

# FLIGHT

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## The Air Mail Begins

**A** GALE of unusual strength for a British August caused something like a fiasco when the new inland mail service was started on Monday last.

We have come to regard fog as the only form of weather which will defeat the modern aeroplane, and it came as something of a shock to learn that the D.H.86, from Glasgow and Belfast, found it prudent to land at Manchester, while the north-bound "Wessex," from Croydon, got no farther than Birmingham. Both lots of mails were then sent on by train to their destinations. It was rather humiliating, but we may take comfort in the thought that occasionally heavy weather holds up steamboat services across the English Channel and the Irish Sea, and that when the new air services are in full running order it is not likely that mere strength of wind will very often prevent them from getting through to their destinations.

We would rather think with satisfaction of the new forward step which was inaugurated on Monday than on the exceptional circumstances which interfered with the first flights. It is undoubtedly a great advance in principle that the Postmaster-General should send letters of 2 oz. and postcards by air without extra charge. That is the point to emphasise. On the services (1) Croydon-Birmingham-Manchester-Isle of Man-Belfast-Glasgow, (2) Liverpool-Birmingham-Cardiff-Plymouth, (3) Birmingham-Bristol-Southampton-Cowes, and (4) Inverness-Orkneys, ordinary letters and postcards are carried without surcharge. The surcharge for letters weighing more than 2 oz. is 1d. per oz. instead of ½d. per oz. by train. Probably in time this distinction will be wiped out, and all letters will be carried by air at the same rates as for rail transport. This occasion is only a beginning and an experiment, and, though we may criticise details, our main feeling is satisfaction that the beginning has been made.

The Postmaster-General has been quite frank about the experimental nature of the service, and he gave

that as his excuse for not including Edinburgh in the initial service. The rivalry of the two largest cities in Scotland is always rather amusing, and the good fathers of Edinburgh seem to have been indignant that Glasgow has been favoured while their city was ignored. The Postmaster was able to reply that other important places had also been omitted, and expressed pious hopes for the future. We may smile, but it is encouraging to see the cities clamouring in rivalry for air mail services.

The point which invites most criticism is the arrangement of the schedule on the main London-Belfast-Glasgow airway. For this, we take it, the Post Office was not responsible. It must have been drawn up by Railway Air Services. This company has certainly plenty of experience available for the drawing up of useful timetables, and it may have very good reasons for the one which has been adopted in this case. If so, the company has neglected to publish them, and enquiries made have not produced much in the way of satisfactory answers. The schedule seems to have been drawn up on the basis of using only one machine, which starts in the morning from Glasgow, spends two hours at Croydon, and then flies back to Glasgow the same afternoon. As it takes some forty minutes to get from Croydon to Victoria, this wait will not be very useful to a man who thinks of flying from Glasgow to London and back in a day. He will not be able to do much business in London.

It seems to amount to this, that the southward journey is useful and the northward trip is of advantage to very few people. It starts too late in the day (15.10 hours). The Postmaster-General is quite frank about it. In a circular on the subject he says: "The mails for Douglas and Belfast will afford a later time of posting in London for first delivery the next day in the Isle of Man and Northern Ireland generally. Ordinary correspondence for the other towns mentioned will not benefit in time of delivery from transmission by air." We can only hope and presume that before long a north-bound machine will start early in the day from Croydon, and so make that journey as useful as the other.

# AMERICAN MILITARY MONOPLANES

## *Biplane Disappears from U.S. Army Air Corps*

By ALFRED CELLIER

*The following article from an American Correspondent gives an outline of the widespread adoption of monoplanes by the U.S. Army Air Corps. This measure, it seems, was dictated mainly by the need for increased speed. In this country the monoplane type has not yet been adopted for issue to squadrons of the Royal Air Force, although several experimental machines have been built recently.*

*It is interesting to reflect that in the United States Navy Air Service the biplane has been retained. In Great Britain the biplane scores, particularly for work with the Fleet, because of the smaller overall dimensions, which are an advantage when aircraft have to be stored in the restricted space on an aircraft carrier. On the land the same considerations do not apply, and it will be interesting to see if the American "Monoplane Vogue" will spread to this country.*

**D**ECIDED radical changes have recently appeared in the design of the aeroplane types which have become standard with the American Army Air Corps. Unlike the Royal Air Force, the United States has separate Army and Navy Air Services. Up to the present time, however, the biplane types of military aircraft predominated. Then a strange thing happened.

