odd-size ships than other designs. This A Class job uses Atom.



"Why Not Scale Gas?" in recent issue prompted Frank Drzymela to send photo of his gas-powered Luscombe.



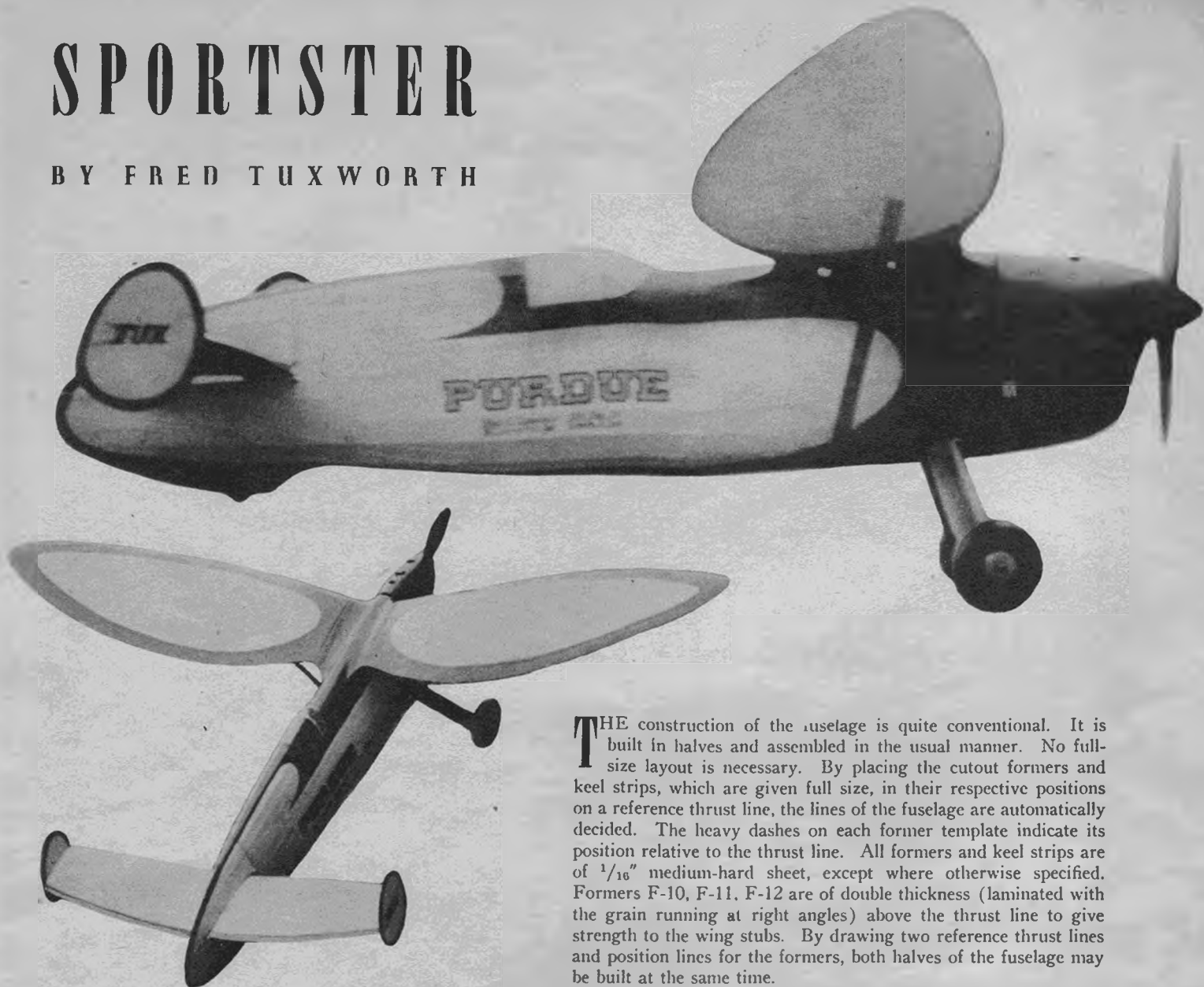
Super Soarer, by David Bailey, Cleveland, is really converted Cahill Clodhopper. Has made hundreds of flights, both hand and tow-launched.



Still another scale gas model. This five-footer is a Rearwin Speedster. It has movable controls, push upholstery, and detachable wing panels.

SPORTSTER

BY FRED TUXWORTH



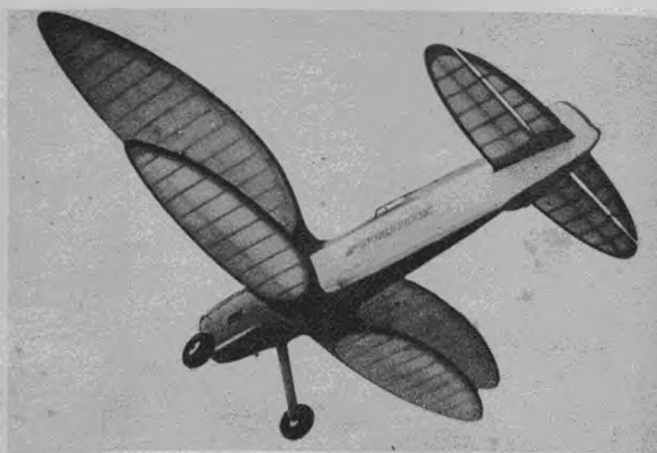
For those who like gas models to look like real airplanes, this sturdy performer is just about tops.

THE construction of the fuselage is quite conventional. It is built in halves and assembled in the usual manner. No full-size layout is necessary. By placing the cutout formers and keel strips, which are given full size, in their respective positions on a reference thrust line, the lines of the fuselage are automatically decided. The heavy dashes on each former template indicate its position relative to the thrust line. All formers and keel strips are of $\frac{1}{16}$ " medium-hard sheet, except where otherwise specified. Formers F-10, F-11, F-12 are of double thickness (laminated with the grain running at right angles) above the thrust line to give strength to the wing stubs. By drawing two reference thrust lines and position lines for the formers, both halves of the fuselage may be built at the same time.

Place the formers and keel strips in their respective positions on the thrust line. The keel strips should project $\frac{1}{16}$ " above and below each former. Neglect all hatches and removable sections. These are cut away after the fuselage halves are assembled. The forward $\frac{3}{16}$ " square and $\frac{1}{8} \times \frac{3}{16}$ " members are of hard balsa and are made flush with the edges of the formers with a sandpaper block. The fairing strips are $\frac{1}{16} \times \frac{3}{16}$ " medium balsa and are allowed to project $\frac{1}{16}$ " beyond the edges of the formers so that the covering will not contact the formers—that is, except where a former is adjacent to the removable section or at (Turn to page 56)



Top—Best-looking model of the year. Above—Biplane wings may be fitted.



This gives you a good idea of the Sportster's size. Note the optional tail.

MODEL FACTORY



The Polk brothers, Irwin, left, and Nat.

HOBBY MART

WITH a background of more than ten years of model aviation work, Irwin Polk, while editor of a now-discontinued model airplane magazine, opened Polk's Model Craft Hobbies, Inc., at 421 Seventh Ave., in the heart of Manhattan, in 1935. The New York opening coincided with one in Newark, N. J., of brother Nathan Polk's store, though there was no connection between the two.

After a year of operation, Nathan found that he could do better selling on the road, so he closed his shop and covered the Eastern States for several model manufacturers. In the meantime, the New York store entered the wholesale field and moved to larger quarters at 429 Seventh Ave. Things began to hum, and Nathan joined the firm to handle the rapidly expanding wholesale branch.

Being a former (Turn to page 59)



New York store is one of the largest.

"DON'T QUOTE ME!"

Talk of the trade as overheard in factory, field, store.

FRANK ZAIC of Jasco is still as far away from completing the Year Book as he was more than a year ago. He is now busy concentrating on his model supply business and the manufacture of insulated balsa boxes for meteorological balloons. . . . Stanley Stanwick, indoor national champ, formerly of Boston and a member of the Junior Aviation League, is in the navy now and is stationed at Lakehurst, where he has been granted the sole use of the dirigible hangar for testing his indoor ships. Watta break!

My pal of the road, Richard W. Mair, representing Rogers' Motors, American Junior Aircraft and Model Associates, came as far East as Pittsburgh on his recent swing, and old man Tabb spent Labor Day week end in New York with Ideal Model Co., and Marine Model, whom he represents in addition to Austin-Craft. Pass on some of the dope you've come across in your travels, boys! . . . The Capitol Model Airplane Co. of Brooklyn is about to hit the market with a new 42" Brewster to round out their \$1 line of flying scale jobs, and is also working on a scale Class B gas model. . . . Polk's Model Craft Hobbies, Inc., have absorbed the Hobby Craft Stores, Inc., one of the pioneer hobby stores of the nation.

Louis Garami, vest-pocket gas-model expert, has perfected a new Atom-powered job that is super! The plans of it are to appear in the near future in Air Trails. He hasn't dared fly it except at the crack of dawn before sunrise for fear of losing it before he has quite a number of them built and plans completed. . . . Sis Frisoli of Scientific Model Airplane Co. has Clippered to Bermuda to visit brother Harold, who is serving Uncle Sam there. . . . The Marvel Manufacturing Co. of Long Island,

makers of those 25-cent scale model tanks, has just come out with three 50-cent motorboat kits. . . . Frank Nekimken of the Ritz Manufacturing Co., makers of gas-model propellers, has just returned to Chicago from a successful Eastern selling trip, during which he introduced a new line of low-priced tools and folding gas-model propellers which are to be marketed by his firm. . . . Fred and Amby Summers of the Summers Hobby Service in Chicago were in the East recently, re-establishing contacts with their suppliers and picking up new lines.

Their inability to obtain tissue and rubber, together with the increased cost of board for boxes, balsa wood and metal parts, may force some of the smaller model manufacturers out of business for the duration. These conditions are affecting tremendously the larger manufacturers, also, and playing havoc with prices of kits in general. Unfortunately, so many of the manufacturers do not or are not able to give advance notice of price changes to the trade. Model builders get upset no end when they come into a store to purchase a kit only to find that the price has been advanced. I do hope that the industry will be able to overcome the bad effect of this situation and somehow smooth the ruffled feathers of the model builders. . . . While Ohlsson and Rice Mfg. Co.'s production is greater than it ever has been, deliveries have not been improved, engines being rationed out to distributors. It seems Ohlsson is trying to make his present supply of raw materials last as long as possible. . . . Super

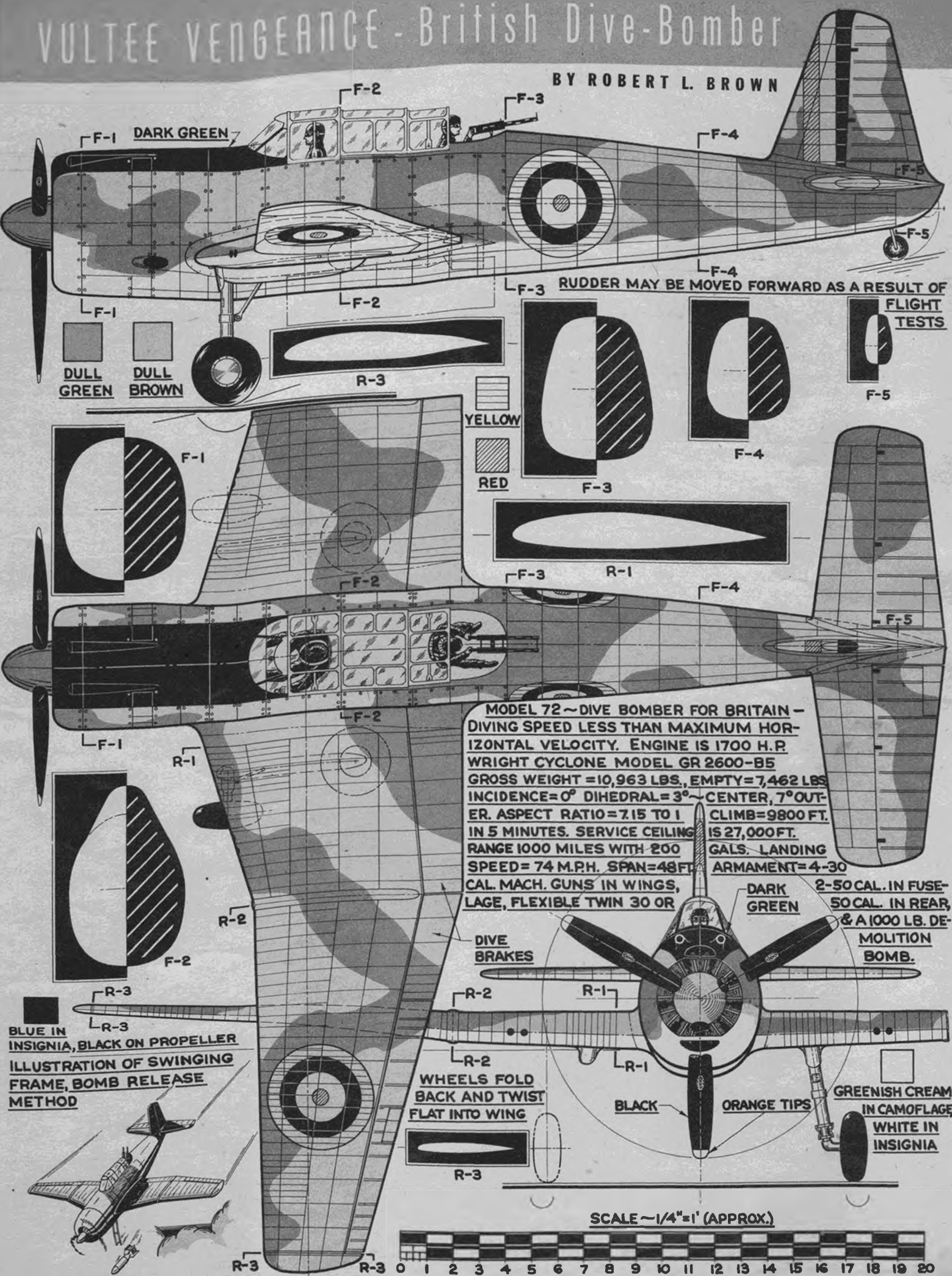
Cyclone simply can't get the materials to manufacture their engines in the quantities they used to. They promise delivery in ninety days, and because they sell direct to the consumer, ask buyers to establish priority by send- (Turn to page 62)



BY THE TRAVELING SALESMAN

VULTEE VENGEANCE - British Dive-Bomber

BY ROBERT L. BROWN



F-1 DARK GREEN

DULL GREEN DULL BROWN

YELLOW RED

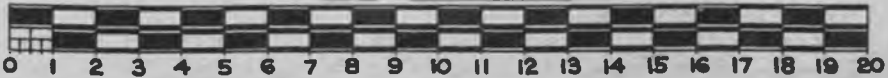
MODEL 72 ~ DIVE BOMBER FOR BRITAIN -
 DIVING SPEED LESS THAN MAXIMUM HORIZONTAL VELOCITY. ENGINE IS 1700 H.P. WRIGHT CYCLONE MODEL GR 2600-B5
 GROSS WEIGHT = 10,963 LBS., EMPTY = 7,462 LBS.
 INCIDENCE = 0° DIHEDRAL = 3° CENTER, 7° OUTER. ASPECT RATIO = 7.15 TO 1 CLIMB = 9800 FT. IN 5 MINUTES. SERVICE CEILING IS 27,000 FT.
 RANGE 1000 MILES WITH 200 GALS. LANDING SPEED = 74 M.P.H. SPAN = 48 FT. ARMAMENT = 4-30 CAL. MACH. GUNS IN WINGS, 2-50 CAL. IN FUSE- LAGE, FLEXIBLE TWIN 30 OR 50 CAL. IN REAR, & A 1000 LB. DEMOLITION BOMB.

BLUE IN INSIGNIA, BLACK ON PROPELLER ILLUSTRATION OF SWINGING FRAME, BOMB RELEASE METHOD

DIVE BRAKES
 WHEELS FOLD BACK AND TWIST FLAT INTO WING

DARK GREEN
 BLACK
 ORANGE TIPS
 GREENISH CREAM IN CAMOFLAGE WHITE IN INSIGNIA

SCALE ~ 1/4" = 1' (APPROX.)



DOWN THE RUNWAY



Official news compiled by the Academy of Model Aeronautics, governing body of model aviation in America.

CONDUCTED BY AL LEWIS • EXECUTIVE DIRECTOR

MODEL aviation, you know, is like a jam sandwich—after the first nibble you're engulfed in the subject. We know—not only as model builders, but as workers at A. M. A. headquarters in the nation's capital. We trust that our efforts in the past few months in these columns to pass along information on starting clubs and running contests has been of aid. We get so engulfed in the 600 or 700 meets that have been put on this year that we sometimes aren't too coherent.

Here, however, instead of a lengthy dissertation, we'd like to bring you up to date on official and unofficial gossip. Latest poser received was a query whether or no retractable pontoons could be considered part of the fuselage cross section. Seems that some of the West Virginia model builders are going out for hydro records in a big way and some had the brilliant thought of retracting pontoons for less drag. But the designing geniuses struck a snag in the form of the A. M. A. contest board when they wanted to consider the retracted pontoons as part of the fuselage. C. B. members said the idea of cutting

down drag was commendable and to go ahead, but that the pontoon is not the fuselage, and vice versa.

★ ★ ★

Bruno Marchi, our hard-working chairman of the contest board who has been running the technical side of activities from Washington, finally had to say so long and joined up with the army. When last heard from, Bruno was in the ordnance division stationed at Aberdeen Proving Grounds in Maryland.

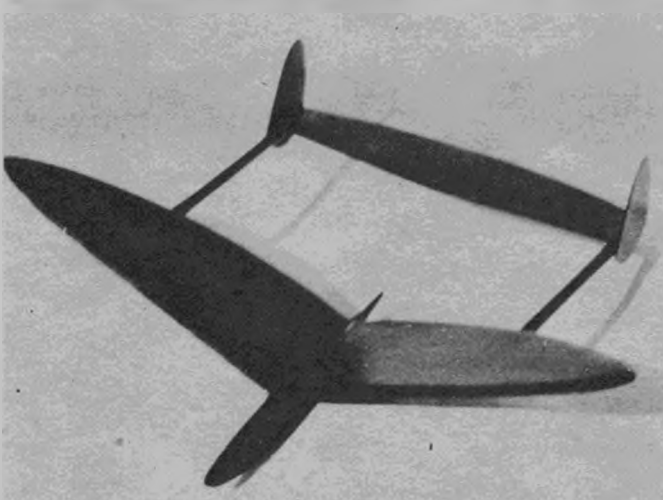
★ ★ ★

Many a good comment has been received regarding the '41 Nationals. For the first time in history, modelers wax enthusiastic over contest arrangements and such. Typical note is one received from Lawrence E. Eisele of Naperville, Ind., in which he expresses "My sincere appreciation for the splendid way the Nationals were handled at Chicago. This was my first year of competition, and I really marveled at the co-operation and the way minute details were handled. Everything worked perfect. More power to you next year." (Turn to page 61)



SOMETHING NEW in Hand-Launched GLIDERS

BY AUSTIN RINALDI



This all-balsa boom job is of simple construction, cheap to build. It flies well hand-launched or catapulted, in either calm or breezy weather.

