ADVERTISING AGENCY

By W. E. Hill

Production manager. The salesman is broaching the matter of a little drawing account to cover expenses and is getting nowhere. The boss is stalling as usual. Says times being what they are, he'll have to think it over for a few days. (This happens about once a month.)

Copy writer. Arthur is having a terrible nightmare after a lively evening with the boys. Dreams he mixed up the unpopular girl and boy in the soap and tooth paste ads, sending the girl to the dentist and the boy to the shower, when it should have been the other way 'round. Leaving them at the finish just as unpopular as ever.

Art supervisor. Miss Foley, who once took a course in textile design, has the air of just having left a swell social gathering and wafts expensive Oriental perfume and charm all over the office. She contacts the artists who submit work on request. Unknown artists are taken care of by the telephone operator.

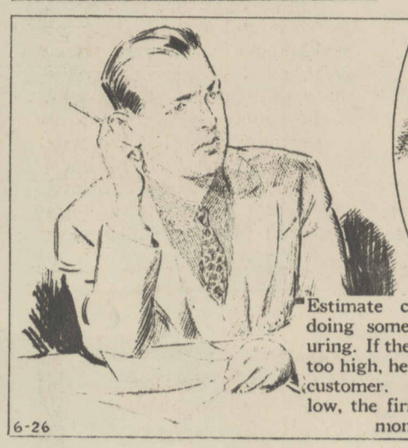
Secretary. Lilyan is the boss' right-hand girl and does all the dirty work for him, such as hounding printers who are behind schedule, calming irate clients whose advance proofs haven't been sent when promised, and shopping for the boss' wife at noon time.

Client. Can't be reasoned with. Has just placed a good-sized order for an eight-page folder and insists on having the proofs tomorrow. The office is in an uproar and there is fearful cursing.

Layout man. He has four jobs that should have been completed days ago to get out all at once. The production department held them up in the office for over a month and now they're yelling, "Get them out! We gotta have them by night!"

Proofreader. Miss Mackenzie let a misspelled word go through and has been reprimanded. Her feelings are hurted terrible. Claims the word wasn't listed in the dictionary, and if Webster can't spell it, how can she be expected to!

Creative artist. Mr. Moan hopes the client will like his preliminary sketches and won't discover that he got the idea from a 1929 magazine full page. The office boy and the filing clerk are being given a look-see in case they have any helpful suggestions.



Estimate clerk. He's doing some close figuring. If the estimate is too high, he may lose a customer. If it's too low, the firm will lose money.

Salesman and prospect. He wants to know what type is used here, what screen is used in this half-tone, what the color process in this sample is, etc., etc. No sale.