Among the many new monoplanes produced, the heavy bombers "put one over." Where, in the past, the pursuit aeroplanes formerly were able to fly rings around the bombers, it was now discovered that they could not get anywhere near the new machines, let alone keep up with them. When the manœuvres were held, this fact became still more evident as the single-seaters tried to dive on the bombardment formations of monoplanes. The bombardment commanders only had to open up their throttles, and they would be miles away when the fighters came out of their zoom. Such tactics against bombers with a speed of 130 miles an hour would not work against those which were doing in the neighbourhood of 220 miles an hour.

The bombardment aeroplanes were not the only type to undergo such radical changes, for pursuit types had to be designed to meet this increased performance and regain their rightful place. These are also of monoplane construc-

tion, as are the observation and attack types that constitute the four branches of the American Air Corps. Two other classifications exist: the training and cargo types, which were not affected by such changes. In the cargo class, however, many monoplanes are to be found. This may be attributed to the fact that it was desired to transport the mechanics for the single-seater squadrons with their units whenever possible. Such organisations are unable to carry additional personnel in their machines, as do the other three branches of the Air Force.

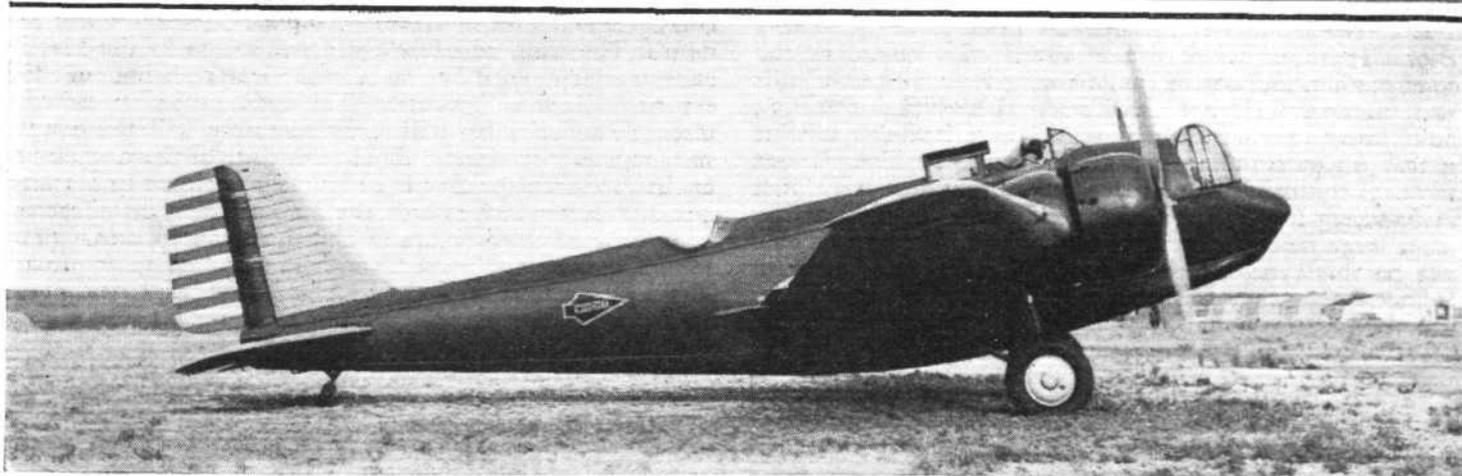
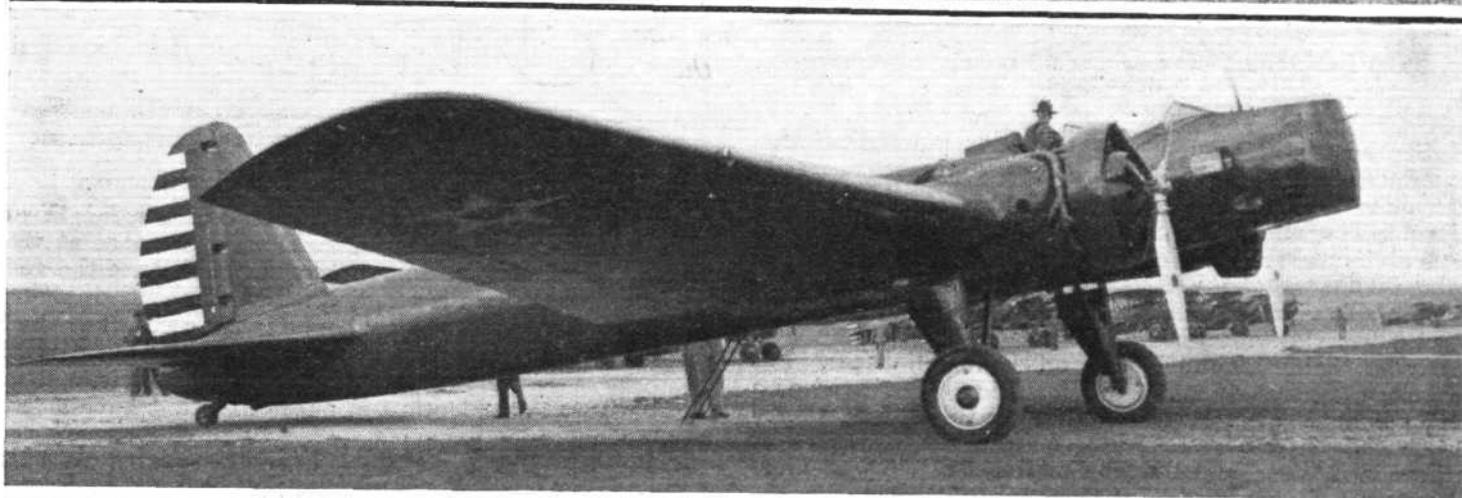
A result of all this has been the gradual disappearance of the biplane types from the Army service squadrons. How long it may be before the biplane will again resume its place remains to be seen. The monoplanes themselves had to undergo exhaustive tests, first with one or two experimental machines, then in small groups for service tests, before the Air Corps was quite certain about making such radical changes. Nevertheless, the monoplanes lived up to, and surpassed, all expectations. This resulted in quantity orders being placed to equip the various units.