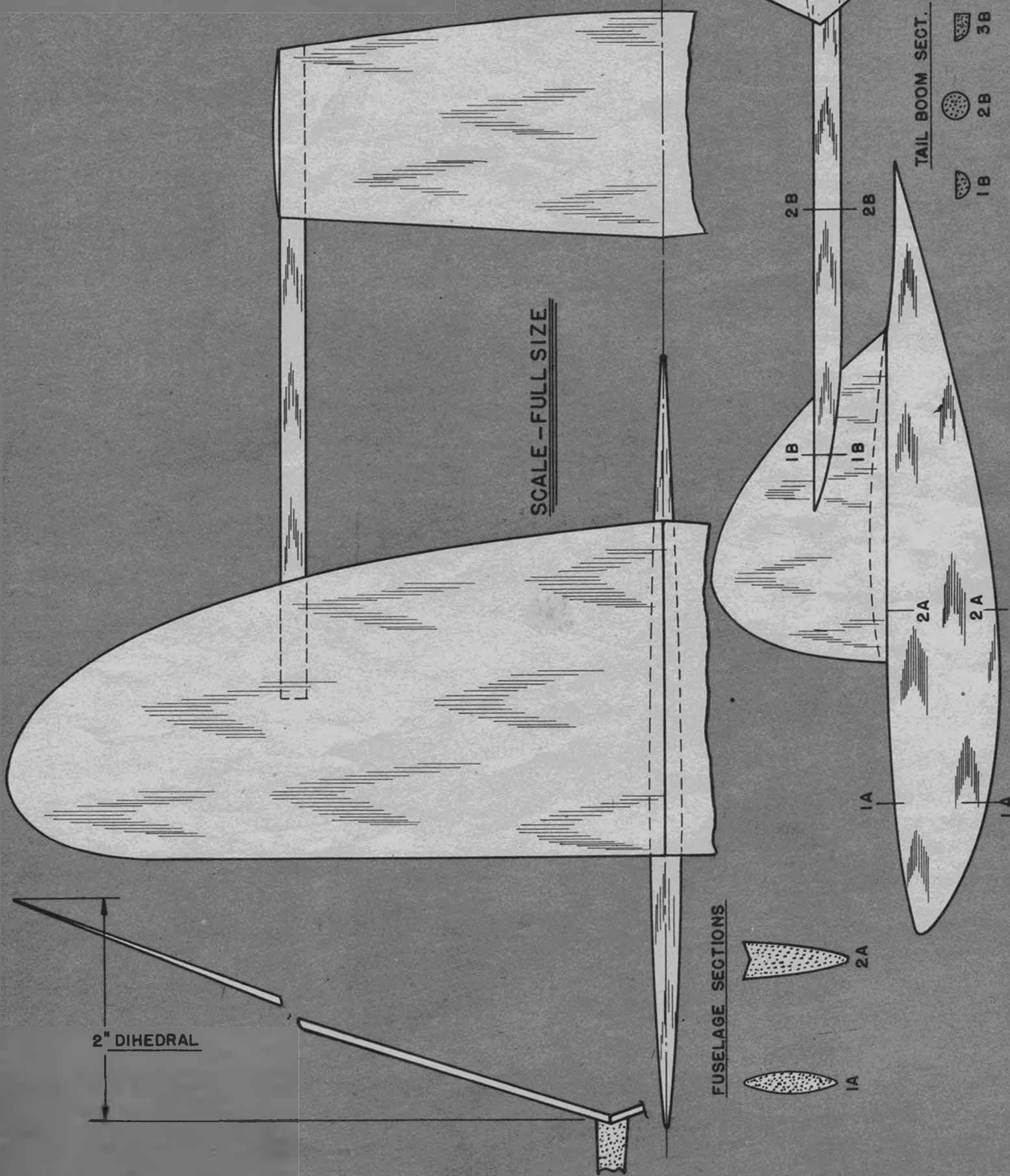
ARE you looking for something different to build in hand-launch gliders? Well, here is the ship for you. It's different, attractive, and turns in good flights. It is of simple construction and costs little to build. This ship can be built in a night and is easily adjusted. It is like an ordinary glider, but with two booms extended from under the wings. It is adjusted as any other ship and built in the same manner, so if you have ever made a glider, you can turn out this one without any trouble at all. Its high tail and twin rudders enable it to be catapulted, by adding a wire hook under the body. It's just the ship for all-around flying. It flies well when hand-launched, catapulted, on a calm or breezy day. So look at the plan and bill of materials and start building.

CONSTRUCTION

To get started, cut out the patterns and use them as they are, for plans are full-size. Trace the wing pattern on a sheet of $\frac{1}{8}$ x 3" medium-hard balsa and sand to airfoil section given on plan. Glue in dihedral, which is two inches, and allow to dry; then finish wings with either clear or colored dope, or glider polish, whichever you prefer. Next, trace body pattern on a sheet of $\frac{3}{16}$ " medium-hard balsa and sand to cross section indicated on plan. Rub in a coat or two of glue and polish. Glue the wing on the body and set aside to dry. Cut out the two booms, which are $\frac{1}{4}$ " square, sand to cross section, also given on plan, and glue them in place on the (Turn to page 63)

HAND-LAUNCHED GLIDER

BY AUSTIN RINALDI

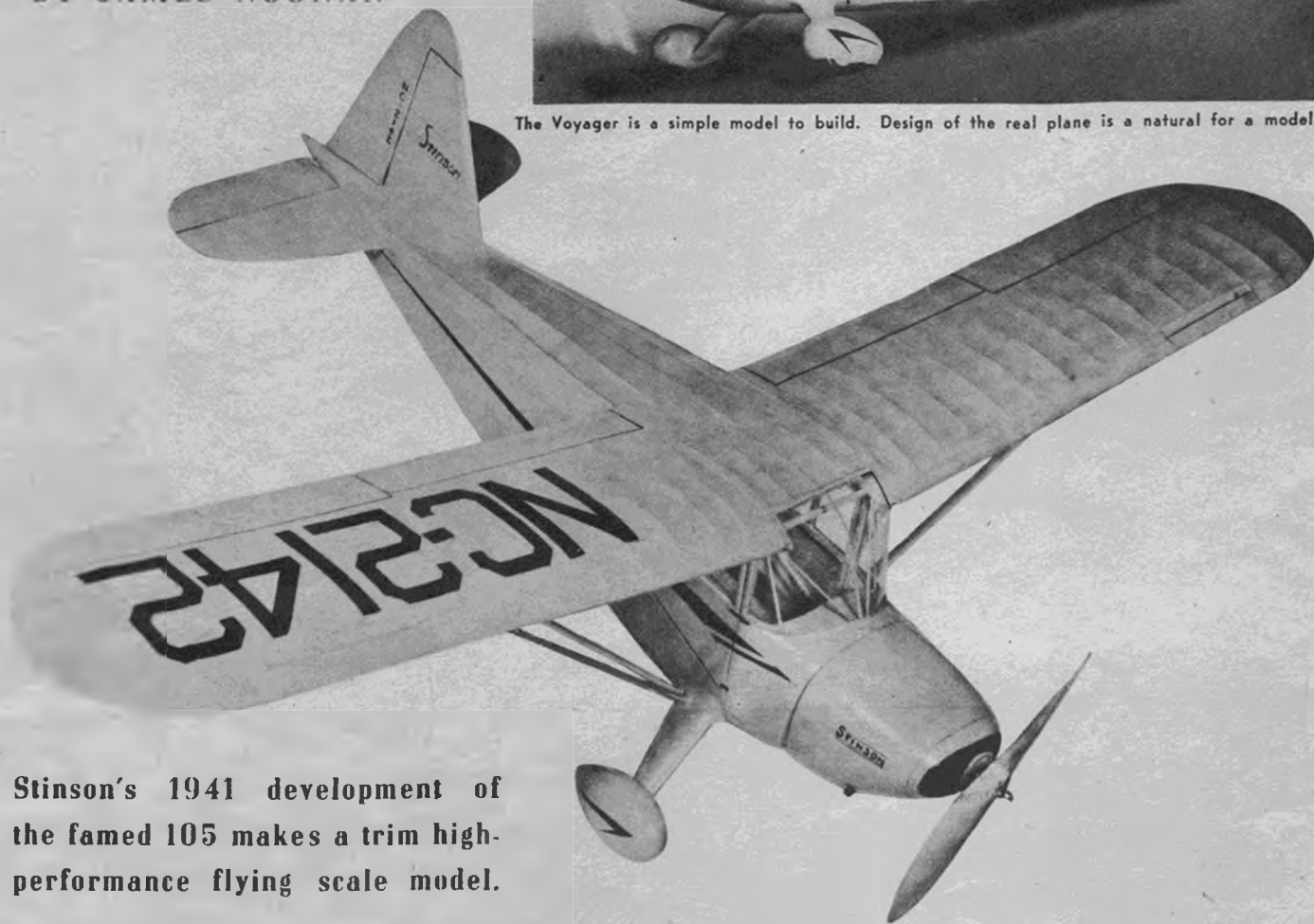


VOYAGER

BY JAMES NOONAN



The Voyager is a simple model to build. Design of the real plane is a natural for a model.



Stinson's 1941 development of the famed 105 makes a trim high-performance flying scale model.

SO I decided on the Stinson 105 for a flying-scale model. Completed, the ship was fairly heavy (5½ ounces), but balanced nicely and was quite stable in test flights, though tricky to adjust because of the scale tail surfaces. I would suggest that you use the larger flying stab, shown on the plan, if you want to get long flights.

CONSTRUCTION

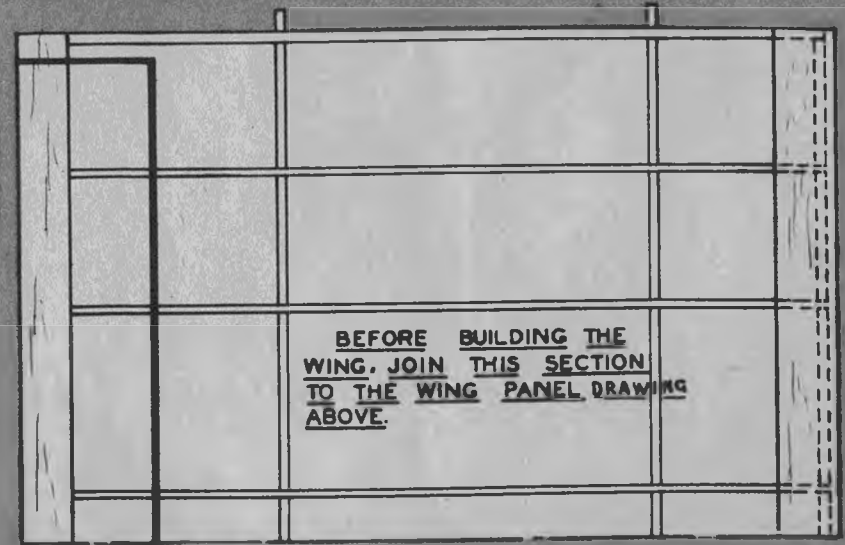
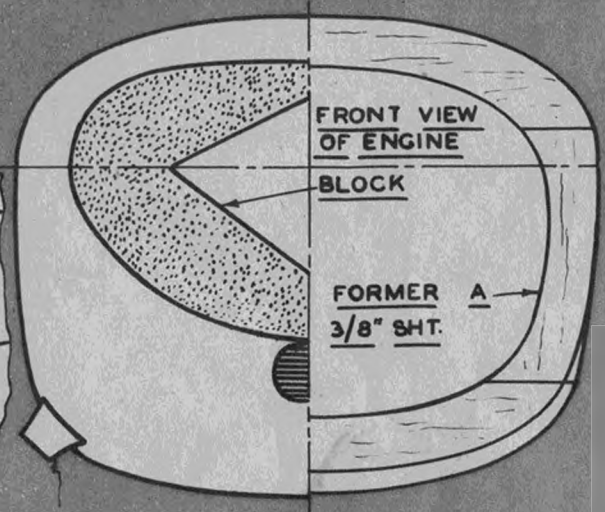
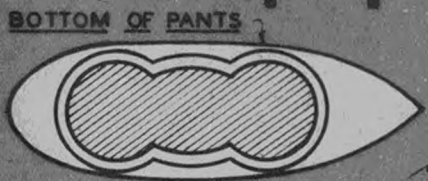
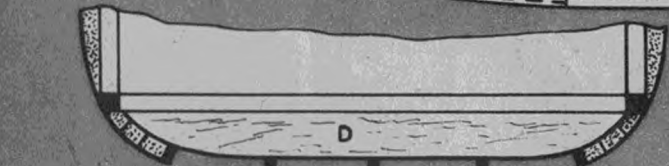
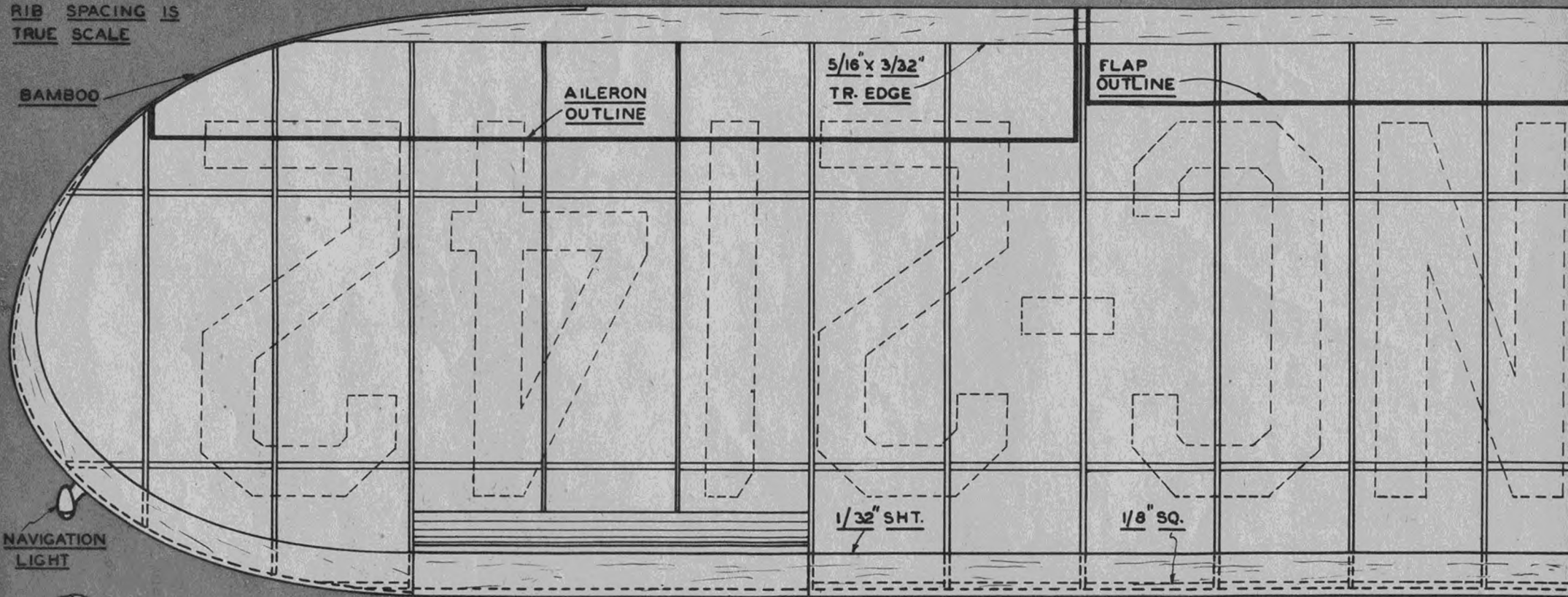
For the fuselage, lay out sides, using medium balsa for ¼" square longerons and stiff balsa for uprights. Doors may be made to open, if you wish. If so, make them fit snugly. Assemble the sides and add the formers on top and bottom. Cut Former A from soft ¾" sheet, all others from 1/16" or 1/20" sheet. Now for some hard work. Using 3/32" very soft sheet, cut strips 1/8" ¾" wide, for use in planking the cabin. On the real ship this is metal-covered. Begin by planking the top, forward of the instrument panel, then the bottom. Fill in all the cracks with scraps, and sand smooth. The sides are planked with 2" sheets of very soft 1/8" sheet. Plank over the windows and cut them out later. Now add the top, bottom and side stringers. For a neater job sand each stringer to a triangle shape so only a small point will touch the covering. Cut the tail block roughly to shape, then carve and