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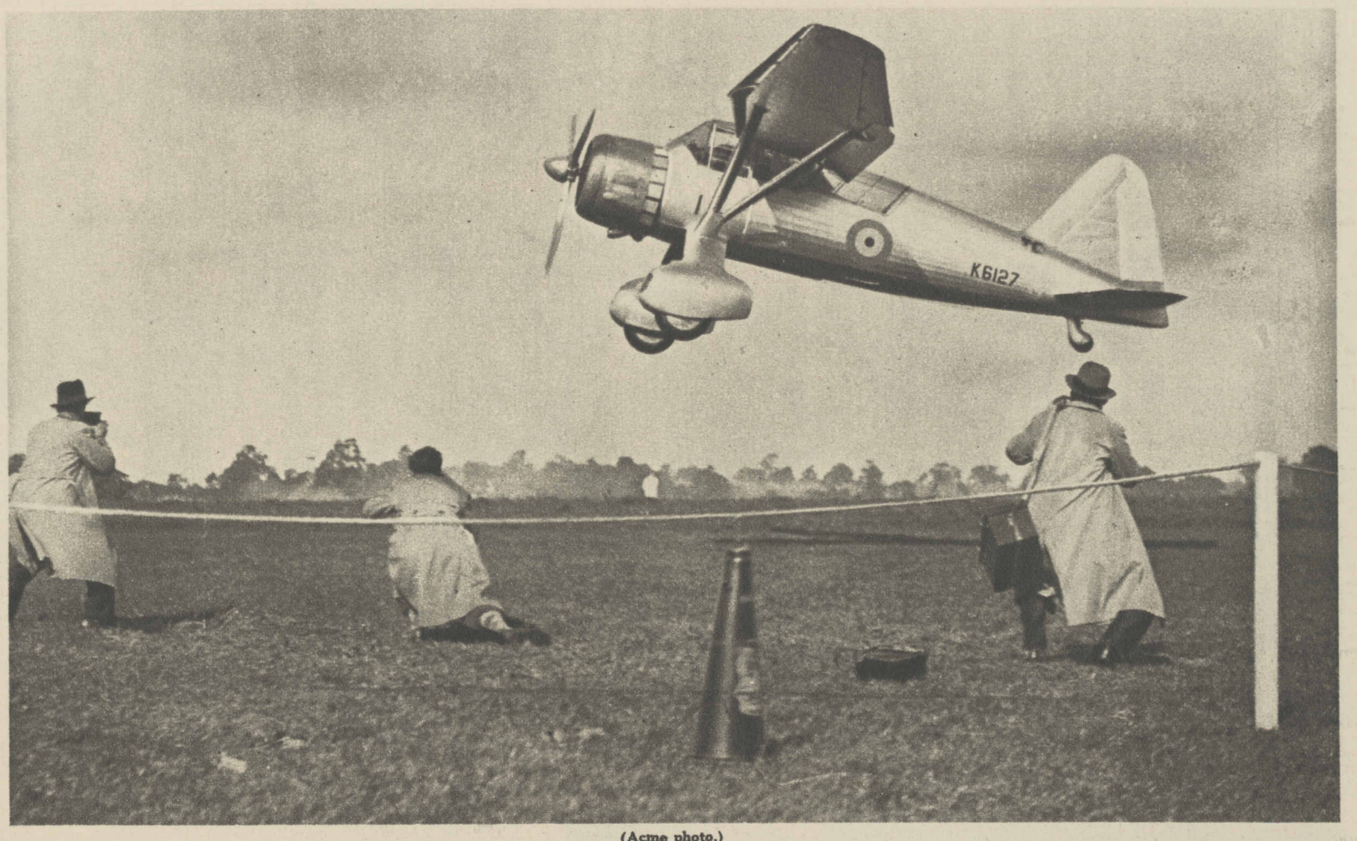
Aviation Hunts Brakes



(Acme photo.)

British air force Westland observation plane. Note the opened slots along the leading edge of the wing and the lowered flap along the trailing edge close to the wing root. This is one of the most efficient airplanes in the world for its size and weight.

Slow-Speed Landings Sought

By WAYNE THOMIS

DEVICES for causing a conventional type of airplane to land slowly have been more or less neglected by designers and engineers in the United States in recent years. The success attained in developing high-performance planes in all classifications has focused attention of the industry on speed. And inevitably high top and cruising speeds have been attained at a sacrifice of low landing speeds.

In the normal development of a vehicle such as the airplane one would assume that performance should gain in efficiency at both ends of the speed scale. This has been the line of progress in the automobile. As higher cruising and top speeds and faster get-away were attained by stepping up horsepower, engineers devoted part of their research to the development of positive and powerful four-wheel brakes.

This has not held true for the airplane. Landing speeds gradually have increased. Formerly 65 miles an hour was considered quite a fast landing speed even for military planes. Today the army's regulation single-seat fighters touch down at about 80 miles an hour. The high-wing transport planes of ten years ago—Fokkers, Fords—had landing speeds of about 50 miles an hour with load. Today the largest transports land at from 68 to 70 miles an hour, and the planes of the four-engined class will touch down at about 75 miles an hour.

Naturally, safety attendant upon slow landing speeds has been affected. The universal cry for more and larger airports is directly connected with the trend toward higher speeds. Planes take off less quickly and land faster and consequently need more room. The margin for error in flight technique is diminishing and the need for more space to increase the size of the landing target is becoming greater.

The pressure of competition for years has been forcing cruising speeds toward the 200-mile-an-hour mark. Today ships capable of flying at this speed are in service. The goal has been attained. It is now high time to direct some of the brain power hitherto expended on pushing up speed to the even more complicated problem of making airplanes fly slowly with safety.