It should not be thought that the biplane has altogether disappeared, for to make such a change in a major air force at a time when appropriations are hard to obtain would take a little while. The remaining biplanes are



**A BOMBARDMENT TYPE:** The Douglas B-7 is powered by two Curtiss "Conqueror" engines of 650 h.p. each.

## AMERICAN BOMBARDMENT TYPES

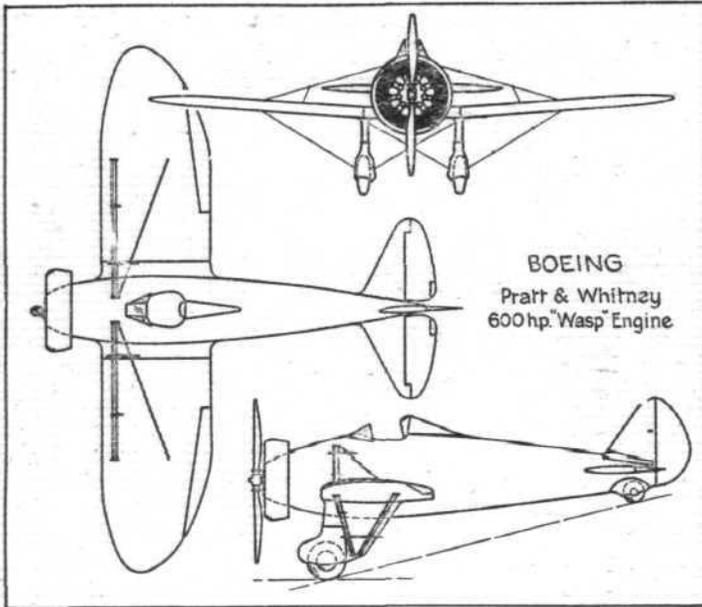


**THREE MORE MILITARY MONOPLANES :** In the upper photograph is shown the Fokker B-8 with two Curtiss "Conquerors." The centre photograph is of a Boeing B-9, fitted with two Pratt and Whitney "Hornets" of 600 h.p. each. The Martin B-10 is illustrated in the lower photograph. It has two Wright "Cyclones" of 650 h.p. each.