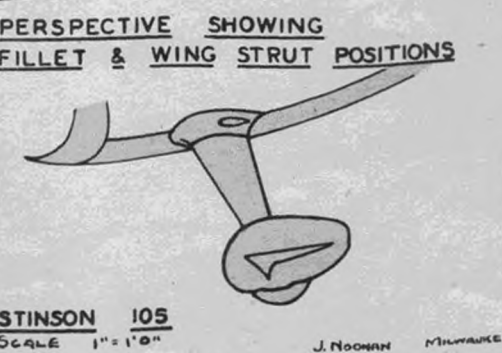
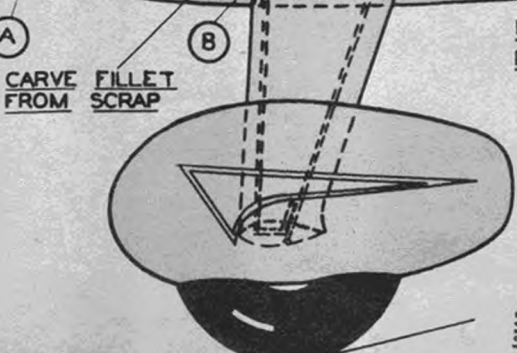
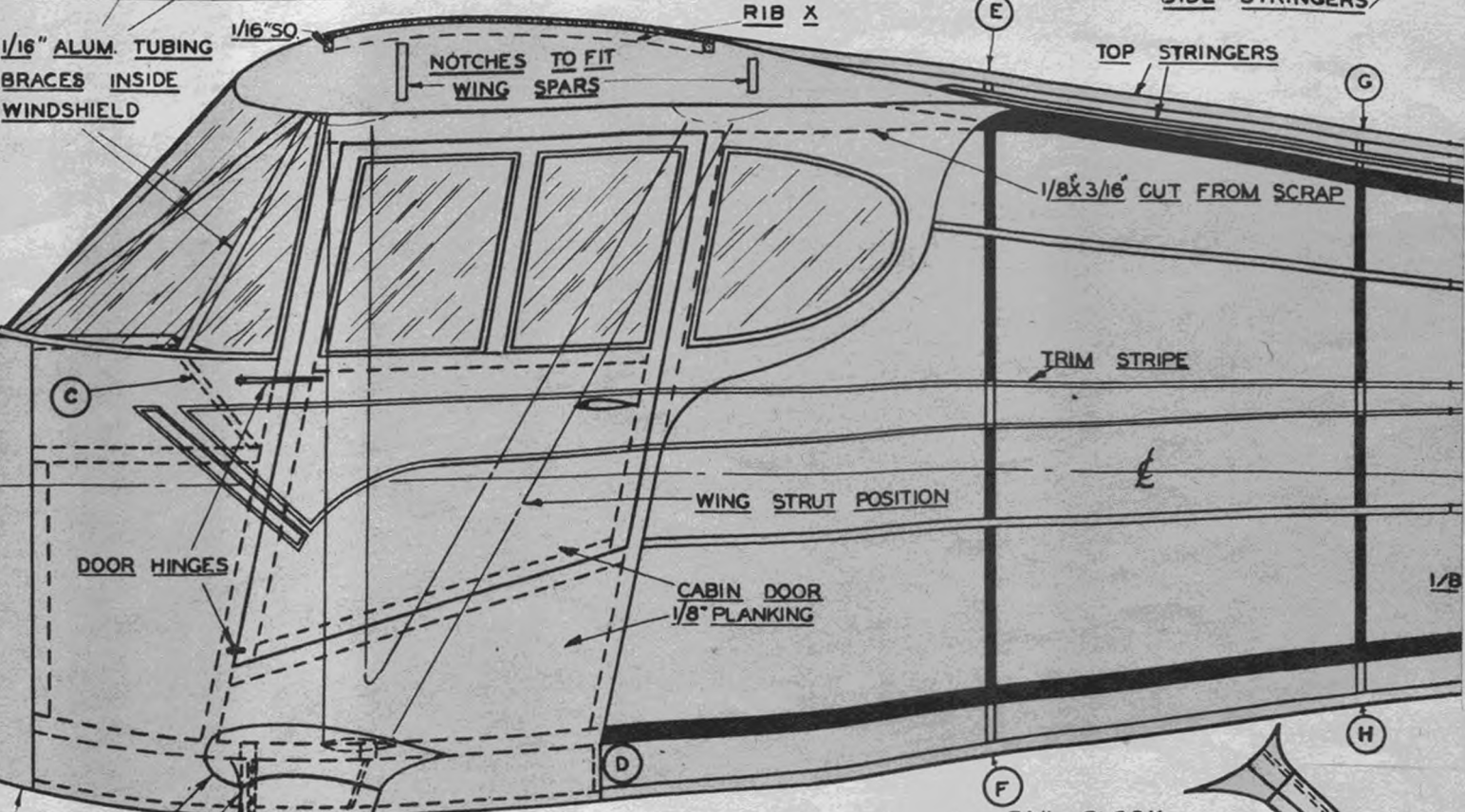
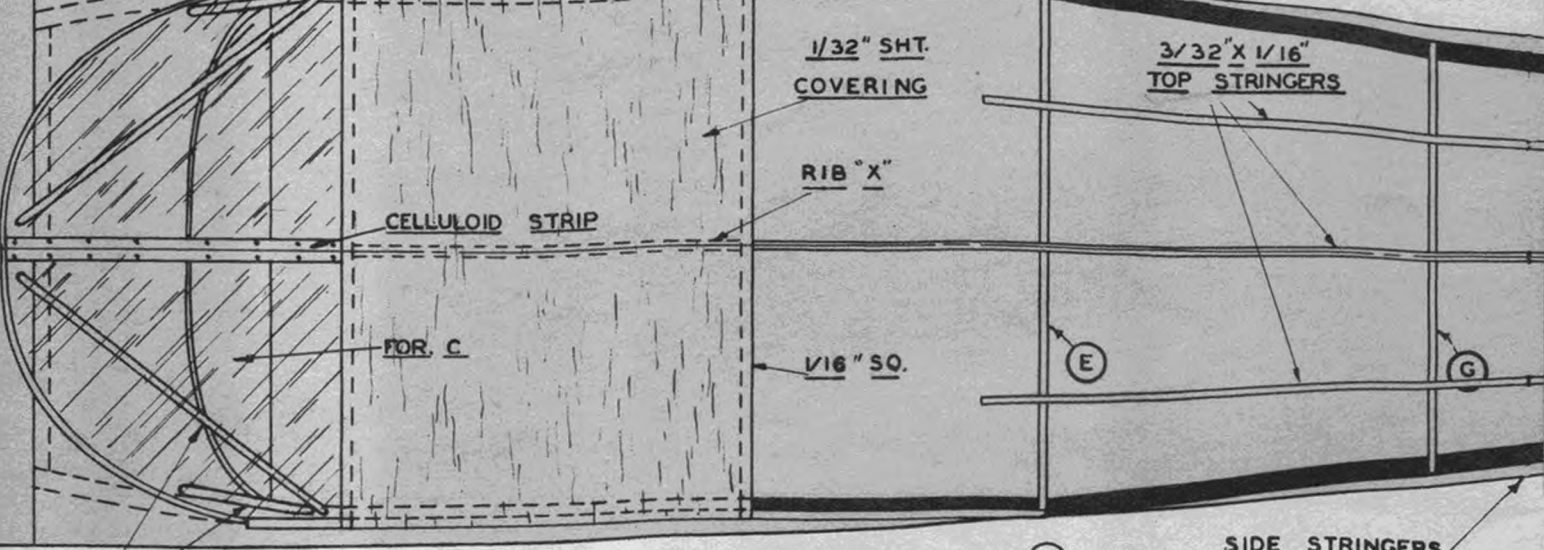
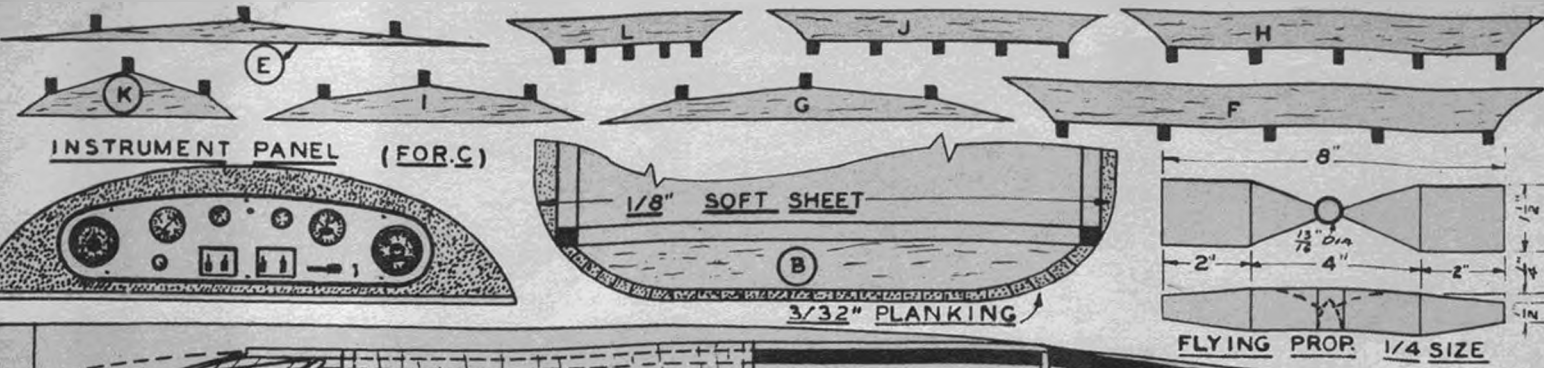
sand to fit the contour of the fuselage. It may be hollowed out for lightness. Attach the rear hook solidly and cement the block in place. Add two stiff wing ribs, spars, and rib X to the top of the cabin. Cover the area shown with 1/32" sheet that has been sanded smooth. Add the 1/16" aluminum tubing braces shown inside the windshield. To strengthen the landing gear, cut, bend and attach No. 12 wire as shown. Use scrap balsa to build up the struts and fillet, sand smooth, and rub cement into the wood, sand and repeat until a perfectly smooth surface results. Add instrument panel.

Wheel pants are built up of 1/8" sheet. Note that the walls must be very thin in spots, to take a scale-size wheel. Carve the opening on the bottom of the pants as shown on the drawing. To prevent splitting, coat inside and out with cement. Do this repeatedly as you work, and finish the outside of the pants to a high luster. 1¼" air wheels or hardwood wheels may be used. The wheel must fit very snugly. Make a tail wheel fork from a bit of tin can, solder it to a bit of piano wire and attach firmly to the fuselage. Attach tail wheel, using a pin or axle.

Cut paper templates of top, side, front and rear of the engine block. Select a medium block of balsa to fit these templates. (Two blocks may be used.) Using the templates, (Turn to page 60)

RIB SPACING IS
TRUE SCALE





STINSON 105
SCALE 1" = 1'0"

J. NOONAN MILWAUKEE

LARGE FACE BUSHING

SPINNER

Stinson

TOP OF ENGINE BLOCK

NOSE BLOCK

SIDE OF ENGINE BLOCK

INTAKE

EXHAUST BOTH SIDES

BAMBOO TR. EDGE

(BALSA MAY BE USED)

NC 2142

IRON WIRE HINGES

WHITE TAIL LIGHT

FOR. M

REAR HOOK

PLUG DETACHES

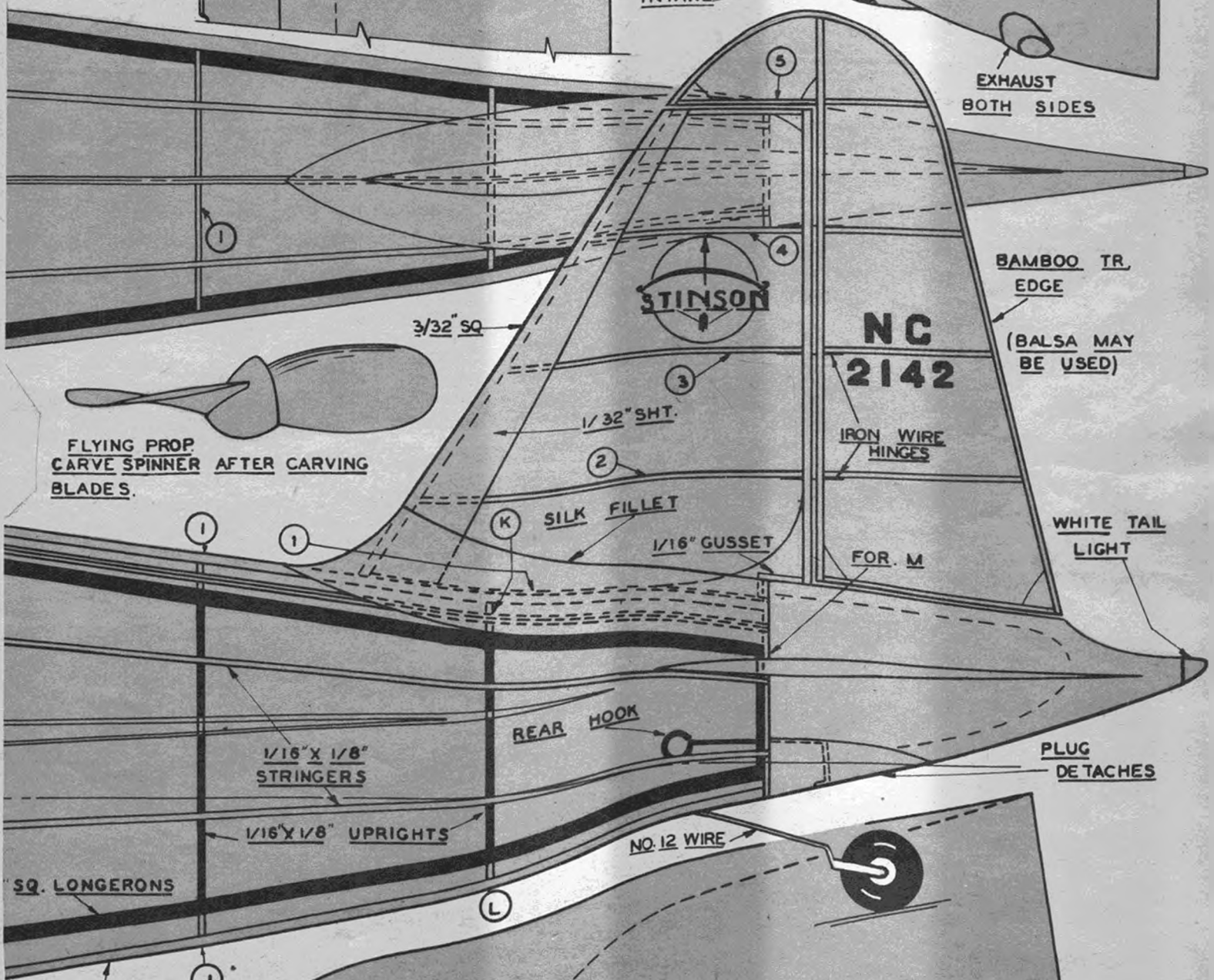
NO. 12 WIRE

SCALE STABILIZER 1/8" SHT.

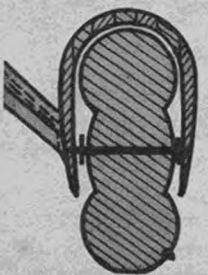
COVER WITH TISSUE

FLYING STAB.

TRIM TAB - LEFT SIDE ONLY



FLYING PROP. CARVE SPINNER AFTER CARVING BLADES.



SHOULD THE RULES BE CHANGED?



This Interceptor typifies the modern layout for high climb, efficient glide. Even wheel retracts.

BY LEON SHULMAN

Chairman of A. M. A. Gas Model Committee

Improved design and flying result in so many out-of-sight flights that winning a contest often requires having more engines than the other fellow. Present rules are outgrown. What are we going to do about it?



How strong is a thermal? This job with Fowler flaps soared away with flaps in down position.



Streamlining like this makes modern gas jobs far superior to ones on which the rules are based.

WELL, there goes another \$25 away on a thermal!"

"Gee, if I had only cleared that patch of grass near the runway I would have had a decent chance!"

"Wow, look at that model fold up!"

Familiar sayings? Sure, these and many similar ones have undoubtedly been heard at contests throughout the country. Of course, we model builders often swell out our chests proudly and say, "Boy, there goes my ship away again on a sightseeing tour," but then usually we must dig down deep into our pockets to buy another new motor, and model, and more accessories. Has gas-model building and flying turned from a hobby into a pastime to see who is the greatest mass producer of models, or have we lost sight of the fact that we are building models to learn how to improve flight? Undoubtedly we have all realized the fact that the changing of rules each year has brought about more efficient models. Because of the rules made last year for this year, we today are still flying models out of sight and

shearing wings and fuselages on our superlight (weak) models.

After gathering the general consensus of opinions of model builders throughout the country, I, as chairman of the Academy of Model Aeronautics Gas Committee, have found that modification regarding lower power loadings, raising the wing loading, one-hand assistance for take-offs, or shortening the motor run should be made. These opinions are general and undoubtedly aren't the best, but at the least are a few steps closer to our goal—perfect controlled flight. I will attempt to take apart these suggestions and present some facts both ways, pro and con, on the effect they would have if adopted by the A. M. A. Each suggestion will be taken apart separately and analyzed.

1. Lowering the power loading. A chart below shows the weight of the models with engines of the most popular displacements as they are under the present rules and how they would be affected if new lower power loadings would be adopted:

Displacement	Model's required weight under 80 ounces per cubic inch of motor displacement	Required weight for 90 ounces	Required weight for 100 ounces
.600	48 oz. (3 lbs.)	54 oz. (3 lbs. 6 oz.)	60 oz. (3 lbs. 12 oz.)
.350	28 " (1 lb. 12 oz.)	31.5 " (1 lb. 15.5 oz.)	35 " (2 lbs. 3 oz.)
.297	23.76 " (1 lb. 7.7 oz.)	26.78 " (1 lb. 10.73 oz.)	29.7 " (1 lb. 13.7 oz.)
.232	18.56 " (1 lb. 2.56 oz.)	20.88 " (1 lb. 4.88 oz.)	23.2 " (1 lb. 7.2 oz.)
.199	15.92 "	17.91 " (1 lb. 1.9 oz.)	19.9 " (1 lb. 3.9 oz.)
.097	7.76 "	8.73 "	9.7 "

(Turn to page 63)

THE QUICKIE is designed for swift construction and snappy performance. Although we do not recommend trying to build it at a single sitting, two evenings should be sufficient to get it into the air. Structural pieces are held to a minimum; curved sections of wing and tail are cut from sheet balsa in the easiest manner possible. Minutes have been sacrificed here and there to provide a few frills to make the job more attractive.

CONSTRUCTION

Fuselage. The side view is symmetrical, both $\frac{1}{8}$ " square longerons following the same bend. The nose cross pieces are wider to take knocks. The top and bottom cross pieces are shown in a group. No top view is necessary. Lay wax paper over the drawings and pin the longerons in place directly on the plans. Cross pieces are cut to size and cemented in place. When dry, remove the side frames from the form and assemble them to each other at Stations 3, 4, and 5. Wrap a rubber band around the nose to pull it into position while its remaining cross pieces are glued in position. Pull the rear of the longerons together, install the rudder post complete with rubber hook, and the remaining top and bottom cross pieces. Cut two cabin sides from $\frac{1}{8}$ " soft balsa sheet and glue one atop each upper longeron in the proper position. A $\frac{1}{16}$ " sheet bulkhead holds these cabin sides in alignment and supports the $\frac{1}{16}$ " sheet V-shaped cabin roof. Details of the landing gear are given on the plan. Finish the landing gear and install it before covering the fuselage. Use hardwood wheels.

Tail. The stabilizer is made from four pieces of $\frac{1}{8}$ " soft sheet as shown by the plan. The rudder requires three pieces. Notches are cut for the cross pieces and the tail is constructed by pinning the various parts directly over the plans until the cement has dried. Round the leading edges and taper the trailing edges.

Wings. Thirteen ribs are cut to the pattern given from $\frac{1}{16}$ " sheet balsa. Pin one of the $\frac{1}{16} \times \frac{1}{4}$ " spars over the plans as the rear spar and cement the ribs on it in the proper locations. Preshape the $\frac{1}{8} \times \frac{3}{8}$ " trailing edge and pin it to the bench. Then slide the $\frac{1}{16} \times \frac{1}{4}$ " leading edge into the leading-edge notches cut in the rib noses. Lastly, glue the top spar in place. Cut the wing-tip pieces from soft $\frac{1}{8}$ " sheet and cement them in place. After the wing is removed from the form, round the front edge of the tip and shave the rear edge to a sharp-edged taper. Brace the tip with short pieces of $\frac{3}{32}$ " square to prevent warping when covered. Dihedral is accomplished by cracking the wing at the center and blocking up one tip three inches off the bench. Hold the other side flat on the bench. Cement the cracked center generously to hold position.

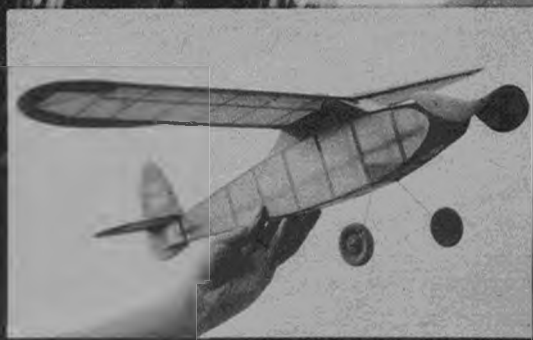
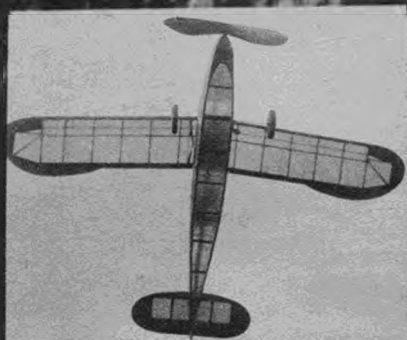
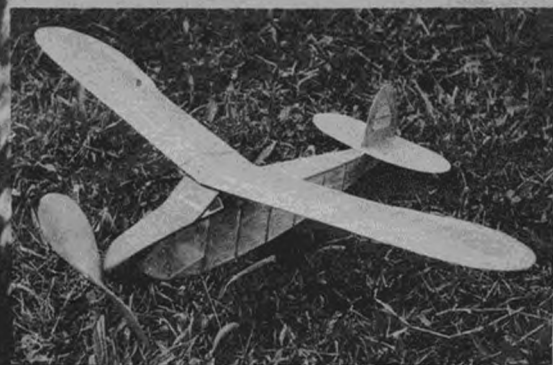
Covering. Using thick dope for adhesive, attach the paper to one fuselage side at a time. Trim the edges neatly before going on to the adjacent side. The stabilizer and rudder are each covered with two pieces of tissue (Silkspan was used on the original model), one piece for each side of the surface being covered. The wings are covered with (Turn to page 55)

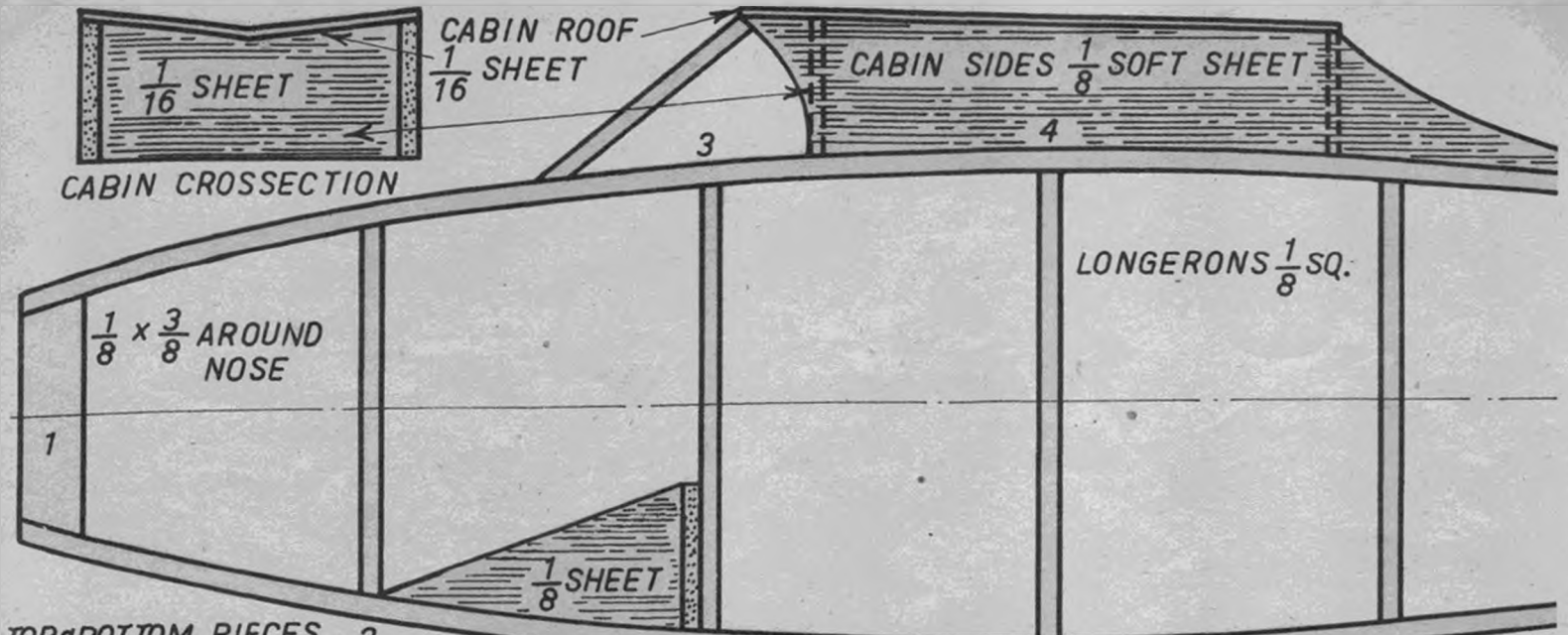


QUICKIE

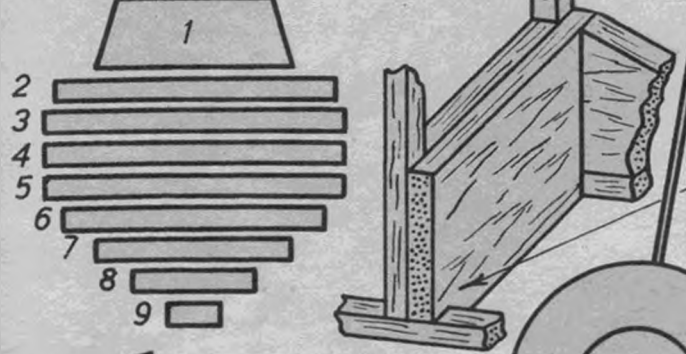
BY JOHN SPRAGUE

Simple construction and a minimum of time required for building make Quickie popular with the beginners.

