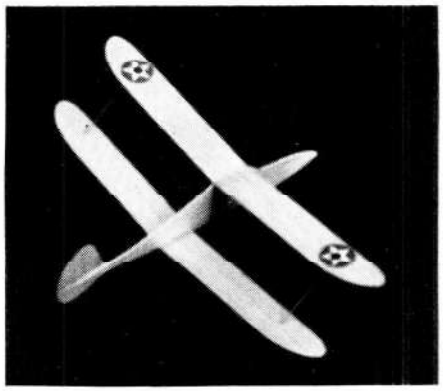
Whatsit?

Is It a Tailless Biplane or a Monoplane With a Large Stabilizer?—It Flies Perfectly



This plane without a stabilizer will fly better than any glider you have ever built.

By FRANK EHLING

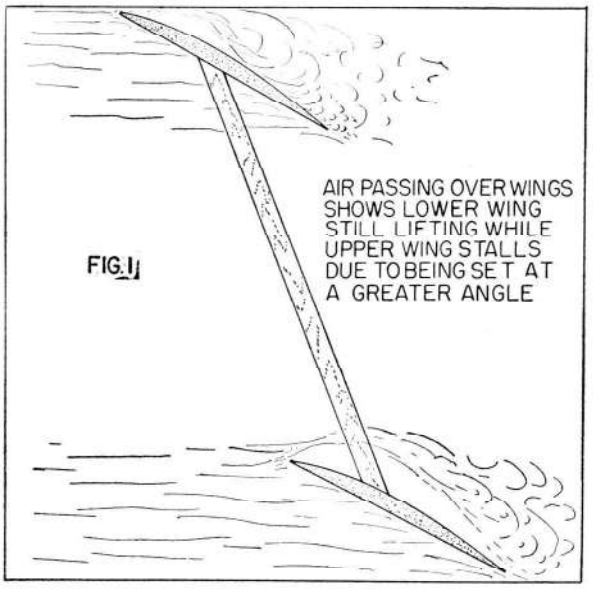
THE main purpose of this article is to give a clear idea of longitudinal dihedral, how it works on an airplane and how you can adjust your present ship to perform better if you were having poor flights in the past.

While there isn't anything new in models except different setups of surfaces or sizes; deep down under the tissue and balsa the aerodynamic principles still remain constant. In any event to get a model to fly smoothly it must be in accordance with the set rules of long ago.

Penaud, in 1871, found that longitudinal dihedral was necessary if stable flights were to be constantly obtained. In order to get a clear idea of longitudinal dihedral we wish you would build one of these little ships to acquaint yourself with the forces that make this clever ship fly so well. Any way you look at this little ship remember the lower plane or wing should be thought of as a stabilizer and anything said or any setting given with reference to this surface can be worked out on the stabilizer of a normal model.

In this version of interesting aerodynamic design we will try to clear up the question of longitudinal dihedral and show how to maintain longitudinal stability. It simply means that the forward plane or wing is set at a greater angle of positive incidence than the lower or rear plane.

A simple explanation of stagger and decalage is that the main plane is set ahead and above the lower plane and the distance is reduced to the amount of stagger. And since the lower plane is set at a negative angle of incidence compared to the upper plane, then it will stall later and as the model goes into a steep climb the main plane will stall. (That is, when the lift of the wing is overcome by the drag; this comes when the angle of attack is too great.) Here the lower plane starts to work since it has the same airfoil as the main wing, only set at a negative angle. It will stall after the front plane has lost its lift. Here you can clearly see that when the front plane has lost its lift it will settle and since the rear one is still lifting, the ship (see figure No. 1 on drawing) will right itself and continue on its way. Here we have the effect of longitudinal dihedral and a lifting stabilizer.



Imagine the two planes set at the same angle to each other. The ship starts to climb and when the main plane stalls the rear plane also is stalling. As it is set at the same angle here the ship will start to settle and go into a dive, and just as in a stall, the both planes set at the same angle will have the same lift and there will be no chance of recovery.

Here in the Whatsit we have used longitudinal dihedral to maintain longitudinal stability. The upper plane is set at zero degree incidence and the lower plane at a negative two degrees.

Now is the lower plane a wing or an oversized stabilizer? We will leave this up to you, call it what you may. It does the work of a stabilizer and it also contributes to the lift of the ship.

When adjusting this glider treat the lower plane as a stabilizer. Warp up the trailing edge of the lower plane to make it loop and warp it down to make it dive. However these adjustments will not be necessary if you build your ship according to the plans; several were built and they were all as stable as if they had stabilizers on all of them.

In constructing the Whatsit use

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AMAZING AEROFACTS

By A. V. ASHUN

DID YOU KNOW THAT:

1. Lieutenant Apollo Soucek's seaplane altitude record of 38,550 feet made in an old Wright "Apache" biplane with only a 425 horsepower Pratt & Whitney "Wasp" engine was made on June 4th, 1929, and still stands?

2. Of the 63 accredited American "aces" (five or more victories) of World War I, Frank Luke, Jr., of Phoenix, Arizona, was the only one to receive the Congressional Medal of Honor, our nation's highest tribute to a soldier? A statue of him stands on the lawn of the state capitol in that city?

3. The first successful catapult launching of a Naval airplane was by Lieutenant T. S. Ellyson at the Washington Naval Yard on November 12, 1912?

