Waterman's New Flying Wing

by ROBERT C. LUNCH

A description of the new tailless plane recently devised as a runner-up for the Bureau of Air Commerce project for a $700 sportplane. It has many interesting features well worth studying.

AS the Waterman tailless airplane came to a landing at the Washington, D. C., Airport, at the conclusion of a flight from California, it marked the near end of man's long struggle, since the first days of flying, to find a flivver plane that could be manufactured cheaply enough to let every average working man own and fly one.

The airplane that is destined to fulfill these dreams, it is believed by many, was flown to the capital by John H. Geisse, Chief of the Development Section of the Bureau of Air Commerce, who was making his first transcontinental trip as a pilot. Secretary of Commerce Daniel C. Roper; Assistant Secretary of Commerce J. M. Johnson; Director of Air Commerce Eugene L. Vidal, and other Commerce Department officials, witnessed the arrival of the new craft at the airport, and extended their congratulations to the pilot.

The Waterman, a two-place monoplane, at present is powered by a four-cylinder inverted, air cooled aviation engine of 95 horsepower. Its distinctive feature, of course, is the absence of a tail. Control surfaces are at the trailing edges, and tips of the wings, which sweep back from the nose of the fuselage. It is a pusher, with the engine in the rear, which materially augments visibility forward and down from the pilot's seat.

The undercarriage is of the three wheeled type with the main wheels to the rear, to prevent ground loops and nosing over. It has a top speed of 114 miles per hour. Its simplicity of construction makes the Waterman particularly adaptable to production in quantity with prospects for a low sales price and maintenance cost.

Partly to demonstrate that the craft is one which may be flown cross-country safely and efficiently by an airman of limited experience, Mr. Geisse, a novice as far as present day types of airplanes are concerned, went to California to accept delivery of the ship and fly it to Washington.

The plane left Santa Monica, August 2, and flew by easy stages to Tucson, Arizona; El Paso, Texas; Fort Worth, Texas; Shreveport, Louisiana; Atlanta, Georgia; Winston-Salem, North Carolina; Quantico, Virginia; and thence to the Washington, D. C., Airport.

As the pilot stepped from the plane, he patted its nose, which is the windshield and remarked, "She's a good girl and can't be fooled."

Later on in the day, while in a more formal mood, he said, "The Waterman airplane is almost fool-proof and is very close to being absolutely so. In the

A Few Views of the Waterman Tailless Airplane

The Waterman plane flying over Washington, D. C. This photo clearly shows the wing arrangement and the controls mounted on the wing tips.

A rear view of the Waterman plane showing the engine cowling and landing gear arrangement.

A front view of the Waterman plane shows that it has excellent visual range.

condition in which it was flown from the West Coast, the airplane could not be stalled or spun by any normal or reasonably abnormal use or abuse of the controls."

And that, mild as it may seem, is the reason behind many airplane factory executives, engineers and mechanics walk around wondering when the new low priced planes that anyone can fly is going to put them out of business.

Ever since the Bureau of Air Commerce was founded, it has striven to attain one great end; safety in the air. First, it started on the safety of the passenger planes, then army planes, then private planes. Then it spread to getting more persons to fly. After that it became interested in the personal airplane that could be bought for a few hundred dollars.

The prime factor though, that the Department could not forget for one moment, was generally lacking. That was safety. Either the plane under consideration would not land properly, or it cost too much to build, or something else was wrong with it somewhere.

The autogiro, perhaps, was the nearest thing to the personal plane that the Bureau had seen up until this date. Its main objection however, was its expense. An Autogiro costs approximately two thousand dollars or more unassembled and unshipped.

Another of its objections lay in the storage space or hangar space it required. All reports to the contrary, the point was never reached where the vanes could be folded back with very little trouble and laid along the top of the fuselage. The Waterman overcomes these two undesirable features. It is expected, if mass production ever gets under way, that it will sell for what about a Ford automobile costs today, and will occupy about the same amount of space.

The tailless feature of the airplane offers possibilities of reduction in production costs, and also reduces the hangar space required. By putting the plane into a hangar wing first, or sidewise, a hangar of about 22 foot span can be used. As hangar construction costs mount rapidly with increase in span, this is an important consideration. In the event that roadable airplanes bodies are found practicable, the tailless feature will have an added advantage as only the wings will have to be removed.