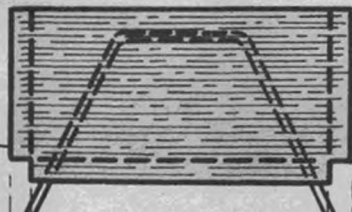
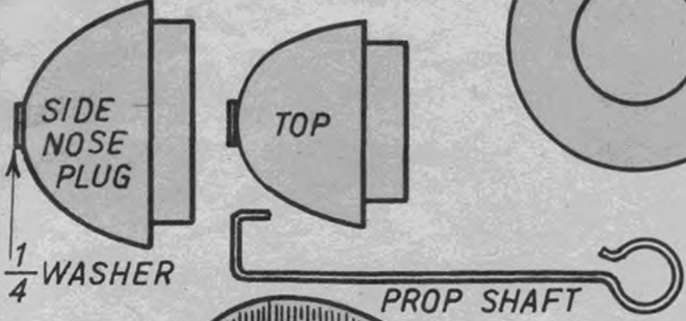




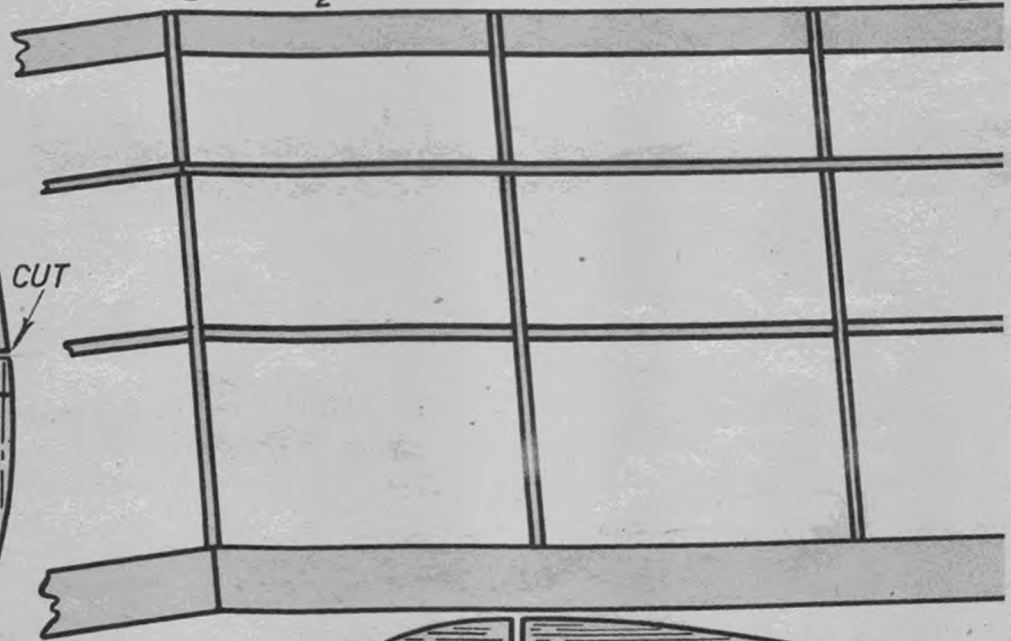
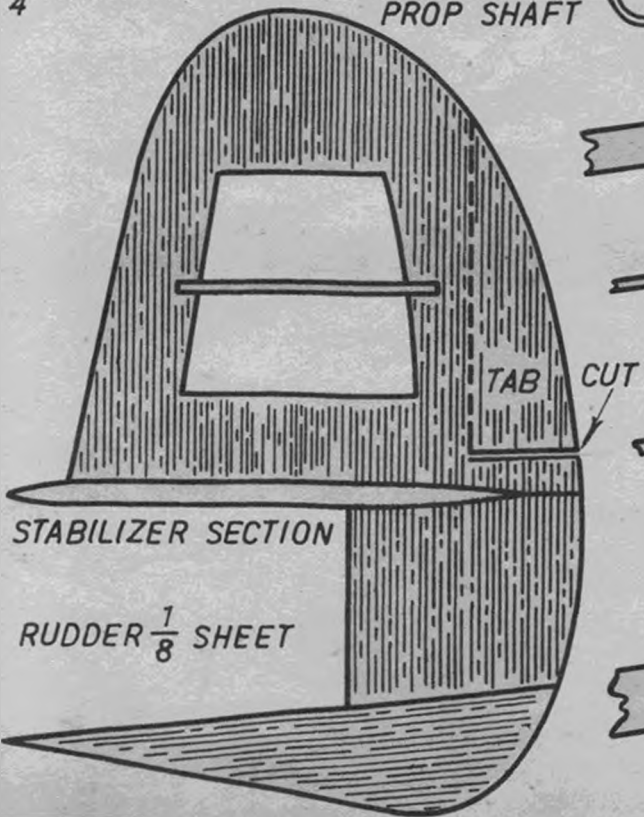
TOP & BOTTOM PIECES 2



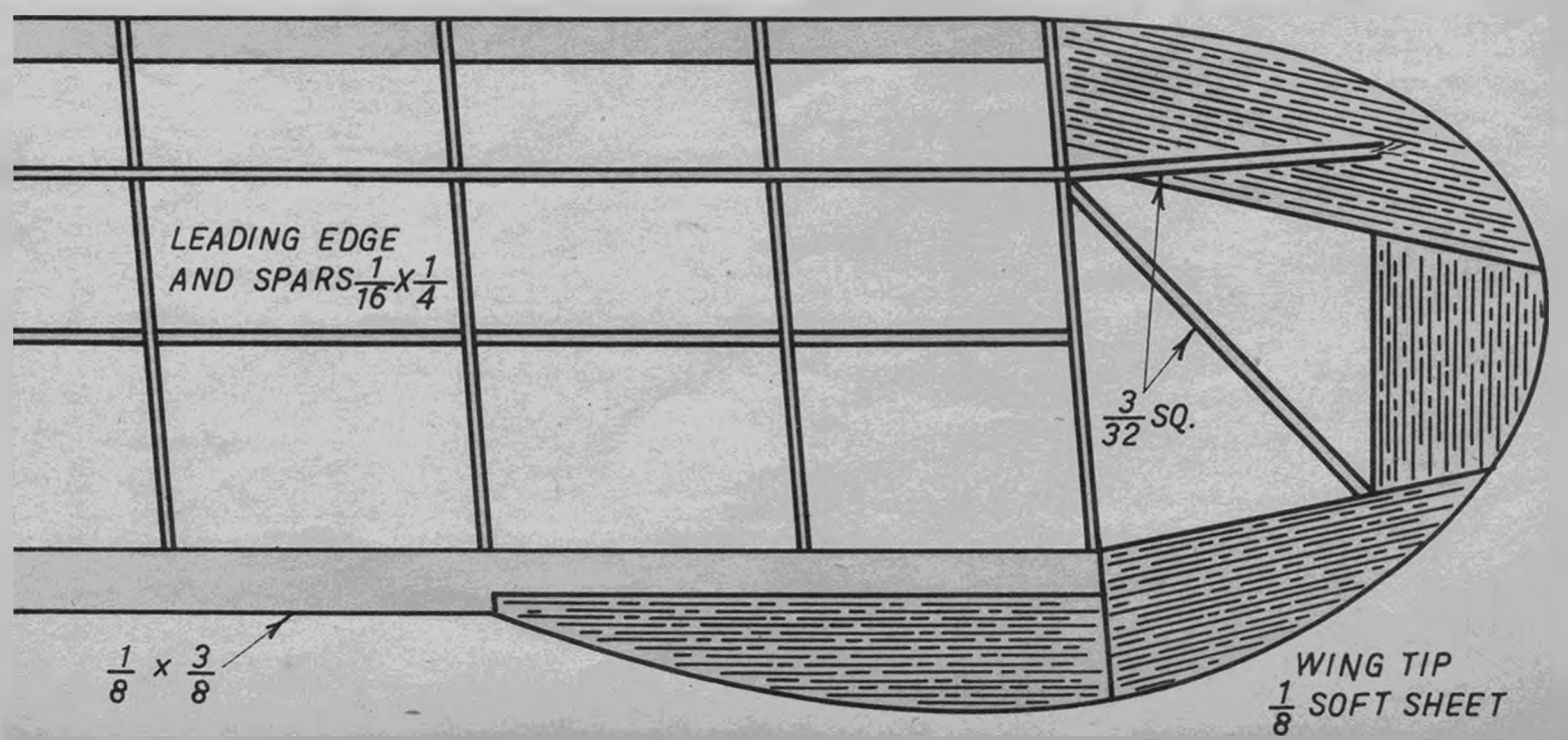
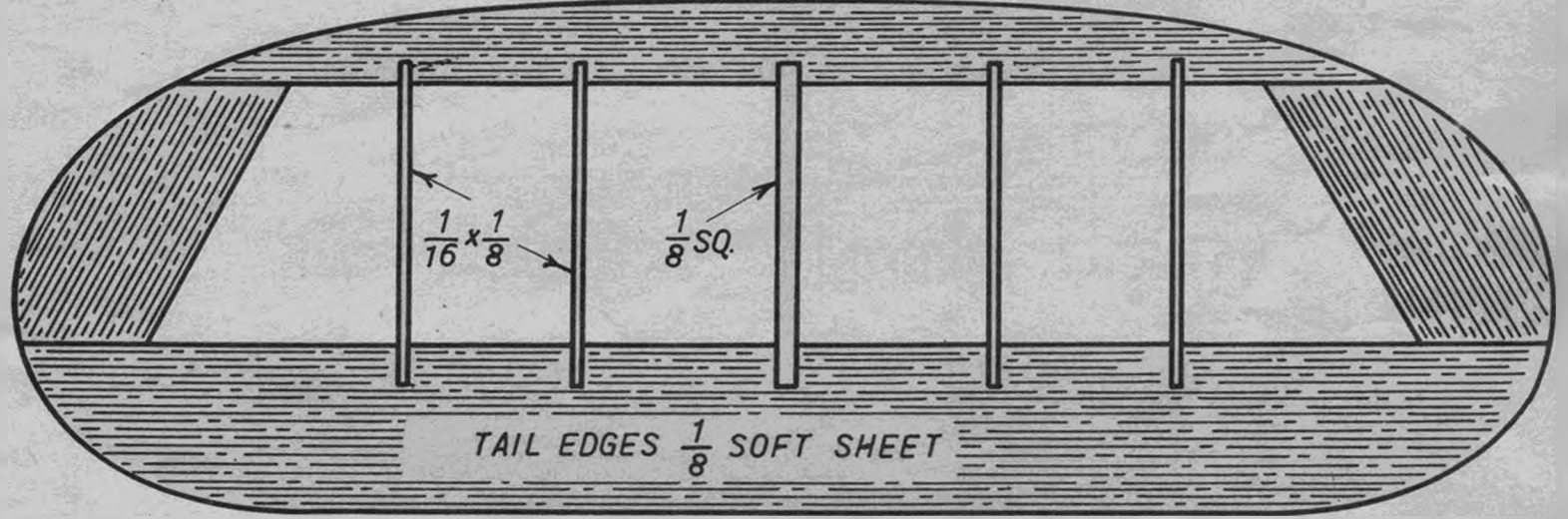
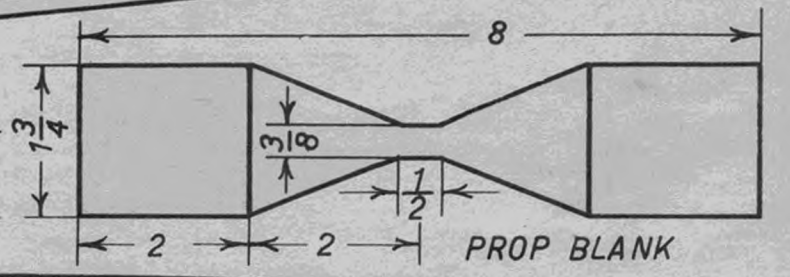
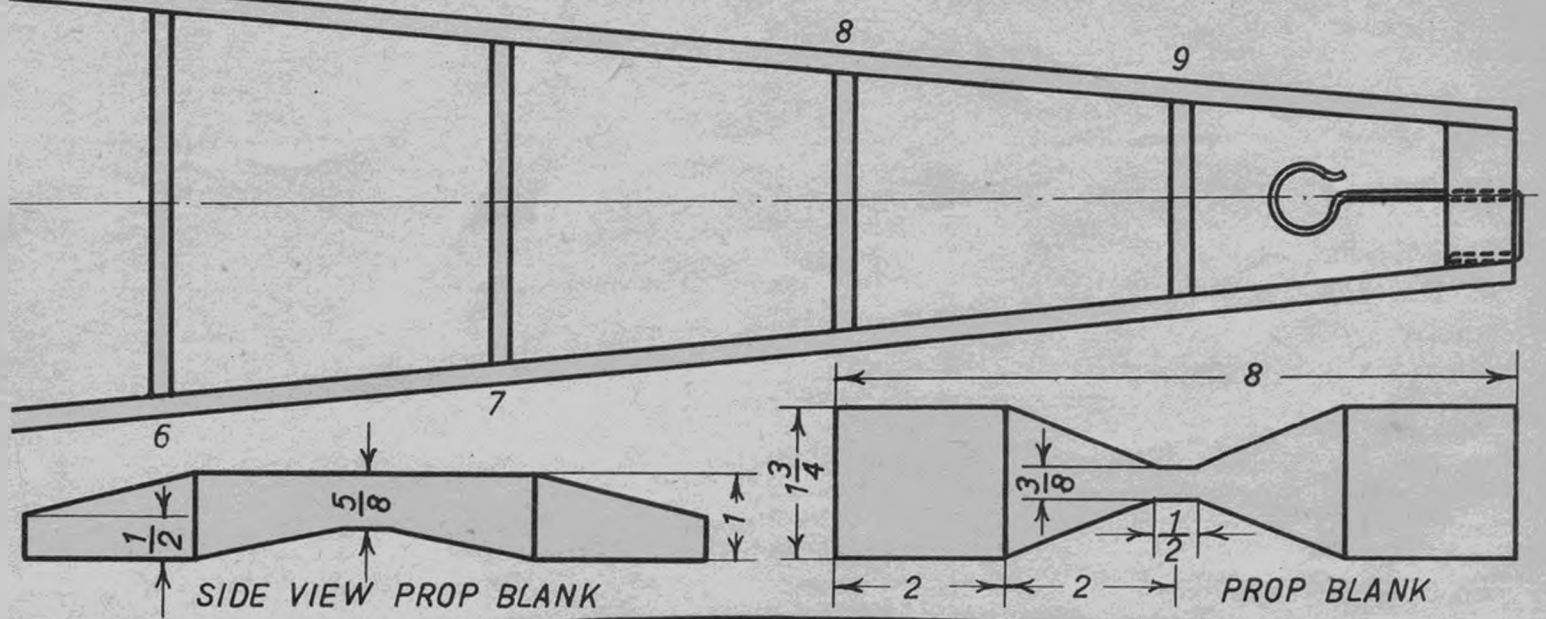
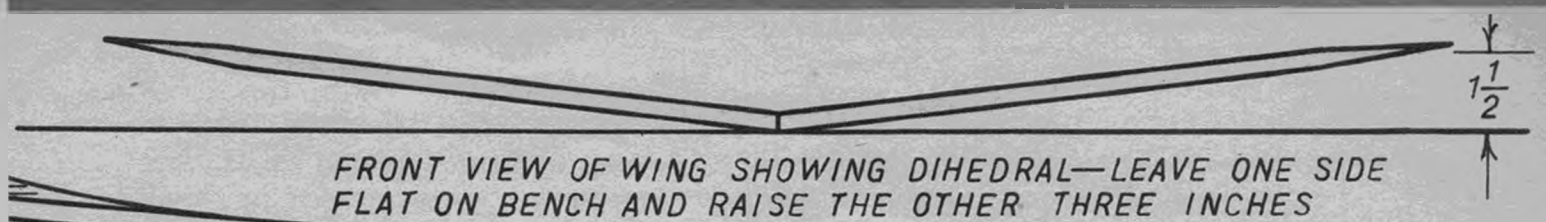
LANDING GEAR SUPPORT IS A SANDWICH OF $\frac{1}{8}$ SHEET



FULL SIZE LANDING GEAR - $\frac{3}{64}$ WIRE
 $\frac{1}{2}$ HARDWOOD WHEELS



FULL SIZE WING RIB



Build These Realistic 3/4" C-D Warplanes!

Model Matters

(Continued from page 35)

LOCKHEED P-38 "LIGHTNING"

The world's fastest fighter, so fast that you don't hear it, they claim, till it's past you. Beautifully modeled. Span 35-3/4". A superpowered twin motor model that's speedy, realistic and an absolute "must" among model builders who want the newest and best. Complete Kit SF-85 \$4.00

(below)

CURTISS

P-40

"TOMAHAWK"

Deadly in swiftness, accuracy and fighting efficiency. Christened "Tomahawk" by the British, who've ordered great numbers. A beautiful 28" span model. A beauty to build and to fly. Complete Kit SF-77..... \$3.00



GRUMMAN "SKYROCKET" ★

Span 31-1/2". Both motors pull. Fast. Beautiful. Complete Kit SF-75. \$3.50

"CANNON PLANE"

THE FAMOUS AIRACOBRA

Span 25-1/2". Long projecting nose gives super speedy flights. Complete Kit SF-76..... \$3.00

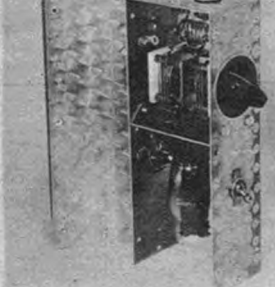
New Catalog 36 READY

Showing all Cleveland Models—3/4" scale. Contest, Nature, gliders, prize-winning Gas, etc. Indoor and Outdoor. 25c up. Send today for your copy—it's only... 5c

CLEVELAND MODEL & SUPPLY CO., INC.

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NATIONAL WINNER



Jim Walker won the Edward Roberts Trophy for Radio Controlled models at the Nationals this year. To control his six foot model Jim installed standard R.C.H. radio control equipment manufactured by Radio Control Headquarters. His plane was equipped with motor and rudder control. To accomplish this he used two R.C.H. No. 211-A receivers and relays, two R.C.H. No. 221 transmitters and an R.C.H. No. 242 antenna assembly. Our equipment comes ready for use, and is easily installed in your plane or boat. Ask your dealer or send 10c for Illustrated Instruction Manual.