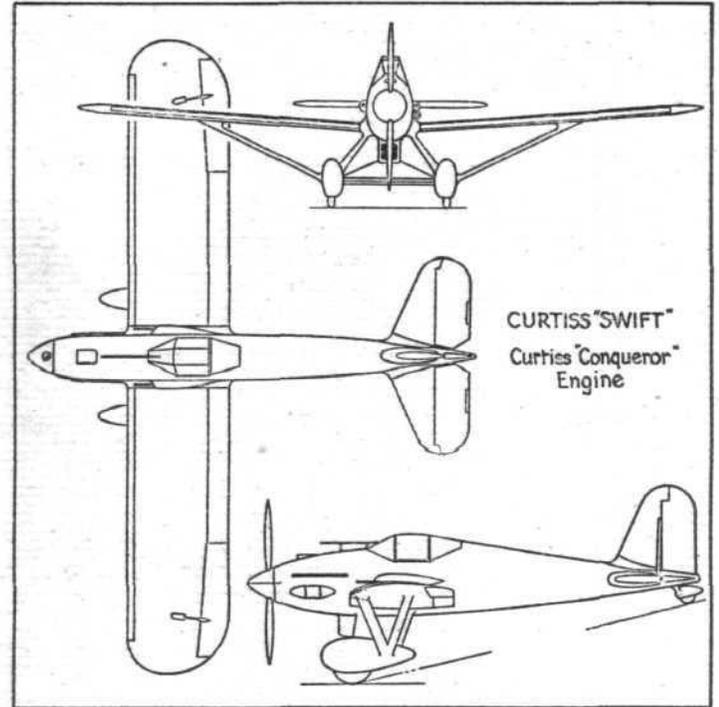
mostly stationed in the possessions, such as the Philippines, Panama and Hawaii, and at the training and other service schools. The tactical units at home, comprising the air force, are the organisations which are being equipped with the monoplanes. These units, made up mainly of pursuit and bombardment with supporting types, would be the ones that would have to bear the brunt of an attack by a hostile air power.

The first monoplane-type bombers on the Army list are the Douglas B-7, fitted with two Curtiss "Conqueror" 650 h.p. engines, and are Prestone cooled. This type, with a retractable landing gear, is of the Gull-wing design, the "V" in the wings allowing the pilot to look back to

the rear of the aeroplane. The engines *nacelles* are of the streamlined type, located below the wing and above the landing gear. The sides of the fuselage and the vertical fin are covered with corrugated metal, while the engine *nacelles* and the nose of the aeroplane are covered with plain sheet metal, the wings being covered with regulation fabric. These machines are actually light bombers, carrying 2,000lb. of bombs and a crew of three men. No information as to their performance has been released, as they are still on the secret list, but they closely approach the 175-mile an hour mark, and have a wing span of 65ft. with a chord of 10ft. 2in. The 31st Bombardment Squadron is equipped with these machines.



THE BOEING P-26 : General arrangement outline drawings.



THE CURTISS "SWIFT" : General arrangement outline drawings.

Second of the monoplane bombers is the Fokker B-8, produced by the General Aviation Corporation. This machine has a tapered wing flush with the top of the fuselage. The engine nacelles, housing two Curtiss "Conqueror" engines, are built directly into the wing above the landing gear. The landing gear is retractable and electrically operated, and, as in the Douglas B-7, the wheels swing back into receptacles in the under part of the engine nacelles, being mounted on parallelogram linkages. The fuselage, fin and wings of this machine, also classed as a light bomber, are fabric-covered, while the nose is covered with corrugated metal. These machines carry a crew of three in tandem, and are the equipment of the 30th Bombardment Squadron.

A heavy bomber showing great promise is the Boeing B-9. These machines are all-metal of *semi-monocoque* construction, and are of the low-wing type with two Pratt and Whitney "Hornet" SGIR-1860B engines of 600 h.p., built into the wing directly above the retractable landing gear. An outstanding feature of these aeroplanes is that they are equipped with a servo rudder that assists the pilot in handling his craft without the tiring effects caused by most large machines. While very little information is let out on this type, which exceeds the 200 m.p.h. mark, it is known that they have a service ceiling of 22,600ft. with full military load and 2,000lb. of bombs. The machines

weigh 13,350lb., have a span of 76ft. 11in., a length of 51ft. 9in., and a height of 11ft. 7in. The chord at the greatest width is 15ft. A provisional squadron of the 2nd Bombardment Group is supplied with them.