4. Those new type M-3 medium tanks are powered by ordinary Wright Whirlwind aircraft engines?

5. During the 84-day period from August 8th to October 31st of last year the Royal Air Force shot down 2,375 German airplanes in daylight over London and this does not include those downed at night or those which crashed subsequently returning home? More than 250 of these ships were brought down by British anti-aircraft batteries?

6. In addition to spending billions of dollars annually to train pilots, feed and clothe them, purchase airplanes and keep them serviced, supply them with gasoline and pay its pilots regular monthly salaries, the United States Government pays its pilots several dollars an hour to fly its airplanes?

7. Goering (22), Udet (62), Loerzer (45), von Schliech (35), Hennrich (18), Greim (25) and Klinche (16), all high-ranking Nazi generals and party officials were Aces in World War I? (Their scores follow their names above).

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years, value $985).

Curtiss Wright Technical Institute, Los Angeles, Calif.

Courses offered: Aeronautical engineering (14 months, value $750).

Aero Industries Technical Institute, Los Angeles, Calif.

Courses offered: Aeronautical engineering (1 year, value $785); master mechanics course (1 year, value $725).

The Delehanty Institute, New York City.

Course offered: Airplane and engine mechanics (1,650 hours, value $1,000).

Aviation Institute of Technology, Long Island City, N. Y.

Courses offered: Aircraft mechanics (9 months, value $475); aircraft and engine mechanics (9 months, value $475).

International Correspondence School, Scranton, Pa.

Course offered: A correspondence course covering aviation mechanics, or a vocational course in aviation subjects (approximate value $200).

The competition will close on April 1, 1942; candidates must have their applications in the mail not later than midnight of that date.

Material which scholarship candidates must submit is:

1. Scholastic record, as certified by the school principal.

2. Evidence of some worthwhile achievement in a hobby or youth activity related to aviation. This may include building and flying of model planes, soaring and gliding, proficiency in aviation radio, assistance to local aviation authorities, or part-time work with the local airport or a similar activity. This material must be submitted in the form of a report, written by the applicant, not exceeding 1,000 words, which may be accompanied by photographs and sketches.

3. Promise of successful achievement in an aviation career. Three reports on this shall be secured by the applicant; one from his school principal, from a local representative of the Civil Aeronautics Authority or a person prominently identified with aviation, and one from a leading citizen of the community.

4. A 1,000 word essay shall be written by the applicant on the subject, "The Part That Youth Can Play in America's Air Defense."

5. A recent photograph (snapshots are acceptable).

All communications shall be addressed to Scholarship Awards Committee, Air Youth of America, 30 Rockefeller Plaza, New York.

Whatsit?

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hard balsa on all parts. Use lead for balancing the ship. Add or trim the lead to get the C.G. (center of gravity) as shown on the drawing. This little ship will give you flights that will amaze the expert fliers. Take one along when you go to the next meet and when Mother Nature blows up a good fuss take out your ship and show the boys some smooth flying.

Flash News

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boon to the thousands of inexperienced workmen being employed or due to be employed in the coming year, is easily seen when it becomes apparent that construction and assembly of parts could more easily be accompanied by pictorial sketches of the parts dimensioned along the planes of projection. Blue-print reading is not easy, it takes many years of experience in order to quickly get the picture of the part clearly in mind from a three-view drawing with perhaps half a dozen sections and projections. This new plan presents the workman with the picture clearly shown, eliminating time-taking study and possibility of misconceptions.

Recent investigations have brought to light that the huge French ocean-liner "S. S. Normandie" was designed for quick conversion into an aircraft carried with a by pass below deck designed to route the exhaust smoke through a single stack and huge center elevator shafts for raising airplanes to the flight deck. If we enter the war the U. S. Navy has definite plans to convert the giant ship, now interned in this country, into the largest aircraft carrier afloat.

The first class of Royal Air Force cadets to be trained in the United States were graduated recently from Polaris Flight Academy, War Eagle Field, Lancaster, California. The group consisted of fifty British youths ranging in age from 18 to 25 who were sent here from England six months ago to begin their twenty-week course. After a mass graduation revue which was witnessed and approved by Air Marshal A. G. R. Garrod of the British Air Ministry, in charge of all training for the Royal Air Force in England, Canada, U. S. and Australia, the officers left on the first leg of their California-Canada-England voyage. Three other classes of fifty are now in training and more are scheduled to arrive in increasing numbers. Army Air Corps Stearman trainers are used and Air Corps instructors are doing the teaching job.

FLASH NEWS interview for the month is with William B. Stout, who certainly needs no introduction to the aviation fraternity other than to mention he is President of the Stout Engineering Laboratories at Dearborn, Michigan. The former vice-president and general manager of Ford Motor Company and creator of the giant and venerable Ford Tri-motors looks like Trotsky, moves about like a radio program director at final rehearsal and talks like H. G. Wells. "Air Commerce will make present day sea shipping obsolete," the aviation oracle fired, and continued with machine-gun rapidity and priestly sincerity, "Airports will supersede seaports and it will be cheaper to ship freight by air than by train. Loaded trucks will be driven right into huge air transports and flown across country, driving off at their destination. There will be hundreds of thousands of private planes and they will land in less than half a city block. Flying will soon be so simple the average man or woman will be able to solo after only two and a