No. 221 Transmitter
Price - \$12.50



The RC-1

Designed by Ben Sheresaw for RADIO CONTROL HEADQUARTERS

Designed primarily for Radio Control, the RC-1 can be flown just as successfully without it.

Specifications of the RC-1: Span 10 ft. Weight without radio controls, 6 lbs. Will carry with ease 5 lbs. of control equipment for three way control, or can be equipped under 1 lb. for rudder control only. Kit includes 5 sq. yds. of silk.

Price \$18.75 less wheels, dope & hardware.

RADIO CONTROL HEADQUARTERS

330 WEST 42nd ST. NEW YORK CITY

boys cleaned up in the rubber events. They took the glider event. Three cash awards for high points scored were taken by Tulsans. Not only that, the Cloud Chasers brought home forty dollars in prizes from a recent contest in Coffeyville, Kans. Club members Don Emmick and Bill Scaggs recently made application for AMA recognition of record flights in fuselage and stick categories. The Cloud Chasers have been organized less than a year and specialize in rubber power. Apologies, Tulsa, we done you wrong in the September issue.

It's cropped up again—the story of the excited person who mistakes a model for a large airplane and throws everybody into a twitch by reporting a crash. This time it was in the Bronx (New York City) and brought police, emergency squad, and ambulance zooming to the scene. But the cops didn't get sore. They inspected the model carefully and agreed that it was a realistic piece of work that anybody might mistake for the real thing. Harry Silverman of the Propbusters Club built the job.

The Tri-City Gas Model Club of Davenport (Iowa), Rock Island and Moline (Ill.) started about three years ago. Initial enthusiasm carried membership up to fifty, then slowly tapered off as "passing fancy" members dropped out. The remaining twenty are genuine. Ray Smith won the 1941 Mulvihill Trophy Event. President Herbert Andrews took two thirds in gas. Pride of the club is the streamlined trailer for model carrying. It cost fifty-two dollars and was financed by three dollars assessment per member. Rock Island Sash & Door Co. donated most of the lumber. The trailer is lightweight and can be towed at normal driving speeds. If building a trailer falls within the projected activities of your club, John Loufek, secretary of the Tri-City Club, will gladly give you some ideas. Address is 1902 Grand Ave., Davenport, Iowa.

Two builders ask for help in finding their lost Bantam-powered models. Bob Osbahr lost his flying from Memorial Park in South Plainfield, N. J., last July. It was a thirty-nine-inch job with a Topper fuselage and a Megow Ranger wing. Motor No. 1089. Bob's address is 63 West 14th Street, Bayonne, N. J. Jerry Brofman lost his Class A Bantam No. 300, AMA No. 9577, at the Hicksville contest last July. "Spectre" was printed on both sides of the fuselage. The model landed on a road, was picked up by a passing car but was not returned. Brofman is one of the up-and-coming youngsters. He won the Class C junior event at Chicago.

Even though Texas has a good bunch of model builders, when they're spread over such a large area the covering is rather thin in spots. Shuford Alexander, Jr., of Lockhart, is too far from the active clubs in San Antonio and Austin to do much good. Galen Stephens is the only other nearby builder. He's fifteen miles away, but they hold a two-man contest every Sunday in official style.

Competition is close, since both boys fly Sailplanes. Different motors help make it exciting. Alexander has an Ohlsson and Galen a Super-Cyclone. Thermals are vicious—been known to carry models away on their test glides. Shuford recently lost a Sailplane after sixty-five minutes.

It's a long time since the national meet, but we still get letters on Hotel Sherman stationery. Some of the boys evidently stock up enough to last them a year, which is one way to cut down overhead.

Take a look through your back issues if you missed the "Arrow" in the December, 1940. Latest testimonial on the flying qualities of this Gibson and Beeler model comes from Ocie Randall of Fresno, Calif. He's racked up twenty-seven dollars in merchandise, five ribbons, and one trophy with his Arrow. It was lost at 9:19 a. m. June 29th at a California contest. Randall was using a Phantom Bullet Motor with a one-blade propeller. Climb and glide are tops.

Did you see the news-photo of the Ryan ST model built from 24,000 match sticks by a twenty-two-year-old Detroit model builder? He used sixty-two ounces of cement. The span was about twenty-four inches.

For the last five years George DeLaMater of Oneonta, N. Y., has experimented with pushers—single and twin. He's worked up a twin which has flown splendidly in the last four contests entered this year. Four have been lost. The longest flight was 11:40—the only long flight in the contest that day. As for single pushers, he's flying one that averages 2:30 in dead air, with a climb and glide that exceed the better tractors. His argument is that the pusher has been neglected and steps should be taken to revive it. Certainly, if they were able to corner the hobby for the first twenty-five years they must have something. Builders follow styles in design, and the tractor has been the thing since the early '30s. The pusher-tractor argument is due for another airing. We're planning on DeLaMater to state the case for the pusher in a future article. George is a model builder from way back. At present he's a junior in chemical engineering at Cornell.

Model flying for Murray Parker has been somewhat limited and unfortunately will continue that way for some time. He's been a shut-in for the last four years. His building goes right on, nevertheless. A rubber-powered California champ and a six-foot towline glider of original design are his latest. The sailplane should feel right at home, since Parker lives in Corning, N. Y., and flying is done at American Airlines Airport at the foot of Harris Hill—the soaring center of America. He must rely on fellow modelers to fly his ships for him. Offhand, it seems they'd be too happy to do this, but this isn't always the case. We always thought it would be ideal to fly them and let someone else worry with the construction. It must be

(Turn to page 52)

A STAR is BORN!

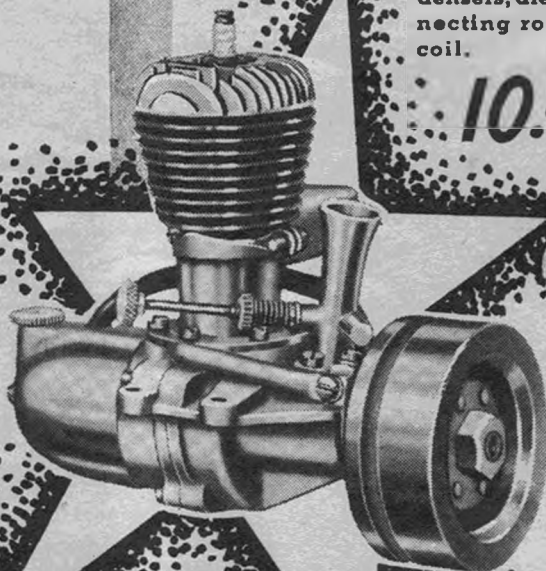
FLASHING across the horizon a new star performer has been born. The Phantom P-30. Ultimate in engine design, performance and durability, the P-30 is designed for use in model airplanes, race cars, speed boats or model trains.

It is our modest opinion that the P-30 offers you the finest Class B motor manufactured today, irregardless of price. Our policy of selling direct from the factory to you makes it possible for us to offer you so much for so little. Fill out the coupon below and thrill to the amazing super performance of a P-30.

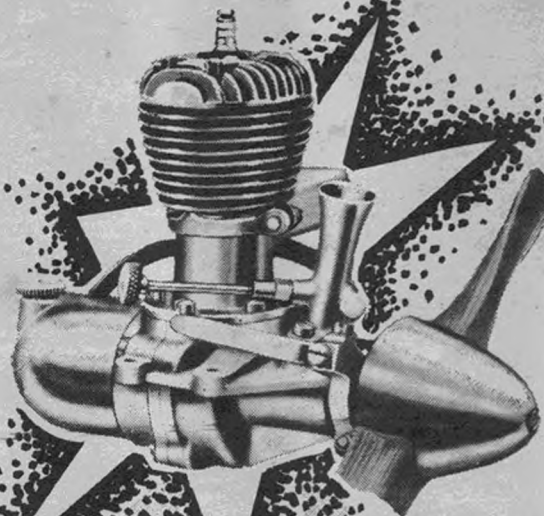
★ P-30 Specifications

1/5 h. p.; 2 port 2 cycle; .710 bore; .750 stroke; .295 cu. in. displacement; bare weight 3 1/4 oz. Vacuum feed downdraft carburetion, will not siphon tank dry. 1/4" crank pin; bronze bearings. Turned steel cylinder; lapped alloy steel piston; new patented principle of by-passing, eliminates piston deflector. Cylinder and by-pass one integral part; full 1/2" crankshaft; square rotary valve port; over-size anti-friction bronze

bearings; lucite plastic gas tank; champion V-2 spark plug; metal enclosed condensers; die cast connecting rod. Smith coil.



10.50



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★ P-30 Engine Features

- ★ Entirely new design.
- ★ New long stroke, small bore motor.
- ★ New principle of by-passing gives approx. 20% more power.
- ★ Square valve increases power 10%.
- ★ Every motor power-block tested in our factory and sold to you under a bonded factory guarantee.
- ★ Sold complete with coil, tank and condenser.
- ★ Timing cam integral part of crankshaft. Hollow steel alloy crankshaft. Visible gas capacity. Motor built to be used upright or inverted. Gas tank can be mounted on either side of fire-wall. Newly designed connecting rod. Large ground steel piston pin. Needle valve conveniently mounted, clearing prop.

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- New Phantom "P-30" complete with coil, tank, condenser and prop spinner \$9.75
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- Special 11 inch hardwood propeller 49¢

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Add 3% if delivery point is in California. Prices Slightly Higher in Foreign Countries.

(Continued from page 50)

that the thrill of a successful flight comes from having built the model, and not from the flight itself.

Edward Soltis of 57 Morningside Ave., Yonkers, N. Y., is deaf. He's a rabid model builder, and would like to exchange letters with model builders who have the same handicap.

The Aeronca Scale Model Contest is open to anyone sixteen years or older in the United States and nearby countries. A full-size Aeronca and flying instruction will be exchanged for the scale model which resembles most closely the Aeronca Chief. This contest was announced at the National meet last July. Late starters still have time. Information is available from the Aeronca dealers at airports or the Aeronca Aircraft Corp. at Middletown, Ohio.

One of the oldest working models in the country was exhibited by Harry L. Roderick at the Hobby Show in Oakland, Calif. It was built and flown in 1909. Span is about forty inches. Bamboo-and-fabric construction is used. Steam power was used originally. The boiler was preheated on the ground to get up steam. The model was later flown with compressed air. In its time, the model held a duration record of forty-three seconds. At that time modeling wasn't organized. You made a flight, claimed a record, and if no one contested it, it was yours—although no flights under thirty seconds were recognized by any builder. G. E. Drake of Oakland, Calif., sent this information. He broke down Roderick to the point where he talked a little about himself. Compared to the wealth of information, prepared material, and other conveniences the modern modeler enjoys, the work of the early builders must have been tough. Aero science was new and model science even newer. What progress they made depended on their cleverness and ingenuity in getting around apparently hopeless situations. What interesting stories an old-timer like Roderick could tell about the early days of model building!

The Florida State Model Meet, held in Daytona Beach recently, was sponsored by the Daytona Beach Exchange Club. Some seventy of the best model builders in Florida participated, with the chief prize an all-expense trip to the Nationals. Ultimate winner of the top honors was Bill Ramsey of Daytona Beach. Some 2,500 people witnessed the competition. Because of the high wind, motor runs were cut to 15 seconds, and even though this restriction was in force, many models were lost. Rubber and glider events were run on Saturday of the contest. John Foley of Daytona Beach took first in glider with an average of 56 seconds. In the senior and open glider event, Gene Chaille won first with a 1:38.5 average. Gene also won the fuselage event with a 2:14 average.

In the stick event, Tony Sylvia was first with a 1:48.7 average. Bill Ramsey won the fuselage (Class D) event with a 3:27.7 average. In the stick event, Ramsey also took first with a 4:10 average. Charles Johnson of Jacksonville took the Class A gas event with a 2:25.6 average. In Class B gas, Ramsey again scored a first with a 2:27.4 average. W. D. Hoffman of Sanford was first in Class C gas. W. T. Thomas, a retired airplane manufacturer who is AMA contest director for Florida, handled the meet. The city recreation department also helped and provided many of the prizes.

At Lincoln, Nebraska, the four-State model meet held at Fairbury was one of the biggest events of the summer season. Just to give you an idea of the general results (despite moderate winds) we present the top winners. Ed Manlon of Lincoln took first in Class A with an average of 1:39.3. Bill Parmenter took top honors in Class B with an average of 5:54.9. Don Woods of Omaha was high man in Class C with an average of 4:21.3. In the Class C rubber (junior) event, Jimmie Pierce of St. Joseph, Mo., was first. In the senior event (same class) Gerhard Onnen, Jr., of Gladstone, Neb., was first. Jack Spaulding of Lincoln won the tow-line glider event. Bob Fox won the hand-launched glider event. Don Woods of the Omaha Sky Katz won the trophy for the longest official flight of the day, doing 13:04.2 in Class C gas. The Lincoln Model Aircraft Engineers were the high-point club. Jack Moralez was contest director.

The Third Midwestern Gas Model Contest held at Ottumwa Airport, Ottumwa, Ia., was a "howling success," according to those present. Some 255 entries participated, and that, my friends, is a contest for any one man to handle. Captain C. P. Oleson of the army air corps, however, and Ottumwa's airport manager, handled the meet very efficiently. By agreement, motor runs were cut to 15 seconds due to wind. Ken Heckart of Ottumwa, flying a ship of his own design powered by a Tiger Aero, took Class C with an average of 6:00 $\frac{1}{3}$. In Class B, S. S.

ON THE FIELD. (By Carroll Moon.) The Gas Model Airplane Association of Southern California held its annual contest recently and the winner established a record in Class C which eclipsed Joe Konefes' Class C record by a wide margin. Bud Chapman of Van Nuys, flying a modified Zipper with an Ohlsson 60 for power, averaged 29:53 for three flights. Averaging that amount of time with this particular set-up is really stupendous, and we congratulate him on the accomplishment. Mrs. Bunting won the ladies' prize. Bud Chapman took first in Class C and Joe Bilgri took tops in B Class. Cummings, of course, captured the Class A trophy. Jerry Williams took the Junior Class trophy (he placed sixth in the meet) and inasmuch as he is but eight, he deserves a fine hand for his achievement. His flights were 9:06 and 7:23. Consistent, eh? His ship was a KGS powered by a Tiger.

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St. Cloud, Minn., flying a Zipper with an Ohlsson 23 in the nose. His average was 5:06 $\frac{1}{3}$. In Class A, Charles Lamb of Tama, Ia., took first flying an original design with a Bantam for power. His average was 2:36 $\frac{1}{3}$. Among the entries were John Williams, Joe Williams and Frank Mead of Colton, Calif., while others from Wisconsin, Illinois, Missouri, Nebraska, Kansas, Minnesota, Louisiana and Michigan attended. The Winged Motors Club of Kansas City won honors for the best representation.

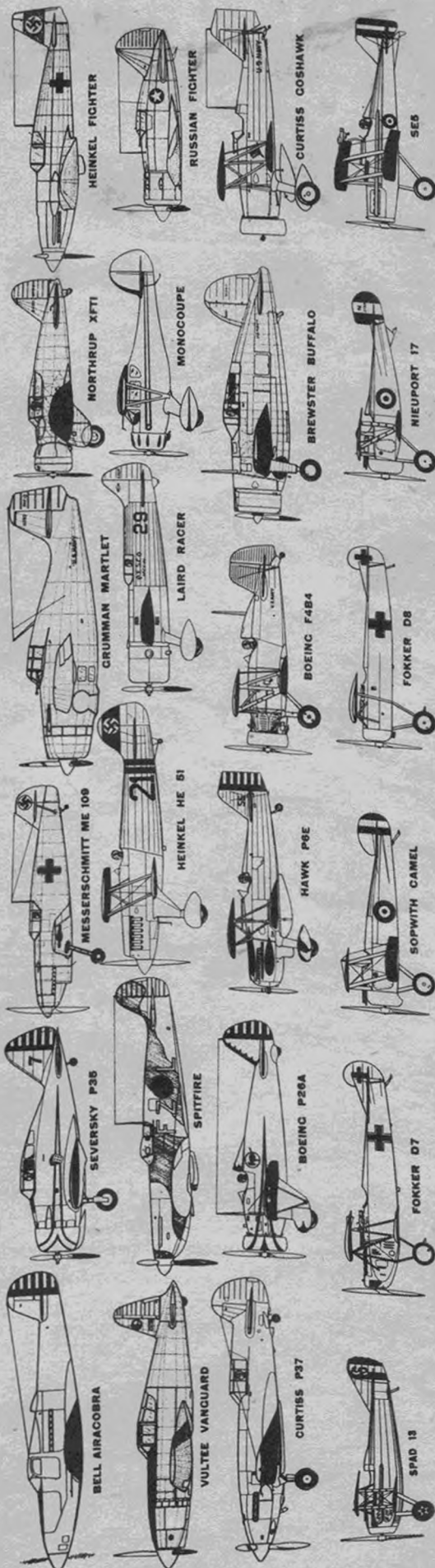
The Poughkeepsie Gas Model Association's annual contest held during the first few days of August resulted in a fine representation despite the fact that the meet was postponed a week due to bad weather. Some 150 entries were on hand. C. G. Giessen of Jackson Heights, L. I., took Class A honors with an average of 4:24, and the longest flight of 10:45. In Class B, George Terwilliger of Newburgh, N. Y. was first with an average of 8:17, his longest flight being 12:51. Mike Pace of New York won Class C honors with an 8:43 average, longest flight 22:10. Awards were made by Carl Goldberg (Comet—remember?). Officials included Walter Lenart, Henry Douglas, and Joseph Butler. Oh, yes, Leon Shulman lost his own ship on a test flight, spent a day cutting down a tree retrieving it and ended up by contracting poison oak. No, he didn't win a prize.

And here's a name that appeals to the wife. The Model Maniac Contest held at Nobelsville, Ind., on August 3rd, which was attended by nearly 100 entries. Some thirty-nine ships were lost in the various events due to the intense thermal activity. Byron Graham of Frankfort, Ky., won the open rubber class with a total time of 21:49. (Whew!) George Perry of Lexington, Ky., flying a Ranger powered by an Ohlsson 19 took first in Class A gas with a total of 11:51. Paul Parke, flying a Baby Playboy powered by an Atom, was third. In Class B, Howard Bonner of Anderson, Ind., flying a Zipper powered by an Ohlsson 23, was first with a total of 17:02. In Class C, Ray Neese of Indianapolis totaled 18:23 using a Playboy with an Ohlsson 60.

The Second Annual Granite City Model Meet (St. Cloud, Minn.) held August 3rd, attracted about 100 modelers from throughout the Middle West. According to our correspondent, thermals were not only frequent but terrific. For example, Bob Sweger of St. Paul won Class C with an average of 15:04. He also had the longest flight of the day, doing 43:28 on one flight. In Class A, Fred Emmert was first with a 7:19 average. E. C. Johnson of Rochester, Minn., captured Class B with a 7:38 average. Conrad Renning of Minneapolis won the cabin event with a 10:10 average. Roberts won the stick event with a 9:28 average. An unusual feature of the meet was a radio transmitter on the field tied in with a receiver located some five miles downwind. Through this constant contact, a majority of the lost planes were soon located.

Cliff Travis, whom we mentioned

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before, walked off with Class A honors at the meet sponsored by Jackson's Models and Supplies Co. of New York and held at Throggs Neck, Bronx, also on August 3rd. His Bantam-powered ship (original design and how!) turned in a total of 340 seconds. In Class B, C. Hauff was first with a total of 290 seconds. In Class C, R. Willard flew a Guff (an Air Trails ship) to first with a total of 700 seconds accumulated on one flight. J. Hopkins won the stunt event. W. Yuppa took the surprise event.

We always like to feature rubber championship meets. To our mind, a good rubber job is harder to build, adjust, and maintain than any gas model. The Linden Model Aircraft Club of Linden, N. J., has conducted the New Jersey State Model Meet for several years, the most recent meet being held early in August. John Best of Elmont, N. Y., won the junior championship, taking first in fuselage and third in glider. In senior fuselage, Silveo Colletti of Linden was first with 29:26 on three flights. In senior stick, Mike Gural was first with 16:50. Bob Dagon was first in senior glider with 7:47. Don O'Connell was first in junior glider. Frank M. Krysiak was contest director.