Another popular objection to so called "family planes" was the great amount of space they needed to land and take off. Again the autogiro pilots and manufacturers thought it had been solved. But later, and more conclusive tests definitely determined that other, conventionally designed planes, already being turned out in mass production, needed no more room. True, they could not be flown as easily as the autogiro, but they could get off the ground in as much space.

(Concluded on page 336)

The Vought SBU-1 Scout-Bomber

Three-quarter front view of the new Vought SBU-1 Scout-Bomber for use with the U. S. Navy's aircraft carriers.

A NEW scout type bomber for use on the aircraft carriers of the U. S. Navy has recently been produced by the Chance Vought Aircraft Corporation.

This new plane, known as the Vought Type SBU-1, is a biplane equipped with a Twin-Wasp Junior engine of 700 horsepower. Eighty-four of these planes are now under construction at East Hartford, Conn., and it is likely that the order will be completed at an early date.

The engine cowl has adjustable flaps, a new development, and flaps are also provided on the trailing edge of the wing for making slow landings on shipboard. A Hamilton-Standard controllable pitch propeller is employed which improves the takeoff and climb.

Front elevation of the Vought SBU-1 Scout-Bomber showing the trailing edge flaps depressed.

More Upheaval Concerning the $700 Plane

WHEN the $700 lightplane project was first launched by the Bureau of Commerce under the direction of Eugene Vidal, POPULAR AVIATION violently protested this move in the "Airy Chat" and elsewhere. But that howl was to prove one of the forgotten incidents of history.

And now, arises a violent and virulent howl from another direction that is becoming overwhelming in its intensity. Our engineers, automotive and otherwise, have just discovered, two years after we started the ball rolling, that the $700 idea ain't just what it should be. They are red in the face and shouting from the housetops about something that should have attracted their attention a long time ago.

But what gets our nanny goat over the whole affair, is the tirade of abuse leveled at $700 airplanes, low-priced sportplanes, amateurs, amateur flying, etc., by William B. Stout, who should know better. Mr. Stout, president of the S. A. E., in a recent article, makes some very sweeping condemnations of amateur planes equipped with automobile engines which we are sure that he would re-consider if he had as much contact with these ships as we have. Quite contrary to Mr. Stout's statements, we have seen Ford powered planes put up a very good performance at a minimum cost of maintenance and operation—and what more could any owner want?

Brand New Features!

THE December issue of POPULAR AVIATION contains many new features of outstanding merit in addition to the old features that have been so popular in the past.

First off, there is a humorous dictionary of aviation terms used by the pilots and mechanics. If you don't know the meaning of "blip", "squawk-card", "crab" or "kicker", you'll need this dictionary. Be up to date on aviation terms and airport patois, you may need them some day.

There are a lot of amateur lightplanes in existence, and most of you have seen or flown them, but in this issue we are starting out on a brand-new angle. Manley Mills, is going to describe the constructional details of an amateur "blimp" or dirigible, and we are sure that this will awaken your interest.

Then, Carl Ogilvie will be back with one of his famous war stories—and this will be good news to our war story fans. One of the best things about Carl Ogilvie's yarns is the fact that they are true authentic stories—not fiction. Accompanying this story will be—literally—a pack of World War planes that will arouse enthusiasm among the members of our paste and scissors club.

For the serious minded reader, and we haven't forgotten him, are numerous semi-technical articles dealing with lightplane design, gasoline driven models and engines. Winter is the time to study and learn and you will find this section a veritable institute.

The front cover will carry a fine color drawing of Benny Howard's famous plane, "Mister Mulligan" which will be prized by all air-race fans and collectors of airplane pictures.