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There are two inventions that point the way toward this achievement. One is the slotted leading edge of the wing. The other is the trailing edge flap. Slots have been virtually ignored in the United States, although they are much used in Germany, England, and Italy for all types of airplanes. The flap has been adopted by designers the world over.

The leading edge slot is a simple device consisting of a false leading edge which fits over the real leading edge of the wing. For all normal flying the false edge is locked tight. But for landing or for slow flying the slot is unlocked. Automatically as the airplane slows down toward stalling speed the false leading edge falls away from the real leading edge, leaving a slot through which the air flows and is compressed as it moves backward over the top of the wing.

Eexperiments have proved that this compression and controled flow will enable the wing to develop lift long after it has slowed down past the point at which a stall would develop if the slot were not in action.

Flaps as they generally are used in the United States increase the lift of a wing by 10 per cent and the drag or resistance by about 100 per cent. These are very general figures for the split type of flap—where the under section of the trailing edge drops down but the top of the wing remains fixed. The actual figures vary for every airplane and depend upon the flap area, the angle at which it is inclined, and other factors.

The one improvement in recent years is the Fowler flap. This type of flap utilizes a large section of the under surface of the wing. When in use this section moves backward and downward, materially increasing the wing area and thus providing a large increase in lift. At the same time the increase in drag is held at a minimum. In effect the Fowler flap reverses the lift and drag ratio of the normal split flap. It increases lift by as much as 35 per cent while increasing drag by approximately 40 per cent.

The Lockheed Aircraft corporation has put the Fowler flap to its first practical use in its type 14 high-speed commercial airliner and its military version. The Lockheed 14 lands at 65 miles an hour but has a cruising speed of 230 miles an hour and a top speed of 260 miles an hour. The speed ratio for this airplane thus is 4:1.

(Associated Press photo.)

Lockheed 14 airliner with its Fowler flaps fully extended. The large increase in lifting surface is clearly shown. When in the air this flap is retracted to form a perfectly smooth undersurface of the wing.

The Douglas DC-3, which cruises at 205 and has a top speed of 213 miles an hour, lands at 65 miles an hour also. The DC-3 has only the split type flap. Its speed ratio is only 3.27:1. This shows the improvement in performance through expansion of the speed ratio obtained by using an efficient form of flap.

To obtain the best results, however, the flap and the slot should be combined. The German Fiestler Stork airplane—which floats in to almost vertical landings and takes off in a steep stalled climb with perfect safety, almost rivaling autogiro performance—has both slots and flaps. So has the British army observation plane, the Westland monoplane, seen in one of the photographs on this page. The Westland has slots along its entire leading edge and flaps from the ailerons back to the fuselage.

The speed ratios of these airplanes are not known exactly, but the Stork is supposed to land at 30 miles an hour and have a top speed of about 152 miles an hour. If these figures are correct its ratio is over 5:1. The Westland can be landed at 42 miles an hour and has a top speed of 181 miles an hour, a speed range of 4.39:1.

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The wonderful Italian Savoia S-79 trimotored bombing planes, which hold a number of world records for speed with range and load, are equipped with both slots and flaps. The Savoia with a wing loading of 43 pounds a square foot, almost twice as much as American transport machines, has a speed range of 4.8:1 with a landing speed of 58 miles an hour and top speed of more than 280 miles an hour.

The German Junkers company has developed its "auxiliary wing" type of flap. This is a miniature airfoil section along the entire trailing edge. At the tips this is used as aileron. The rest of the way across the wing it is flap. The Junkers company recently is supposed to have developed a sort of Venetian blind flap composed of many small airfoils. These contribute lift and very little drag when lowered in flying attitude to the air stream. They can also be turned flat to present a very large drag area. Applied to the new Heinkel and Messerschmidt monoplane fighters, they are supposed to have made possible new high speed ratios of about 6:1.

A Junkers Ju86 air line plane, showing the auxiliary wing type of flap. At the tips this auxiliary wing becomes the aileron. Closer to the wing root it is used as flap area to aid the takeoff and slow down landing speed.