Although we don't often editorialize, we might mention the advisability of getting up that extra buck to AMA for insurance. To our own personal knowledge, in recent weeks planes have smashed two windshields, hit a house and broken a window, and one poor unfortunate who was smacked by a high-flying ship suffered a fractured skull. That dollar invested in insurance might have saved an expensive hospital bill. . . . Gordon (Scotty) Murray of the Brooklyn Sky-Scrapers received his wings from the R. C. A. F. on September 2nd. Shortly after this high point in his life, Gordon returned home on a furlough and promptly the boys in the club gave him a party. The Scotsman was overjoyed, and in sheer gratitude promised to design no more gas models in the future. . . . Ben Shershaw, proprietor of Bantam Motors, advises all and sundry that Miniature Motors, Inc., is now knee-deep in defense contracts. However, within a few weeks repair motors should be forthcoming, and by Thanksgiving, new motors should be available. Benny's correspondence reveals some funny things about modelers. One motor, returned, bore this bit of enlightening information: "I cannot start the Bantam despite the fact that I have choked and choked it." (Normally, in one full choke, a Bantam will be flooded for about an hour.) Another builder reported a "slight crack-up," and the motor returned was found to have all lugs broken off, a split case and broken timer. Benny is still wondering what the builder would have done in a real smack. . . . Newly elected officers of the Sky-Scrapers for the remainder of 1941 are Art Mansfield, president; Sal Taibi, vice president; Bernard Liquorman, secretary, and

Pete Tryborn, treasurer. Doris Meyer is corresponding secretary, and mail addressed to the club should be relayed to her at 44 Harte St., Baldwin, Long Island, N. Y.

On August 10th, the Queens Aero Club of New York held its first annual contest at Creedmore, L. I., and despite high winds (again?) a goodly crowd of modelers was on hand. Leon Shulman, (prexy of the Kresge Club and erstwhile Sky-Scraper) won Class A honors with an average of 4:56 2/5. In Class B, Cliff Travis (mentioned before in these columns) took first with a 4:41 average. George Gordon won first in Class C with a 4:09 average. Travis also won the award for best single flight with 9:16. Bob Feuer, contest secretary of the club, turned in the report. Incidentally, Bob reports that his Comet Zipper with a Comet 35 (#1193) was stolen a few days later. Ship had red fuselage with blue trim, yellow wing and tail. His address is 93-30 220th St., Queens Village, L. I., N. Y.

The Sky-Scrapers Club of Brooklyn, N. Y., conducted its third annual gas meet—the Eastern Championships—on August 31st at Hicksville, L. I., and nearly 200 entrants were accommodated at the meet, which all conceded to be the biggest and best in the East this year.

At the close of the contest, Alder Mowry of Orange, N. J., was awarded an armful of hardware when he was announced as the Eastern Champion. Mowry won fourth in Class B and second in Class C, and turned in the highest single flight of the day—11:15 in Class C. Walt Waechter flying a Pacer powered by a Forster 29, took Class B honors with a 2:55 average, his best flight being 7:25. Mowry, who flew a Diamond Demon with an Ohlsson 23, averaged 1:59. In Class A, Leonard Wilket, flying a job of his own design powered by a Bantam, averaged 3:13 1/2 for first. In Class C, George Hartman (Glad-ator, Super Cyclone) was first with a 5:13 1/2 average, his best flight being 9:40. Mowry flew a Clipper powered by a Brown to a 4:38 average.

An unusual feature of the meet was the gas flying scale event won by Hank Osmer (Sky-Scrapers). His ship finished first in the fidelity and workmanship half of the event and second in the flight half. The Sky-Scrapers were permitted entry in only this one event. Osmer's ship was a beautifully finished Fokker powered by a Forster 29. In charge of the meet were Contest Directors Ed Yulke and Yours Truly, while most of the credit of the organization of the many details goes to Sal Taibi, Art Mansfield, Pete Tryborn, Doris Meyer and their able assistants. Judges in the flying scale event were Frank Zaic and Jesse Davidson. Model builders from Schenectady, Hampton Roads, Va., Poughkeepsie, N. Y., Boston, Mass., and many other modeling centers in the East were represented by entrants and the nearly 10,000 spectators.



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Quickie

(Continued from page 47)

three pieces of paper, one for the bottom, and one for each side on the top. Attach the paper to end ribs and wing edges only. Spray the finished covering with water and allow to dry taut. Then follow up with a coat of thin clear dope. When spraying the tail surfaces and wings, pin them to the bench until dry to prevent warping. The wet paper will not adhere to the bench. Spray one half of the wing at a time.

Propeller. The propeller blank is cut to the outlines on the plan from a medium-hard balsa block 1 3/4 x 1 x 8". Do not round the tips until carving is finished. Carving is done in the usual way. Carefully balance and sand the finished prop. Use at least eight strands of 1/8" flat rubber with no slack. The nose block is shown. Glue a washer to it for a bearing and another to the rear of the prop hub. Use a loose washer on the shaft.

FLYING

The tail surfaces are cemented permanently in position. The wing is loose for convenience, being held in place by rubber strands run over the wing and around two wire hooks fastened one on each side to the fuselage at Station 4. Test glide the model over tall grass if possible. If properly built, the model will be tail-heavy. Since the wing cannot be moved back and forth for adjustment, a slight amount of downthrust will remove any stall, but if the stall should be severe, add a little weight to the nose. Insert a sliver of wood behind the top of the block for downthrust. Remember occasionally to place a drop of oil on the propeller shaft between the bearing washers.

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- Page 6—Fletcher of "PIC."
- Page 10—International.
- Page 11—Top, British Official Photo; R., British Combine; Bot., British-Combine.
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- Page 23—Second from top by Emery, rest by Brion.
- Page 24—Top, Bond.
- Page 40—Top, Al Daraghy; Upper L., Kulick; Lower L., Al Daraghy; Bot., Al Daraghy.
- Page 47—Al Daraghy.

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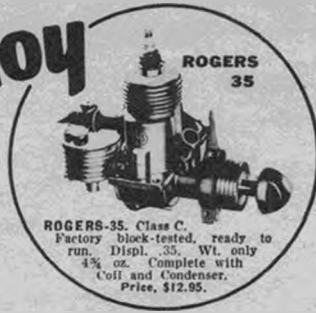
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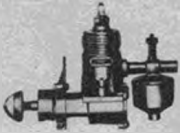


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Sportster

(Continued from page 36)

the rear of the cockpit. In these cases the spaces between the fairing strips should be filled with small pieces of 1/16" balsa strips to support the covering. The positions for the fairing strips are not shown because even the most careful transfer of formers will produce enough inaccuracies to cause many of the positions to be changed.

The individual builder will probably have his own idea of how many fairing strips should be used and the spacing of them. The fuselage section drawing shows the spacing on the original model. Fasten one strip at a time lightly in position on the formers with a few pins and mark its position on each former. (A fountain pen is very good for this and all other markings on balsa.) Remove the strip and cut the 1/8 x 1/16" notches. This matching is best done with a short piece of 1/16 x 1/2" balsa with a narrow strip of very coarse sandpaper cemented to its edge. Use a sawing motion.

The planking on the forward end is of 1/16" medium balsa. It is laid over the formers and flush with the edges of the fairing strips. Cover with as wide strips as possible over the flatter sections. This provides the smoothest and fastest results. Where the curves are sharp use 3/32" or 1/8" soft balsa and narrow planks. The contours around the wing stubs are made by cementing the stub ribs in place and filling in between the formers with 1/8" soft balsa blocks. The leading edge of the stubs are formed last by cementing soft balsa blocks in place and cutting and sanding them to shape when dry.

When the two halves are completed they may be removed from the assembly surface and the inside of the formers cut away as desired. The formers are left solid up to this stage of construction to provide a more substantial frame to work on. When cutting away the formers, keep in mind the stress on each one. F-11 and F-12, for instance, should be left quite strong because of landing gear stress, and F-13 should be left solid because it acts as the firewall. The cut-away portions are only for accessibility, as the weight saved is negligible. F-14 and F-15 may be cut away to about 1/4" to 3/8" to give ample room for the engine. The two halves of the fuselage may then be assembled and the fuselage completed. The nose block is made from laminated sheets of 3/16" or 1/4" hard balsa. Cement these sheets together to form a block of sufficient size and then lightly cement this block to the forward former.

Draw the spinner circle on the front of this block and then carve it to shape. When shaped on the outside, remove it from the fuselage, hollow it only as much as is necessary to clear the engine, and replace it permanently.

The removable sections (above the stabilizer platform and the bottom hatch) are made by cutting the stringers away enough to allow a piece of 1/16" sheet to be inserted next to the adjacent formers. Bring

these removable sections as near to completion as possible before cutting from the fuselage. This is not only the easiest way to build them, but it insures a good fit. After the bottom hatch is removed, brace F-9, F-10, F-11, and F-12 across the bottom between the lower longerons with 3/16" square strips. The top of the engine cowl is cut away as shown and the top of the firewall is rounded to provide a louver for cooling-air exhaust. The rear of the cowl is also cut away to a thin edge to provide as free an airflow as possible.

The landing gear is bent as shown from 1/8" diameter piano wire. Make the center bends first, slip sections of aluminum tubing over the wire, and complete the bending. Bind the landing gear to the two lower 3/16" square longerons. Bind only over the aluminum tubing. Scratching the tubing with coarse sandpaper will give the cement a better hold on it. It will be necessary to cut away a small portion of the planking to bind the landing gear, but this can be easily replaced by inserting a piece of 1/8" sheet and sanding it to fit. The landing gear fairing may be added later. This is made from heavy drawing paper wrapped around brass or tin ribs soldered to the piano wire. Several thicknesses of the paper may be used if necessary to acquire the desired strength. The fairings should fit loosely to allow the landing gear legs to flex; and when crushed or crumpled they may be easily replaced. Rubber cement makes a good adhesive with which to replace fairings. It is well to have some material, already painted, handy for quick replacement.

The tail wheel on the original model was a rubber-tired wooden wheel from a toy automobile. Its U-shaped axle is cemented to the 1/16" planking on each side of the tail-wheel cavity. The lower cooling-air exhaust louvers are made by cutting through the cowl and into the firewall as shown. Bend the cardboard to shape for the air scoops and cement in place. The rectangular louver plate may be made from thin aluminum. Cut parallel slots in the sheet and bend the louvers with a pair of flat-nosed pliers; then cement in place. The tubes for the wing shear pins are made from aluminum tubing. On the original model a match stick would fit very snugly into the tubing used. This is suggested, because a good source of shear pins is always available. Roughen the tubing with sandpaper and insert in drilled holes in the indicated positions. Use plenty of cement. Cut the holes under the shear pin tubes to allow for the wing mounting rubber bands.

The former at the forward end of the cockpit is used as a template in bending a wire windshield frame. The former may then be cut away and replaced by the wire. The cockpit cover is cemented in place and then the windshield is added. Although a template is provided for the windshield, natural structural variations will make it necessary to fit the



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ENGINE INSTALLATION

The engine mounting is quite unusual. Although the builder may use any kind of engine mount he wishes, the one described has proved very satisfactory and convenient. The engine used in the original model was also often used in another model. The mount consists of a skid to which the engine is bolted securely. The skid is made from two thicknesses of 1/8" mahogany or birch plywood cemented together. The dimensions are determined by the engine to be used. This skid also holds the gas tank and condenser. It is supported in three places in the engine compartment. It is held in place by four heavy wire hooks that are spring-mounted to the inside of the engine compartment. The two forward hooks are of 1/16" diameter piano wire and are hooked directly over the mounting flanges of the engine. Small drill spots in the flanges will keep the hooks in place. The rear hooks are of about 5/64" diameter hard brass wire or brazing rod. They hook into small brass plates mounted on each side of the engine skid.

The ignition wires from the fuse-lage are soldered to the brass plates. Upon installing the engine in a plane the ignition system is completely hooked up when these two hooks are in place. All four of the engine mount springs are attached to wire loops bent as shown and securely cemented to the bottom of the engine compartment. The best positions of the hooks will vary for different engines installed. The chock blocks upon which the engine skid rests should be made from very hard balsa and securely cemented in place. Plastic wood is used to fillet in the blocks. (Use moistened fingers or tools when applying plastic wood.) When the chock blocks are dry the engine skid may be fitted into place. The engine should be mounted to the skid with the line of thrust parallel to the skid edges. All variations in the thrust line should be made in the skid mounting, and it will always be the same no matter how often the engine is removed. The skid is fitted into place by laying a layer of plastic wood over the chock block, moistening the contacting portions of the skid to prevent adhesion, and then pressing the skid into position. Remove it immediately and allow the plastic wood to dry. Several coats of thinned cement will add to the strength of the chock blocks. When all dry the skid will fit snugly into position. Later, if desired, the thrust line may be changed by cutting or building up the rear chock block. Cut any necessary holes in the cowling to allow for the engine controls and gas tank. Some builders may find it advisable to cut a hole in the bottom of the cowling for the removal of the spark plug with a socket wrench. Give the entire inside of the engine compartment several coats of shellac.

The spinner is made from disks cut from hard sheet balsa and cemented together as shown. It is made in two

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parts; the back section is clamped between the drive plate and the prop hub, and the spinner cap is fastened with two wood screws to the sides of the prop hub. After having built quite a few spinners, I found this method most satisfactory because it can be rapidly adapted to any propeller.

WINGS

In building the wings, first lay out a spar line and then rib position lines at right angles to it. No further layout is necessary. Cut out the leading and trailing edges and the tip and root rib. Lay these in their correct positions on the drawn position lines. By using the chord dimensions and by carefully cutting the edges, the wing can be built quite accurately. Assemble the edges of the wing first. See that the joints are good fits; this may be done with a sand block. Use two applications of cement; the first should be of thinned cement and allowed to dry without assembling the parts. (This extra penetration will provide a much stronger joint.)

When the edges are assembled but still unshaped in section, the rest of the wing is built. The lower cap strips are straight pieces and are laid flat. The spar is placed in position on these strips and then the upper cap strips and false ribs are added. The upper cap strips and false ribs are cut from medium 1/16" sheet quarter-grained balsa by cutting along the edge of an aluminum rib template with a razor blade or knife. After making each cut, move the template down 5/32" and make another cut. Mark the position of the spar on each strip. The false ribs can be cut with the same template by merely using that portion forward of the spar position's mark. In assembling these upper cap strips a little judgment is required to turn out the best airfoil; trim the ribs at both the leading and trailing edges and always place them so that the spar position mark is always directly over the spar. The cap strips need only be held in place at present with a small amount of cement, as all joints are recemented later. The auxiliary spar is a strip of soft 1/16" sheet about 3/8" wide. It is intended to provide a little rigidity to the wings and also to brace the ribs. Slip it in between the cap strips and push it back until it contacts both the top and bottom strips, then cement it in position. It will form a curve much like that shown in the drawing.

When the cement is dry the wing may be shaped. Trim the edges roughly with a knife and finish the entire wing with a sandpaper block. Work it lightly over the ribs and edges until the joints and contours are smooth. When the shape is satisfactory, every joint in the wing should be gone over at least once with thinned cement. By using a brush this may be done quite rapidly. Apply at least two coats of cement to the leading and trailing edge joints. Joints made in this manner provide a maximum of strength, and if the cement has been thinned sufficiently they will not show through the covering. Locate the positions for the wing peg tubes in the root ribs. Drill

holes and insert one-half-inch sections of aluminum tubing of the same diameter as used in the wing stubs. Make the wing strut fitting by soldering 1/8" lengths of 1/16" diameter brass tubing to 1/8 x 1" strips of brass or tin. Bend these so that they fit over the rib and along the bottom edge of the spar and bind them with linen or silk thread and cement.

The rubber mounting hooks should be bent as shown and securely cemented in place. The wing is held in place by stretching rubber bands from the hooks on one wing, through the holes in the wing stubs, to the hooks on the other wing. Use a long piece of 1/16" diameter piano wire with a tight hook in one end to pull these rubber bands through the fuselage, and stretch them in position.

The wing struts are made from very hard balsa and are streamlined in section. The fitting on the wing end is a piece of piano wire bent and mounted as shown. The free end of the fitting is bent parallel to the wing lower surface to allow the strut to fit closer. The hook in these fittings makes it necessary to twist the strut into position, and then when the other end is fixed the wing end cannot become disconnected. The fuselage end of the strut is provided with a short section of 1/16" diameter aluminum tubing and a rubber hook. The lower fuselage longeron has a similar piece of tubing in it. A common pin, bent to suit, is used in this tubing to hold the strut in position, and rubber bands are stretched from one wing strut hook, under the fuselage longerons to the other wing strut hook. This arrangement for mounting the wings allows a very strong connection that will give in any direction in case of a crack-up.

TAIL SURFACES

The stabilizer construction is very similar to that of the wings. The ends of the spar and the leading and trailing edges are allowed to project a short distance beyond the tip ribs. The fins fit over and are cemented to these projections. This eliminates the typical warping characteristic of this type of fin. As in the wing, the stabilizer is sanded to shape after assembly, and all the joints are recemented. After the dihedral is put in, the center section is covered with soft 1/32" sheet. To hold the stabilizer in place on the fuselage, cement two pieces of piano wire across the underside of the stabilizer platform to act as rubber hooks. Place one under the leading edge and one under the trailing edge, and allow about 3/8" of the ends to project through the fuselage sides. By using 1/4" sections of aluminum tubing in the platform and pegs in the stabilizer, the position of the stabilizer can be made very constant. The section of the fuselage which fits over the stabilizer is finally cemented to the stabilizer, but it is best to hold it in place with pins until the model has been flown and the best angle of incidence decided upon.

COVERING AND FINISHING

The builder may use any kind of covering material he wishes. Bamboo paper was used on the original model because of its toughness; how-

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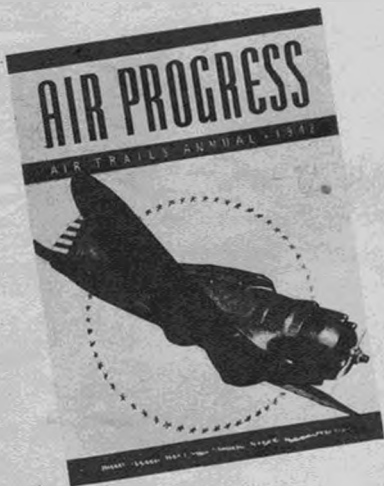
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79 SEVENTH AVENUE, NEW YORK

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ever, its weight and the difficulty of applying it on the curved fuselage are disadvantageous. Use narrow strips of tissue over the wood-covered portions to give them a smooth appearance when doped. Dope the entire model with one coat of clear, and as many coats of colored dope as necessary, to give the desired finish. Sanding with fine sandpaper between coats will improve the surface considerably.

Hobby Mart

(Continued from page 38)

model builder himself (having personally taught nearly 5,000 boys to build airplanes), Irwin Polk, with his wife, Chuddy, faithfully served the requirements of Metropolitan modelers. Polk's policy has been and is, "If it's made and is any good, we've got it!" Every conceivable kit can be found here. Built-up display models make the builder's choice easier. Thirty-five different gas engines and every part for replacements are stored in "Polk's Drawers." While model airplanes are the personal favorites of the Polk brothers (Irwin being the founder of the Bamberger Aero Club in Newark, N. J., which both brothers directed, and the director of the Junior Birdman Institute) other model-building hobbies are not neglected. Both the model railroad and the ship model departments under the supervision of experts in each field are by far the most complete in the country. An eighty-page ship catalogue gives one an idea of the extent of the stock carried, while future R. R. catalogues are expected to be the most comprehensive in that field.

The present gas-model catalogue is a real digest of the kits and engines available today.

While wholesaling is now the major function of the business, Polk's have a retail store that is the talk of the nation. It not only serves efficiently modelers in the Greater New York area, but through its mail-order department reaches modelers in far-off States and away from the beaten track. The store serves as a showroom and exemplary hobby shop for the many dealers who religiously visit Polk's for ideas in merchandising and displays.

Polk's have a downtown warehouse from which bulk shipments to hobby shops and department stores from coast to coast are dispatched, while a two-story building in Newark contains a dope shop and a modernly equipped balsa shop where Polk's color-graded wood is cut by experts.