When the Army Air Corps believed that they had reached the ultimate in fast bombers, the Glenn Martin Company came forward with the squat-looking Martin B-10 and B-12 that are identical in appearance but have a few minor changes in equipment. (See *Flight* of February 15, 1934.—ED.) These machines have two-gear Wright "Cyclone" engines of 650 h.p. built into the wings. They carry a bomb load of 2,500lb. at a speed of 220 miles per hour. The wing and fuselage construction in the Martin is something entirely new, the latter being of the "restrained shell" construction that provides extreme strength and rigidity with approximately half the weight of the *monocoque* type. Another feature of these machines is that the front gunner is completely enclosed in a transparent turret which affords the forward guns an effectiveness never attained before in high-speed aeroplanes. (The latest Boulton and Paul "Overstrand" has an improved gun turret in the nose.—ED.) The retractable landing gear when drawn up gives the machine the impression of a huge



A PURSUIT TYPE : The Boeing P-26. The engine is a Pratt and Whitney "Wasp" of about 600 h.p.



THE CURTISS "SWIFT": Note the enclosed cockpit. The engine is a "Conqueror."

fish flying through the air. The dimensions are: Span 70ft. 6in., length 44ft., height 11ft. 6in., chord 11ft. 3in. These aeroplanes are assigned to the 9th and 11th Bombardment Squadrons, while two other squadrons will also be similarly equipped as soon as the machines can be delivered.

Chief among the new pursuit developments is the Boeing P-26, a sleek low-wing all-metal monoplane which has gone into quantity production. One hundred and eleven of these machines have been ordered, and the first deliveries are being made to the 34th, 73rd and 95th Pursuit Squadrons, replacing the Boeing P-12E type now in service. Three other Pursuit Squadrons will also be similarly outfitted. The fuselage of the P-26 is of streamlined *monocoque* construction, while the wings like the fuselage have smooth metal skin covering. The wing is equipped with automatic slots which come into operation of their own accord at stalling speeds of fifty miles an hour, or they can be controlled or locked by the pilot at will. The landing gear is not of the retractable type, but is composed of streamlined "pants." Powered with a Pratt and Whitney "Wasp" engine of 600 h.p., the P-26 has a top speed of over 220 miles an hour, and was built as the answer to the increased bomber speeds. The dimensions are as follows: Span 28ft., length 23ft. 7in., height 8ft. 8in., chord 6ft., with 4 deg. of dihedral. A later version of the P-26 is the P-29, similar in all respects with the exception that it is provided with a retractable landing gear that allows a further increase in speed. These machines are now under test.

Also undergoing service tests is the new Curtiss "Swift" or P-31, fitted with the Curtiss "Conqueror" V-1570

675 h.p. engine. This is a low-wing, all-metal, single-seater pursuit monoplane with automatic slots and flaps. The pilot's cockpit is enclosed by a transparent hood that allows unhindered visibility at high speeds and in deep dives. The span of this machine is 36ft. and the length is 26ft.

The two-seater Pursuit type was not passed by in these new developments, and five aeroplanes known as the Detroit P-24 have been delivered for trial. These are low-wing, all-metal of the noted Lockheed type, and have streamlined *monocoque* fuselages and a speed well over 200 miles per hour. The standard two-seater Pursuit machines now in use are biplanes of the B.J. P-16 type, in service with the 94th Pursuit Squadron. The very latest version is the Consolidated P-30, a modification of their P-25. This is also a two-seater, fitted with the "Conqueror" 700 h.p. engine, and so new that no information is available as to its performance. Needless to say, it is also of low-wing design.

(To be concluded next week.)

[An interesting sidelight was thrown on the subject of this article the other day when we had a caller from the other side of the "Herring Pond" who has been in close touch with American service aviation developments during the last few months. According to him, the Americans are definitely getting very spectacular performances out of their new military monoplanes. For example, the Boeing P-26 is reported to have attained a speed of over 300 m.p.h. in level flight when not carrying its military load. A new Northrop low-wing monoplane is stated to have reached a speed of 500 m.p.h. in a terminal velocity dive.—ED.]



A TWO-SEATER PURSUIT TYPE: The Consolidated P-25 is being followed up by a later version, the P-30, with Curtiss "Conqueror" engine.

# AMERICAN MILITARY MONOPLANES

By ALFRED CELLIER

(Continued from page 865)

WITH the Observation Class a repetition occurs in two of the models that are identical to their prototypes of light bombardment aeroplanes, except for their interior installations, which do not include bomb racks. The first of these is the Fokker o-27, whose prototype is the B-8. This is an Army Observation machine with the same power plant and dimensions as the bomber. The span is 64ft., length 47ft. 6in., and the height 11ft. 6in. The other Army Observation type is the Douglas o-35, prototype of the Douglas B-7, and identical

The landing gear is not of the retractable type, but "pants" on the wheels add to the speed, which is reputed to be in the neighbourhood of 195 miles an hour. The 99th Observation Squadron is composed of machines of this type. Another such model is the Douglas o-43 (see *Flight* of February 15, 1934), almost identical in appearance and dimensions, except that it employs a parasol-type wing in place of the gull-wing of the "o-31"; its speed is about 190 m.p.h.