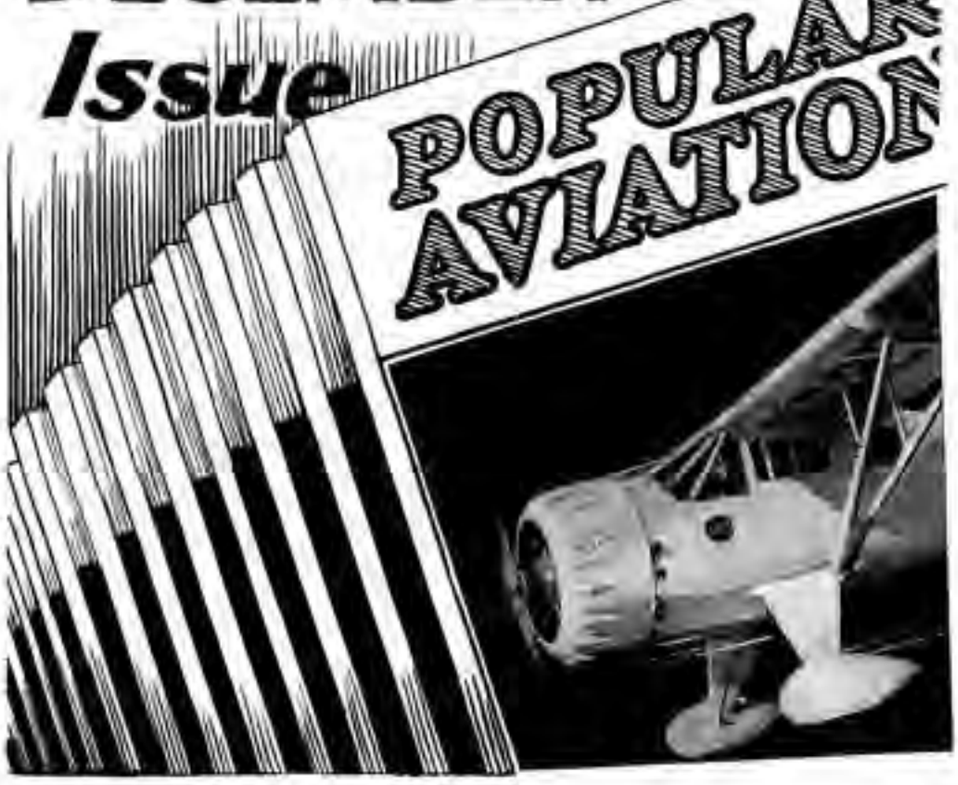
20 More Army Insignia

WITH COMPLETE DESCRIPTION OF SQUADRONS, HISTORY, ETC.

All in the

DECEMBER

Issue



Waterman

(Continued from page 288)

Due to the type of landing gear used in the Waterman plane, primarily, a safe margin of minimum gliding or flying speed over stalling speed has been reached. Brakes, always a difficult thing to apply to any plane, and more difficult to use, are a part of the new type tailless plane, and can be applied at a speed of 80 miles per hour. Though the top speed of the job is 114 miles per hour, it can be landed at a speed of 30 miles per hour!

Another feature of the new type is the ability of gliding straight into a landing without any flaring near the ground, which removes entirely the need of any accurate judgment of height above the ground, one of the chief troubles of most pilots.

That landing feature alone, it is estimated by officials, will result in the saving of no small number of student lives throughout the land. Last year, more than twenty pupils on early solos were killed by misjudging slightly their distance above the ground and crashing. It is practically impossible to get into trouble in landing with the Waterman plane, except by actually running into a obstacle. And that happens very rarely.

Its landing safety was emphasized the other day when the left landing gear buckled after the plane had been landed, and resulted in the craft swinging around in a half circle without damage beyond the undercarriage member which gave way.

The second greatest asset of an airplane, beside its inability to spin, is its ease of pilot visibility. The Waterman plane, in many ways, affords better visibility than the open cockpit planes of pre and just after war days. Its front is practically all shatter-proof glass.

The interior is heated in winter, and while the windows cannot be opened, ventilation is provided for three persons. While the plane is designed for a normal two person load, it will rise with a load of 600 pounds, the approximate weight of three persons.

As for the spinning undesirability of most planes, due to crossed controls many times, this one presents a decided contrast. There are no controls that can be crossed and the plane cannot spin. In fact, except in rough air, only the rudder need be used to hold to the desired course, or turn.

The banking is done by the two vertical flaps at the ends of either wing, in much the same manner as the vanes of the autogiro. One merely pushes the rudder over. As the plane begins to turn, the wing tip on the outside becomes more horizontal, and the entire wing rises to suit the sharpness of the bank. When the rudder is snapped back straight the tips become vertical once more.

END.