The Polk brothers are active in the promotion of model aviation, having founded the Metropolitan Model Airplane Council in New York. Irwin, with Lieut. H. W. Alden, first obtained national recognition for aero modeling through the N. A. A., and has for several years been a vice president of the Academy of Model Aeronautics. He has acted as meet manager for several Nationals, and is also a director of the Model Industry Association.

NATION-WIDE "HITS"

by SCIENTIFIC

FLAGSHIP—Class "C"

- Wingspan—78"
- Wing Area—850 Sq. In.
- Overall Length—44½"

\$5.50



CORONET—Class "A" or "B"

- Wingspan—46¼"
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- Overall Length—30"

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Ensign \$3.50

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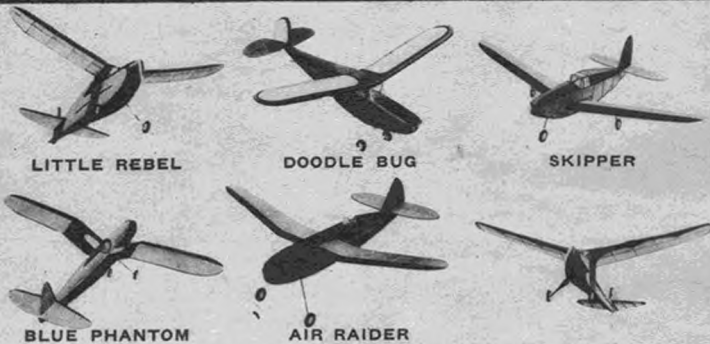
VARSITY—Class "B"

- Wingspan—50"
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25" FLEET OF CHAMPIONS . . 25c



30" DEFENSE SERIES . 95c



CURTISS SB2C-1

BREWSTER 340

CURTISS HAWK P-42

REPUBLIC P-47



ZENITH Soaring Glider
It's A GLIDER and A FLYER!

Complete, easy to build kit includes everything necessary to build both the Glider and the Flyer. Only..... **50c**

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SCIENTIFIC MODEL AIRPLANE CO.

"Gas Model Headquarters"

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"KEEP 'EM FLYING"

with a

SKY CHIEF

NOW \$7.95

FAMOUS FOR
LONGER MOTOR LIFE
and
CHAMPIONSHIP PERFORMANCE

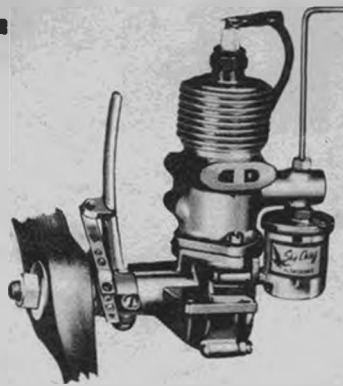
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UNCONDITIONALLY GUARANTEED

Class "C" 1/5 H.P.—Complete with Coil & Condenser

- *Sky Chief "Lightning" 3 ounce Coil
- *Bore $\frac{3}{16}$ ", stroke $\frac{3}{16}$ ", displacement .526
- *R. P. M. up to 13,000 with 13" propeller.
- *All bearings are Diamond-bored and Micro-lapped
- *Weighs approximately 10 ounces with coil and condenser
- *Multiple-finned Cylinder made of Molybdenum Iron
- *Piston centerless-ground and Micro-lapped with PERFECT CIRCLE Piston Ring for longer motor life
- *Heat-treated Crankshaft made of polished-ground steel scientifically balanced.

Not a kit—a completely assembled motor ready to run.



Making Immediate Shipments

American Supercraft Corporation

Union and Lake Streets
Chicago, Illinois, U.S.A.

Voyager

(Continued from page 42)

carve and sand to correct shape. Cement the nose block to the front and carve it to fit. Check constantly with the drawing and templates, to get the correct shape. Cement a large-face bushing on the nose block. Now cut off the nose and saw the engine block down the center. Carve out the inside as shown. Cement a scrap block to the rear of the nose block. Make it fit snugly in the carved-out portion of the engine block. Finish the entire block smooth as you did the landing gear and pants. Add the detail shown.

Carve the prop from a fairly hard block. Shape the blades first; then, using a razor blade, carve the spinner. Add freewheeling and finish smooth.

Now for the tail surface. Cut rudder ribs and spars. Bend tip and trailing edge of aluminum tubing or bamboo. Assemble the rudder and cover the leading edge with $\frac{1}{32}$ " sheet. The stabilizer on the real 105 is plywood-covered, so to simplify the model I used $\frac{1}{8}$ " soft sheet for the stabilizer, sanded to a streamline shape and covered with tissue. Scale and flying outlines are shown.

For the wing, make a metal template of the longest rib. Cut the required number of ribs, cutting slots for the leading edges and spars. Cut the odd-sized spars from sheet balsa. I used bamboo tips, but $\frac{1}{16}$ " aluminum tubing or balsa may be used. The wing spars should project a quarter-inch or so from the end ribs. These fit in the slots on the ribs built into the fuselage, assuring perfect wing alignment. When wing framework is finished, cut away the leading edge and insert the carved slot. When thoroughly dry, sand the entire framework smooth. Movable ailerons and flaps may be added, if you wish.

notice that the dope is rubbing off in spots. Wipe the surfaces clean and apply several more coats of thin dope, until all parts are evenly colored and smooth as glass. Give it another rubdown. As many as twenty coats may be applied to the fuselage and wood parts. Be careful when rubbing the wings and tail—don't go through. Decorations and detail may be applied with thinned colored dope flowed on with a ruling pen. By rubbing talcum powder into the surface, India ink will stick, but must be coated with clear dope. Windows are .005 celluloid. The edges of the windshield are $\frac{1}{16}$ " wide strips of celluloid painted and cemented in place. A strip of celluloid $\frac{3}{8}$ " wide may be painted and carefully cemented over each fuselage wing junction, on top. The real ship has a metal strip over this junction.

In assembling, attach wing to the fuselage. The spar ends fit in the slots cut in the center section. Cut the wing struts to correct length and cement in place. Cement the stabilizer in place, at 0° to the thrust line. Attach the rudder and cut silk to fit the fillet shape. Apply it wet, pulling out all wrinkles. Dope and paint the fillet. Finish as you did the other parts. Cement the engine block in place. Make up a rubber motor of six or eight strands of $\frac{3}{16}$ " brown rubber, well lubed, and bind it to the prop shaft and rear hook. A small opening may be cut at the rear of the fuselage to permit changing the rubber motor. To keep the finish from getting dull use any wax in paste form, applied with a soft rag and rubbed to a high gloss. This should only be done on the completed model, because the wax may retard the drying of any cement or dope that may be necessary in assembly.

COVERING AND FINISHING

Use any material desired. I used light silk on the fuselage, and hakone tissue on the wing and tail. Apply the covering carefully. Don't allow it to touch anything but longerons, stringers, wing ribs and tips. Spray with water and apply thin clear dope until all pores are filled. Sand lightly with 10/0 and dope again. If you are not sure of the pores in the covering or wood parts being properly filled, give them a light coat of colored dope. When dry, it will show where fill-in is needed.

Now for that super finish. Don't rush the job. Use Berryloid regular pigmented dope. I used Stearman vermilion trimmed with black, but any color scheme will do. Thin the dope slightly, then apply three coats to wings and tail, seven or eight coats to fuselage and wood parts, letting each coat dry before applying the next. Check to see if all pores in wood and covering are closed.

Now sand lightly with wet or dry sandpaper, wetting the surface occasionally. Wipe clean and apply auto rubbing compound with a soft rag. Do this slowly and wet the surface occasionally. When all parts take on a smooth luster, you will

You may have noticed that I omitted much of the usual instruction, but I'm taking it for granted that you can "wish" some parts to their proper shape, the idea being to keep working on the particular part until you are satisfied it is right and that it conforms to the drawing.

Adjust and fly the model in the usual manner. Test hopping can be done safely in tall grass on a calm day. Good luck!

LIST OF MATERIALS

- 1 pc. $3\frac{1}{2} \times 3 \times 3\frac{1}{4}$ " for nose block
- 1 pc. $1 \times 1\frac{1}{2} \times 8$ " prop block for flying prop
- 1 sheet $\frac{1}{8} \times 2 \times 36$ " soft balsa for wheel pants, planking
- 1 sheet $\frac{3}{32} \times 2 \times 36$ " very soft, for planking, et cetera
- 6 pcs. $\frac{1}{8}$ sq. $\times 36$ ", longerons, leading edge
- 1 sheet $\frac{1}{16} \times 2 \times 18$ " hard, to strip for wing spars, stringing rudder spars, et cetera
- 2 pcs. $\frac{1}{16} \times \frac{1}{8} \times 36$ ", fuselage uprights, et cetera
- 1 pc. bamboo and 18" of $\frac{1}{16}$ " O. D. aluminum tubing
- Various scrap blocks of balsa
- 1 sheet $\frac{1}{16} \times 2 \times 36$ " soft, rib, formers, et cetera
- Iron wire for control hinges



RYAN STM-2

Contains floats and wheels to build Navy or Army version of this famous trainer.

RYAN STM-2

Precise adaptations of authentic plans as furnished by the makers of this real plane! The ONLY kit of this plane available to modelers.

Easy to Construct from

GIANT SIZE BLUE PRINT WORKING PLANS

last details! Cut-to-outline shape wings, fuselage, tail surfaces, Alum. coils (weights specified) liquid, wheels, insignias, etc. Specify model wanted.

Kits are complete, down to nuts and bolts!

Complete Kit

\$1.50

NOTHING ELSE TO BUY!

METAL COVERED MODELS

Deluxe kits ready soon—at your dealer—or direct.

BURKARD GIANT SOLIDS

Choice of 12 "in the war" news FIGHTERS - BOMBERS

RYAN STM-2 (illus.)	STUKA Dive Bomber
New Airacobra	Hurricane
Curtiss P-40	Spitfire
Messerschmitt	Glenair Scoutlet
Curtiss Hawk	Boulton Debonair
Grumman F3F-2	North American

BURKARD Model Engineering Co.
Dept. AT Larchmont, N. Y.

4 GREAT OHLSSONS

Precision engineered for performance that has made them the motors of champions.

IMMEDIATE DELIVERY

"19"



\$14.50

"23"



\$16.50

"60" SPECIAL



\$18.50

"60" CUSTOM



\$21.50

ORDER YOURS TODAY

NO WAITING OR DELAY. MOTORS SHIPPED SAME DAY ORDER IS RECEIVED.

Dealers write.

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FREE FOR MEN OR WOMEN—A BEAUTIFUL LINK BRACELET WITH INSIGNIA AND SECRET COMPARTMENT.

Here's the very latest news in jewelry! Both men and women are eagerly buying these lovely bracelets in gold-plated or rhodium finish. They are of heavy link design, with a plaque in the center on which you may have your choice of insignia—army, navy, marine, infantry, air corps, signal corps, etc. Price them in the stores and see what their real value is!

The plaque opens to reveal a place for a picture. Men, you can carry your favorite snapshot with you—of your mother, sister or sweetheart. Girls, here's the place for his picture while he's away at camp. This bracelet would make an ideal gift for a man in the service—and a perfect present for those at home. It's yours—with just a year's subscription to Air Trails.

Don't delay—to get this bracelet absolutely free, simply fill in the coupon below.

This offer good in U. S. only.

★ ★ ★ ★ ★

AIR TRAILS
79 SEVENTH AVENUE, NEW YORK CITY

Inclosed is \$1.50 for a year's subscription to Air Trails. I understand you will also send me, free, the bracelet containing my choice of insignia. (Mark: a b c d e f)

NAME

ADDRESS

CITY STATE

- .005 celluloid for windows
- $\frac{3}{16}$ " brown rubber
- 3" rubber tubing for hooks
- Silk and tissue for covering
- 1 large-face bushing
- $3\frac{1}{4}$ " O. D. copper washers
- 1 pr. $1\frac{1}{4}$ " balloon wheels
- 2 ft. No. 12 wire
- 8 oz. Berryloid pigmented dope (optional)
- 6 oz. clear dope
- 2 oz. cement
- 6 oz. thinner
- Black dope for trim
- Wet or dry sandpaper, fine
- Various other grades of sandpaper
- Auto rubbing compound, wax

Down The Runway

(Continued from page 40)

The Academy bows deeply to Mr. E. for his much-appreciated comment and introduces for the applause the Chicago Park District and the Chicago Times, whose staffs made the 14th Nationals the best ever.

★ ★ ★

Probably few activities receive the publicity that model aviation activity is accorded by the press and radio. Organized enthusiasm comes in for the most play, of course. Of all the full-page "spreads" we've seen in the roto sections on aeromodelling, we award our own first prize to the Philadelphia Inquirer for a full page of color shots taken at a Quaker City meet this summer. The colorful models made a very effective front page for the Inquirer's "Picture Parade," and the best of these splendid photos was one of Viola Gutekunst holding a yellow-and-white model while wearing polka-dotted blue slacks and a Bustleton-unit Quaker City Club white insignia blouse.

Fashion catches up with the model builders!

★ ★ ★

Latest news from up North is the establishment of the Air Cadets of Canada, a sort of boy scout-aviation movement designed to inculcate into the youth of Canada a knowledge and love of flying. With smart uniforms and aviation-study programs, the Air Cadets are already under way. Back home, it is reported that the boy scouts have finally licked antiflying sentiment in their own leadership and may soon embark on a model and full-scale aviation program in a big way.

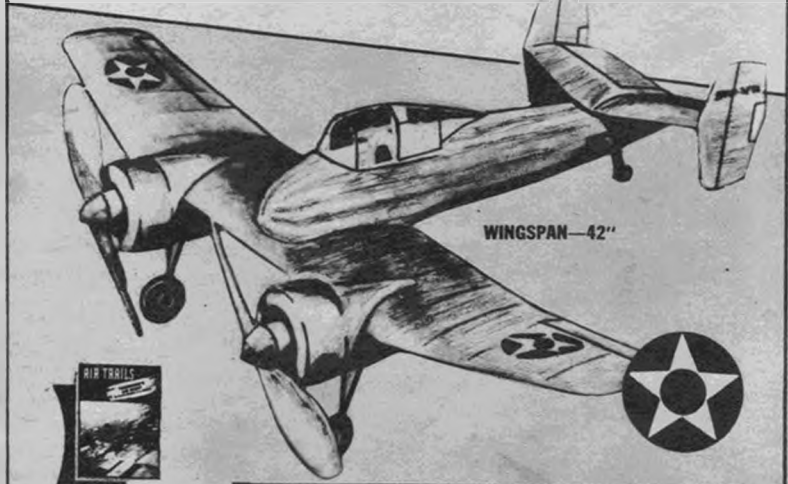
The Canadian Air Cadets are not to be confused with Maurice Roddy's Air Cadets of America, although both are utilizing models to interest youngsters in full-scale aviation.

★ ★ ★

We promised that we wouldn't be lengthy this month, but before we close we can't help passing on the information that a number of flying schools such as Parks Air College have a surprisingly large number of ex and active modelers among their students. The A. M. A.'s slogan for the month goes "Keep 'Em Flying" one better. Our aim: "Start 'Em Flying."



Grumman SKYROCKET



Above model of the famous Grumman Skyrocket was featured in double-page spread in the SEPTEMBER, 1941 issue of AIR TRAILS.

TWIN-MOTOR 450 M.P.H. NAVAL TERROR

THE GRUMMAN SKYROCKET—A ship that attains a top speed of 450 m.s.h. . . . climbs 6,000 ft. per minute and declines to be the most heavily armed fighter in the world . . . that's the plane Sid Struhl followed in designing the exact flying scale model. Model has 42" wingspan. Its twin props give it terrific climb. No torque. The double propellers revolving in opposite direction assure tremendous stability. 2-minute flights are accomplished with ease in clam air.

KIT CONTAINS: Full-size plans, Printed sheets (ribs bulk-head), Silkspan covering, 2 finished balsa props, Prop spinners, Esignia, Calfeld, Wheels, Wire, Liquid, Cement, Dopes, Etc.

\$1.50

ATTENTION! Jobbers, Dealers, Distributors. Write on letter-head for details on our complete line of kits & supplies—10c to \$3.

FLYING H & F LINE

SEND FOR CATALOG NEW **5c**

	ROCKETEER "A"	GAS—Sensational contest winner. Wingspan—40". Class A or B. For Bantam, Ohlsen 19 or 23. KIT: Full-size plans, Stream-lite wheels, Silkspan, Printed sheets, Formed landing gear, Semi-F prop.	\$2.95
	JIFFY	GAS—36" Class "A" ship. For Alam, Parky, etc. Full-size plans. \$1.00 Standard KIT: Silkspan, Balsa wheels, Formed gear, Liquid. \$1.50 Deluxe KIT: Silkspan, Fin. prop, Stream-lite, Cement & Dopes.	\$1.00 \$1.50
	BEE	GAS—Contest winner that has developed into 1941's biggest seller. COMPLETE KIT: Full-size plans, Carved prop, Formed landing gear, Silkspan, Printed wooden parts, Stream-lite wheels, Cement & Dopes.	\$1.95
	STREAM-LITE WHEELS	Ultra-streamlined sponge rubber wheels centered with hardwood hubs. Fits all ships, blow-out proof.	40c PAIR 50c PAIR
	50-INCH MODELS	RUBBER—Modern 50-inch flyers. KIT: Alum. cowl or spinner as needed, Full size plans, printed sh., land. gear, contest rubber, Balsa prop, Thinners, etc. STINSON "105", MR. MULLIGAN, RYAN ST.—\$1.99 EACH	\$1.

H & F MODEL AIRPLANE CO.
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DEALERS: Brooklyn Novelty, 2264 Bedford Ave., Brooklyn—Austin-Crafts, Burbank, Cal. Summers Hobby Service, 929 Milwaukee Ave., Chicago.

Called "LIGHTNING"
by
the R.A.F.

\$1.95
By mail postage
15c extra

**Sensational NEW
MEGOW MODEL
LOCKHEED Interceptor**

Interest today is focused on the warplanes, and as usual, Megow is far out in the lead with a big new 50-inch flying model of the fastest, most terrific fighting plane the world has ever known . . . the 2,200 h.p. American LOCKHEED INTERCEPTOR!

Called "Lightning" by the British, this radically different warplane is making history in Europe today, and every model builder who wants something "different" will want this new Megow Kit. Get one today and show the fellows that you know your warplanes. Kit includes lifelike pictures in detail, full-size plans and the super quality materials found in all Megow kits. Ask for it at your dealer's. If he cannot supply you, send your order direct to us.

Send 15c postage for the big new 1942 Megow Hobbycraft Catalog just out, and for special information on all Megow warplanes.

Megow

Dept. A T. Howard & Oxford Sts., Phila., Pa. or 217 N. Desplaines St., Chicago, Ill.

WORLD'S LARGEST
MANUFACTURER AND DISTRIBUTOR
OF MODEL AIRPLANES
SHIPS AND RAILROADS

"Don't Quote Me!"

(Continued from page 38)

ing their orders now for future deliveries.

The National Retail Dry Goods Association is publishing a manual for its member stores, "Making Profits out of Hobbies," which will show how to install, operate and promote a hobby shop. The manual is being prepared with the co-operation of the Model Industry Association. It is hoped that by the means of this manual many department stores will become interested in conducting a hobby department, thus widening greatly the distribution of hobby materials and providing the means for many hobbyists to carry on their activity by obtaining a source of supply where there was none before. This sort of competition should make hobby-shop owners perk up, dress up their stores and polish up their service.

Franklin Butler, secretary of the Model Industry Association, is moving his office from New York back to Chicago. The Model Industry Association board of directors' meeting will be held September 27th and 28th in Pittsburgh, Pa. Plans for proposed model-hobby trade exhibit to be held during the New York Toy Fair will be discussed. It is planned that an executive committee meeting of the Academy of Model Aeronautics be held at the same time.