Also of the Corps Observation class, but not of mono-



**FOR ARMY OBSERVATION:** The Fokker o-27 is designed for long-range reconnaissance. It is fitted with two Curtiss "Conqueror" engines of 650 h.p. each.

in all outward respects. The purpose of these aeroplanes is long-range reconnaissance and night-observation missions, and a number of them are allotted to squadrons of the 9th Observation Group for service tests. With minor changes they are readily convertible to light bombers.

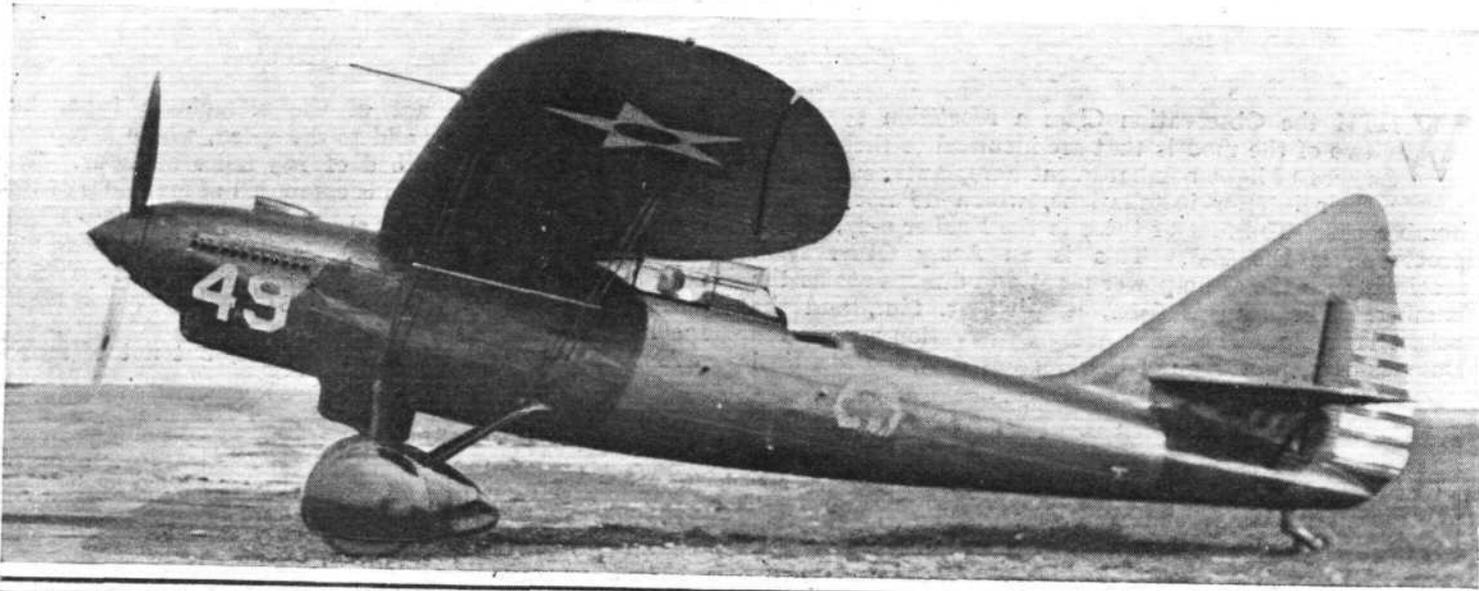
The Corps Observation types, not to be confused with the Army Observation machines, are the single-engined aeroplanes, such as the Douglas o-31 class. This is a typical two-seater monoplane with the Gull-wing, giving the pilot and observer excellent vision in all directions.

plane design, is the new Curtiss "Raven," or o-40, with the Wright "Cyclone" F engine of 700 h.p. This is a two-seater sesquiplane with transparent hooded cockpits and a retractable landing gear, which give it a high speed of 200 miles an hour. The dimensions of this machine, of which a few have been delivered for service tests, are: Span (top), 43ft. 11in., and a length of 28ft. 3in. (A description was published in *Flight* of January 4, 1934.—Ed.) A later model of the Raven, the o-40B, is a high-wing parasol monoplane.



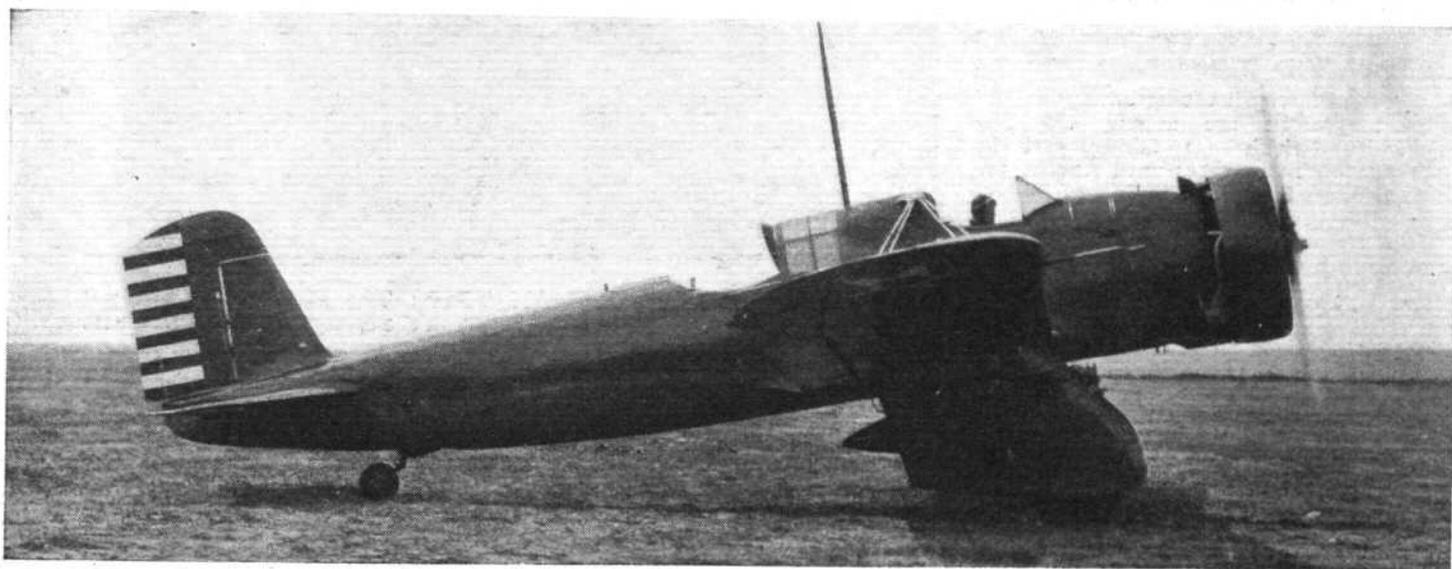
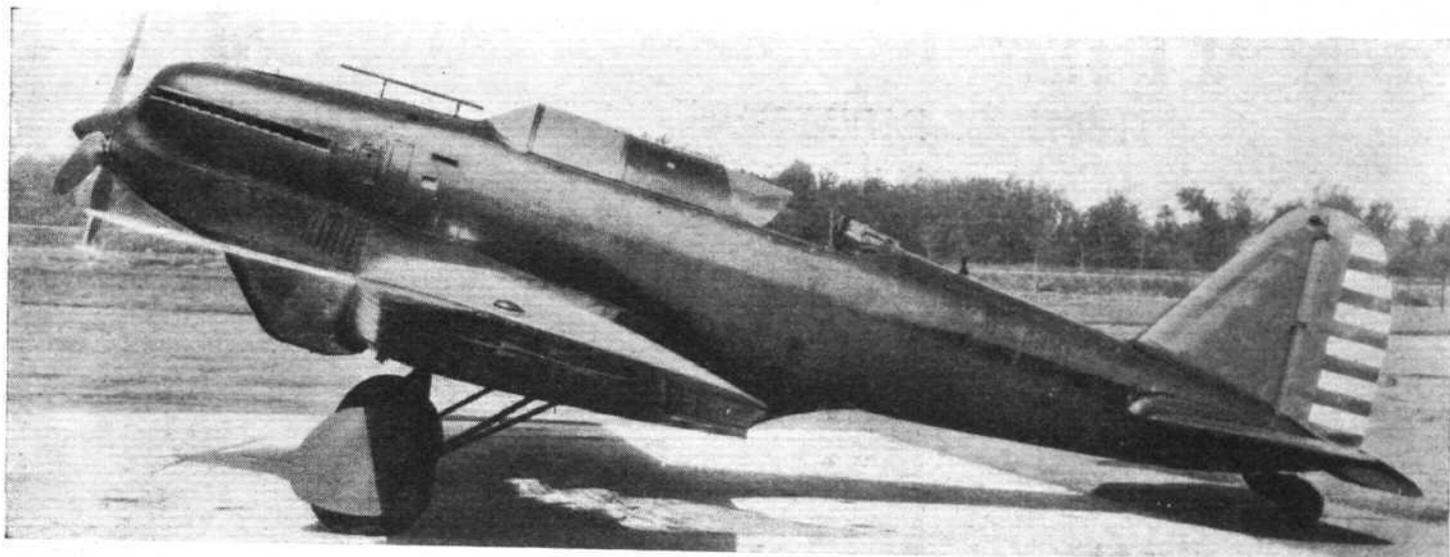
**THE DOUGLAS VERSION:** Like the Fokker o-27, the Douglas o-35 is an Army Observation type. It has the same type of engines, but is strutbraced and has the "gull's wing" formation.