The world's fastest model airplane is what Victor Stanzel & Co. call their new Super "G" Shark, which features an entirely new wrinkle in control-line flying. But let Stanzel himself tell you about it. We quote from a recent letter: "First, however, we would like to give you a little dope on Super 'G' Line Flying, our new directional control system. This is something entirely new in

movable elevator control for gas-powered models. It is especially designed for Super speed flying and stunting, yet it is so simple in construction and operation that even the beginner will experience no trouble mastering it. . . . Getting back to the Super 'G' Shark, this little super speedster has a wing span of only 24" and may be powered with any Class B or C motor, Class C motors, such as the Ohlsson "60" and Super Cyclone preferably. Test models of this new ship have thundered through space at the unbelievable speed of over 100 m. p. h. Its remarkable maneuverability and ease of control allows for hair-raising stunts in absolute safety. The new Super 'G' Shark Construction Kit will retail at only \$3.95 complete."

Cannon Manufacturing Co., 1561 East 17th St., Cleveland, Ohio, sends us a very impressive and comprehensive leaflet on the Cannon motors (Class B with .299 cubic-inch displacement at \$16.50 and Class C with .598 at \$18.50). Jack Liendecker won Senior Class C at '40 Nationals using a Cannon, then followed up by taking the same event at the Scripps Howard races in Akron. The Cannon is a development of the DeLong and Steele custom-built engines of a few years ago. Chief engineer is old-timer Mr. DeLong, said to rank among leaders in design in the internal-combustion field. Interesting features include a special sand-cast crankcase which is stronger, and a thirty-five percent to fifty percent improvement in crankcase cooling, an extremely high-compression ratio, replaceable cylinder liner and replaceable bronze main bearing.

We hear that Pioneer Brown will introduce a high-quality coil in the

**MODEL CRAFT'S NEW SCALE-TYPE GAS MODEL THAT
WILL FLY AGAINST PEDESTAL-TYPE SHIPS!**

So perfectly balanced that you have to carry the BEST BATTERY on the market to bring the weight up to 8 oz. per sq. ft. a Westwind (for Class B or any small Class C engine) is nevertheless as STRONG as any gas model ever built. Like all Modelcraft models it is easy to build from complete, well-made kit. Order from your dealer or the West's \$3.85 Largest Model Supply House. Price.

The trend is to real DESIGN in gas models . . . away from mere contest "fraks". For years some "experts" have been saying that you couldn't get high performance in a cabin-type airplane. However, Modelcraft designers have been more interested in finding out what COULD BE DONE. After exhaustive test-flights, we announce the new "Westwind", a true "aviator's model", with scientifically slotted wings . . . and performance that challenges any pedestal model on the field.

MODEL CRAFT 7308 S. VERMONT AVE • LOS ANGELES, CALIF.



About the SOLO CLUB and how to become a member

Feeling that there is a definite need for a means of recognizing those pilots who have experienced the supreme thrill of their first adventure alone into the blue on man-made wings, Air Trails has formulated and founded the SOLO CLUB.

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

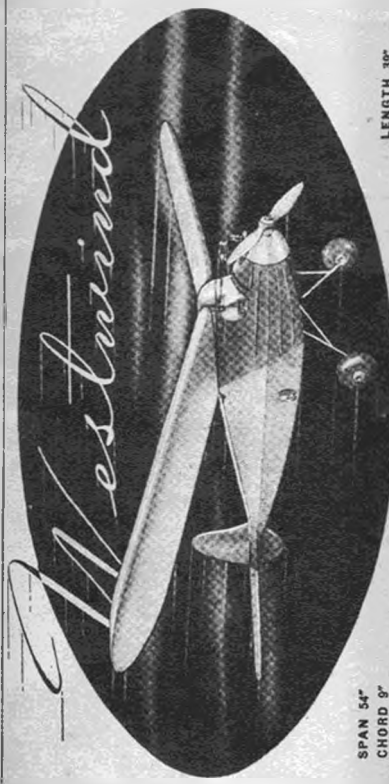
To obtain your sterling silver SOLO CLUB lapel wings and life membership identification card, comply with any of the following requirements and sign. Send with fifty cents to the SOLO CLUB, Membership Committee, Air Trails, 79 Seventh Ave., New York, N. Y.

Proof of Qualification as a SOLO CLUB Member

1. Dept. of Commerce license and number if held.
 2. F. A. I. license and number if held.
- Or attach any of the following:
3. Evidence of military or naval air-corps service.
 4. A letter from your instructor testifying to your solo flight, giving his rating and license number.
 5. A notarized statement, preferably with witnesses, giving all details and data of solo flight and plane used.

In submitting the above for membership in the SOLO CLUB, I certify my willingness for the Membership Committee to investigate my application.

Applicant.....Age.....
(please print)
Street.....City or Town.....State.....



near future. . . Ritz Propellers have added a Handy Andy line of 10-cent tools, including a neat refillable sandpaper block, a tiny hand saw with a wood handle and a hack-saw-type blade to be used for field repairs, and a small wood plane with a razor-blade-type cutting edge. . . Ritz Props used by American Junior

in Fireball tests did over 90 m. p. h. . . H. & F. is now sending advance trade notices to dealers. . . Ben Spotts reports that as a result of his recent write-up in Air Trails he was deluged with orders and inquiries including new business from fourteen States not heard from before.

Something New In Hand-Launched Gliders

(Continued from page 40)

wings (making sure they are glued in proper position under wing). Next step is the stabilizer and rudders. Trace these patterns on a sheet of $\frac{1}{16}$ " medium-hard balsa and sand to airfoil section as on plan. Rudders and stabilizer are polished like the wings. The stabilizer is glued in place on top of the booms, and the rudders are glued on the sides of booms. Make sure the stabilizer is set at zero degrees incidence. When ship is finished, wax the whole plane and it is ready to fly.

FLYING AND ADJUSTING

Take the ship out to your favorite flying spot and test-glide it, adding clay to the nose to balance it. When you obtain a long flat glide, give the

ship a heave into the air and watch it soar around. For best launching, put one finger behind the left wing, gripping body with thumb and middle finger, and throw into the air, giving the ship a little bank. A higher altitude may be obtained by taking a little clay off nose and adding a little positive to stabilizer. Well, from here on it is all yours, fellows, and lots of luck.

BILL OF MATERIALS

- 1 sheet $1\frac{3}{8}$ x 3 x 12" for wings
- 1 piece $\frac{3}{10}$ x 1 x 7" for body
- 1 piece $\frac{1}{4}$ x $\frac{1}{4}$ x 12" for booms
- 1 sheet $\frac{1}{10}$ x 2 x 12" for stabilizer and rudders
- 1 ounce glue
- 1 ounce dope or glider polish

Should The Rules Be Changed?

(Continued from page 46)

By glancing over the chart, we can readily see the required weight for the models using engines of the most popular displacements. Today the rules require 80 ounces of weight for every cubic inch of motor displacement. It was suggested by the country's leading modelers that 100 ounces of weight for every cubic inch of motor displacement be adopted. This would prevent, to a great extent, the type of model that tips upstairs and sometimes leaves part of it behind. This power-loading requirement will tend to give a medium fast climb with a greater safety factor. The 90 ounces of

weight for every cubic inch of motor displacement is the other alternative in this phase, but does not help or prevent in the loss or wrecking of our models to any large extent. So, after considering and reconsidering it may be suggested that the 100 ounces of weight requirement for every cubic inch of motor displacement be adopted.

2. Raising the wing loadings. The phase of model flying most often discussed is usually wing loadings. Arguments always take place on the advantage and disadvantage of higher wing loadings. It is time that arguments be turned into action to

Statement of the Ownership, Management, etc., required by the Acts of Congress of August 24, 1912, and March 3, 1933, of Air Trails, published monthly, at New York, N. Y., for October 1, 1941.

State of New York, County of New York (ss.)

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared H. W. Ralston, who, having been duly sworn according to law, deposes and says that he is Vice President of Street & Smith Publications, Inc., publishers of Air Trails, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publishers, Street & Smith Publications, Inc., 79-89 Seventh Avenue, New York, N. Y.; editor, C. B. Colby, 79 Seventh Avenue, New York, N. Y.; managing editors, none; business managers, none.

2. That the owners are: Street & Smith Publications, Inc., 79-89 Seventh Avenue, New York, N. Y., a corporation owned through stock holdings by Ormond V. Gould, 89 Seventh Avenue, New York, N. Y., Gerald H. Smith, 89 Seventh Ave-

nue., New York, N. Y.; Estate of Ormond G. Smith, 89 Seventh Avenue, New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

H. W. RALSTON, Vice President, Of Street & Smith Publications, Inc., publishers.

Sworn to and subscribed before me this 30th day of September, 1941. De Witt C. Van Valkenburgh, Notary Public No 84, New York County. (My commission expires March 30, 1942.)

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World's Finest Detailed Scale Models

restrict the tendencies of our favorite models to hover in the clouds and forget their homing instincts.

Eight ounces of wing loading for every square foot of wing area was the most popular loading in years past because we enjoyed seeing our models glide slowly and bounce around in those slight ground risers. Today it is not too surprising to learn that we have improved over the past six to eight years when this loading was adopted. Today, our models climb much faster than they did six years ago, and because of their greater efficiency and the inherent dynamic soaring characteristics of most models, we can outglide ships of that day. The time seems to be on hand at last to raise the wing loadings.

It has also been suggested by leading modelers that 10, or better yet, 12 ounces of wing loading be adopted for 1942. Twelve ounces seems mighty high for most models, but if most builders calculate the wing loadings that they fly with, they would be surprised to learn that they have been flying with nearly 10 ounces, and some with 11 or 12 ounces. When we first build a model it is finished quite light, and has usually as hoped for, an 8 or 9 ounce wing loading; the testing period adds a few ounces because of oil soaking and slight repairs, and then our models are 10 or maybe 11 ounces loaded per square foot. That is a fact.

Theoretically, a smaller chord on an airfoil is proportionately less efficient. Class C models will not be handicapped as greatly as Class B, and not as great as Class A models if a heavier wing loading is adopted. Because of the smaller size of a Class A model, the efficiency throughout is not as high as a larger class of model.

Realizing this fact, it was suggested that 9 ounces wing loading be adopted for Class A models, 10 ounces for Class B models, and 11 ounces for Class C models. The effect on each class of model today will not be great, but these loadings will tend to decrease the size of the future models for the engine used.

Decreasing the size or loading the models more will prevent to some extent the soaring characteristics of most models and is a step closer to our goal.

3. Shortening the motor run. Five years ago we started flying with 45 seconds engine run, then four years ago with 30 seconds; then 20 seconds, and today still 20 seconds. Nowadays 20 seconds seems too long a period of time, but if lower power loadings are adopted and proportionately heavier wing loadings, a 20-second engine run would be satisfactory since our models would not climb quite as fast and not soar as much. Although 15 seconds was also suggested by these modelers, it was only done so as an alternative if the power and wing loadings were to remain the same. If these suggested loadings are adopted we may disregard the shortening of the motor run.

4. Allowing one hand only, guidance on a wing tip. With the inadequate take-off facilities at the majority of the contests throughout the country, many models have been wrecked and damaged during the take-off procedure. Because of the varying flight conditions and the many poor flying fields some builders must content themselves with the take-off rules should either be abolished and hand launching permitted universally, or allow one-hand guidance on a wing tip. There cannot be any in-between. Last year the

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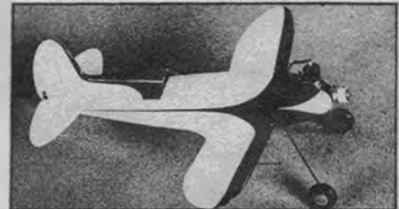


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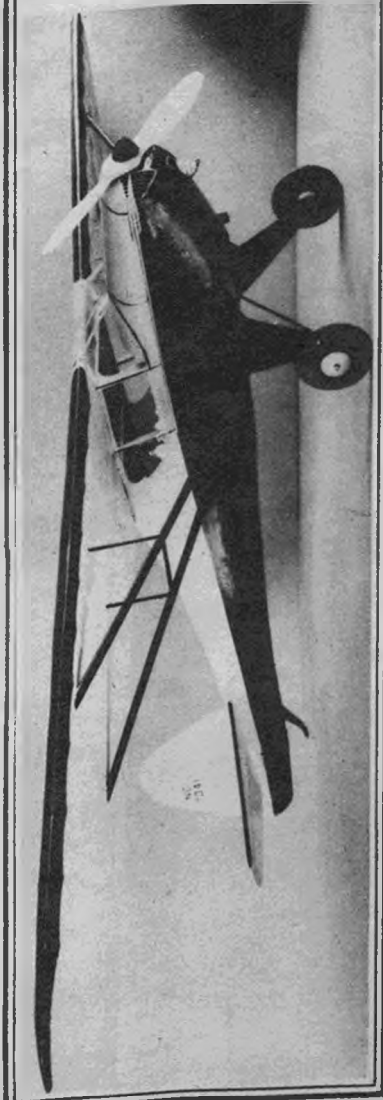
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must start from a standstill under its own power without any assistance. Without doubt this phase of the gas model rules has created the greatest dissension between contest directors and contestants.

At almost every contest, inadequate take-off facilities are prevalent. We either must specify a definite size and type runway and strictly enforce it, or do away with the no-assistance restriction. It is almost an impossibility for the average contest flier to get his ship off the average runway at an average contest—without some assistance. Suggested was one-hand guidance or assistance on a wing tip—which would definitely increase competition by allowing every model to get into the air at a contest instead of just a few. It is the opinion of these modelers and myself that the purpose of the unassisted take-off procedure was to simulate real flight. Do we simulate real flight to any degree? Only in the sense of the word "flight" and not much more. Our models today look less like a real craft than they ever have, and yet fly more efficiently in respect to climbing ability, stability and soaring characteristics—simply because our rules demand these characteristics, whereas real aircraft fly under entirely different conditions.

Modelers today when sport flying almost always fly from a hand launch simply because they realize that it is safer, yet many of them advocate unassisted take-offs for contests. Why? At contests more than at any other time do we want safety. Once model flying is branded unsafe it will surely be outlawed.

One-hand assistance or guidance would allow every builder a better

fly or no wind. One-hand assistance on the wing tip means just that—no pushing on the tail, fuselage, wing or any other part. One-hand assistance on a wing tip will not favor some planes and builders more than others. If a modeler cares to toss his model with one hand on a wing tip he cannot do much to boost his flight time by his assisted acceleration. This rule if adopted would decrease the total crashes due to a part of the model striking the ground, grass or any other obstruction.

5. Creating another gas model category. Gas models have flown in competition throughout the country in endurance events only. Rubber-powered model builders have several different categories which they can build for and fly in, but gas model builders have only one—endurance. Speed flights were proven possible using Jim Walker's U-control method. Scale model flights have been proven practical in California, as has precision flying. Weight lifting has been proven interesting in the East. Why couldn't we create new categories for some of these types of flying? As an example, speed flying by U-Control or any other similar method doesn't need a large field. This type of flying is quite safe because of its controlled flight path. I believe new categories for some other types of models besides endurance should be adopted. (If we are trying to simulate real flight, let's build speed jobs and learn what makes 'em fly faster.)

These expressed opinions have been made by worthy builders and leaders in the model aviation field and merit your consideration for next year's contest flying rules.

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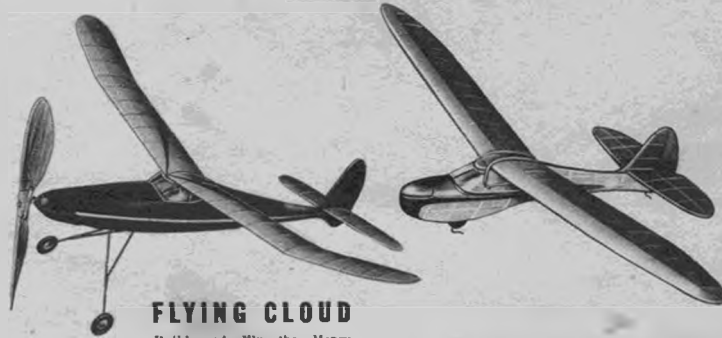
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BAKERSFIELD, CALIFORNIA CONTEST

NAME	TIME	PLANE
Joe Menezes	2030 Sec.	Zipper
Ted Gillette	1143 "	"
Curtiss Dugan	1017 "	Mercury
Lester Haskall	900 "	Own
A. L. Buck	510 "	"
Van Tassell	408 "	Zipper
V. Kishue	399 "	Sailplane

LETTER FROM—Chas. VanDyke, Independence, Mo. Gentlemen:

The first time I flew my Mercury was at a Topeka, Kansas contest. On an unofficial flight my plane flew out of sight after eighteen minutes in the air and I had to get a real airplane to find it. Two weeks later, Kansas City held a contest in which around 400 competed. I flew the same plane and won first place. A month later, the Winged Motor Club held a contest in which around 100 took part. I again won first place, my time being 23 minutes. This is the best little gas plane I have ever had and I sincerely want to congratulate you on such a wonderfully designed model as the Mercury.

RESULTS OF San Diego Aeronauts Sixth Annual Southwestern Championship Gas Model Airplane Meet.

- 1st—Walter Hauck, Sailplane, 22 min. 9 sec.
 - 2nd—Ray Acord, Sailplane, 21 min. 22 sec.
 - 3rd—Chas. Koby, Sailplane, 20 min. 49 sec.
 - 4th—Bob White, Zipper, 18 min. 52 sec.
- Seven out of the first ten places went to Comet models.

Richard Pittenger of San Francisco, Calif., established a new national record for Class "C" Jr. event with three flight average of 10 minutes 10.3 seconds, using a Zipper, powered with a Comet "35" motor.

LETTER FROM—Warren Lowe, Contest Director of Brookfield Balsa Bashers, Brookfield, Mo. Gentlemen:

I wish to tell you about the remarkable flights that my fellow club members and myself have been getting from our Comet Zippers. My Zipper is about a year and a half old and is silk covered. In the last 40 flights, I have had 7 thermal out of sight flights. It has stayed up for one hour, 47 minutes, travelling 20 miles. Other thermal times are 45 minutes; 15 minutes; 1 hr. 15 min.; 12 min.; 25 min. and 30 minutes. The ship is powered by an Ohlsson "23", two years old. I recently tried a Forster 29 in it but both times the ship "left the country". The plane weighs 28½ ounces and has really taken a lot of punishment with only slight damage, due to proper design and construction. Several of the other club members have Zippers and Ohlsson "23's" and their flight records are very similar to mine. Some of their times are 45 minutes; 1 hr. 30 minutes, 20 minutes, etc. Here's to Comet for their unequalled success in gas model design and construction.

LETTER FROM—Warren Weible, Defiance, Ohio. Gentlemen:

I think you will be pleased to learn of another victory for your Sailplane. I took first at the Newhio Model Airplane meet held on October 20th at Dayton, Ohio. My first flight was 30 minutes official but the

plane flew 26 minutes more before coming down. With the thermals gone, the plane turned in its next two official times of 4:18 and 4:17, giving a total official time of 38:35. I think that the Sailplane is the best model I've built. My Sailplane was powered by an Ohlsson "60". I would like to know if you are going to come out with a small Sailplane that could be powered by an Ohlsson "19".

Cliff Propst won first in Class "C" in the meet sponsored by the Arrowhead Aeronautics Club with a Sailplane. Time—17 minutes for one flight!

Bobby Davis, Jr. of Atlanta, Georgia, age 15, made the longest official time of 1940 when his Zipper flew 64 minutes on two flights establishing the national record.

LETTER FROM—Wm. A. Mulvoy, So. Norwalk, Conn. Dear Sirs:

After reading all your testimonials about the performance of the Zippers and Sailplanes, I feel that I should tell you about the success I had with the Mercury. I built and flew two this past Summer and in every meet I entered, they outflew all other Class "B" ships, including Ohlsson "23" powered Zippers. On its best flight, it disappeared in the clouds after 36 minutes, using a 13½ second motor run. This flight gave me the national record in Class "B" open. In my estimation, the Comet Mercury is "tops".

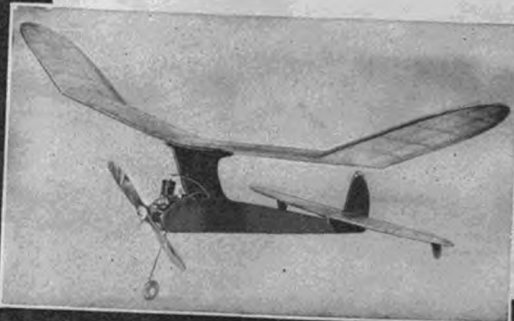


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