## CORPS OBSERVATION TYPES



UNLIKE THE ARMY OBSERVATION TYPES THESE ARE SINGLE ENGINED: The upper photograph shows the Douglas O-31, and the centre picture the Douglas O-43. Both have the Curtiss "Conqueror" engine. The lower illustration shows a machine in the same class, the Curtiss O-40B, but having a 700 h.p. Wright "Cyclone" radial air-cooled engine.

## TWO ATTACK TYPES



**FOR GROUND STRAFING:** The Detroit (or Lockheed) A-9 seen in the upper photograph has a Curtiss "Conqueror" engine, while the Curtiss A-12 in the lower picture has the Wright "Cyclone" radial air-cooled.

The latest development of the Attack type is the all-metal Curtiss A-12, equipped with slots and flaps, ordered in quantities to outfit the 8th, 13th, and 90th Attack Squadrons. These low-wing monoplanes are powered with the Wright "Cyclone" F of 700 h.p., and can carry a 300lb. bomb beneath their fuselages. The top speed is about 220 miles an hour. They are practically identical, except for the power plant, to the Curtiss "Shrike" A-8 type, which has a span of 44ft. and a length of 32ft. Other monoplane Attack types undergoing trial are the Northrop A-13, all-metal two-seater, developing close to 230 miles an hour, and the Detroit A-9, the prototype of the P-24.

While on the subject of American military monoplanes, it would not be amiss to mention those Cargo types coming under this classification. These vary in design from the large tri-motored Ford machines to the smaller single-engined types, the speediest of which are the Northrop C-19, low-wing, six-place, all-metal cabin type, with a top speed of 220 miles an hour, and fitted with the Pratt and Whitney "Wasp" 450 h.p. engine, and the Lockheed C-17, high-wing, all-metal "Vega" type, also with the "Wasp" engine.

#### American Terms Explained

Students of military aviation who have not previously come into close contact with American Service matters may find themselves confused by the names of various classes of military machines in use in the United States.

We feel, therefore, that a brief explanation may be useful. A "pursuit" machine is what we should know in this country as a "fighter." It may be either a single-seater or a two-seater. The origin of the name should be obvious, but the term is misleading, in that it may be taken to mean "interceptor." Of course, one of the main duties of the type is the interception and destruction of hostile aircraft, but it may be used also for ground attack and similar duties. It is, in fact, very similar to our day-and-night fighter class. In the American Navy the term "fighter" is used as in this country.

"Attack" machines are primarily intended for the destruction of enemy *personnel* and *materiel*. The main requirements of the type are high speed, large offensive armament, good performance at low altitudes, and moderate range. There is no equivalent type in the R.A.F.

Comparable with the so-called "Corps Observation" types are our Army co-operation machines. As well as performing observation and reconnaissance work, the "observation" machine may be used for light day-bombing. In long-range missions twin-engined and more heavily armed "Army Observation" types are used. Special fast day-bombers do not exist in the United States Army Air Corps, light bombing being performed by the attack and observation machines. The heavy "bombardment" types are really similar to our long-range night-bombers. In this class a machine carrying 2,000 lb. of bombs or less is often called a "light" bomber, the heavy types carrying as much as 4,000 lb. of bombs.