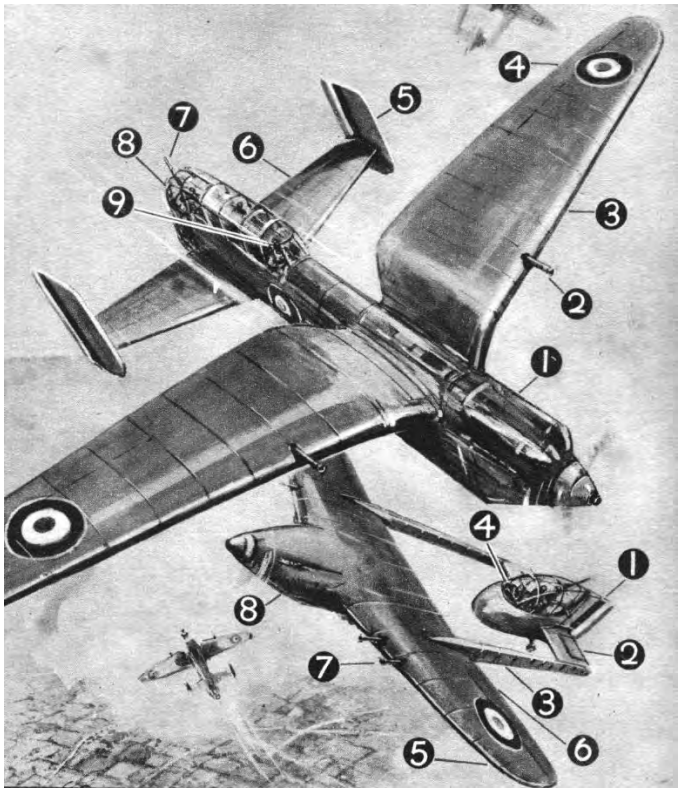
Battle Planes – David Gray

The picture below appeared on the front cover of a magazine called **Modern Wonder**, published in April 1938. We could be forgiven for thinking that the two aircraft depicted were the figments of a story-teller's over-active imagination, however, these aircraft were both real. They were serious designs, and one of them even flew. The red one is the French, Delanne 10-C2, the smaller blue aircraft is the British, Airspeed AS.31.

Even in 1938, the story of flight was relatively new, the Wright brother's first flight had only been 35 years earlier. Science fiction was constantly striving to create new and more wonderful designs to entice readers into buying books and magazines and even movies, such as Buck Rogers. It seemed as if nothing was too outlandish and these two designs, fitted the bill perfectly.

Before we 'investigate' this story with hindsight, we need to understand how it was being described at the time and the best way to do that is look at the story which accompanied the picture. An article and second black and white illustration, appeared inside the magazine, along with a key (*below*).



Upper Plane – French Delanne:

1. Engine.
2. Quick-firing cannon.
3. Wing.
4. Aileron.
5. Rudder and fin.
6. Elevator.
7. Rear cannon, or heavy machine gun.
8. Covering of cockpit and gun turret.
9. Pilot.

Lower Plane – British Built:

1. Rear end of pilot's nacelle.
2. Tail-planes elevator.
3. Tail boom.
4. Pilot.
5. Wing.
6. Aileron flaps.
7. Cannon or machine guns.
8. Engine cowling.

'Amazing New SKY BIRDS of the British and French Air Forces

The warplane designers have been wracking their brains to find a type of aircraft that fulfils modern military requirements. France, first as usual with out-of-the-ordinary flying machines, is building an entirely new type of two-seater fighter for her Air Force.

It was decided on by the Delanne firm, who claim that it solves all the problems of the two-seat interceptor. As you will see from the key plan on this page it is a high wing cantilever monoplane. The mainplane has a gull formation, curving down to the fuselage at the roots. Two machine-guns firing clear of the propeller, are in the wings.

Behind the trailing edge fillets of the mainplane the fuselage is stubby, leading up to a cabin on the centre section of the tail. In the front of this covered-in cabin is the pilot's cockpit, while at the tail end of it is the "sting." This is the gunner's cockpit - or turret. It is a fully automatic rotatable turret, fitted with a shell-firing cannon. The pilot controls the two wing machine-guns and another cannon firing through the propeller shaft. The machine is said to be the most formidable light fighting ship ever designed.

There are no blind spots. Attackers cannot surprise the machine by getting under its tail and firing upwards. – because the gunner can see them and shoot them down. And the gunner is in no danger of shooting his tail off, because he is in the tail. The pilot has a clear field of fire forwards, while the gull wings dispose of any of the blind spots he would normally find.

The tailplane itself has a span nearly equal to that of the main plane, with twin rudders, one at each end. The machine is fitted with the new one thousand horse-power Hispano engine. It should reach a speed of four hundred miles per hour.

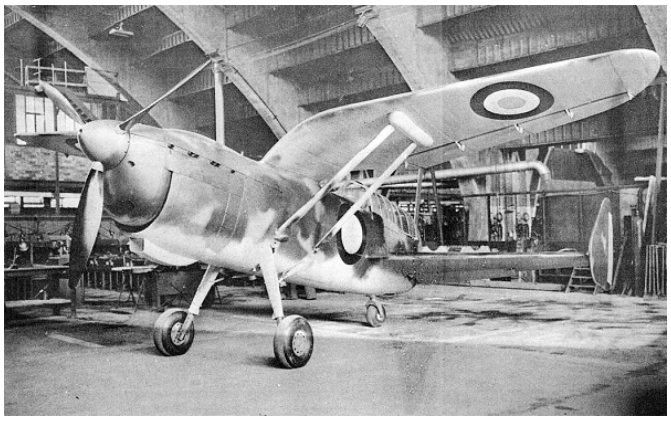
The other machine in the illustration is a new type now being built experimentally by Airspeeds Ltd., of Portsmouth. It is a single-seat fighter which may reach a speed of four hundred and fifty miles an hour when it is completed.

As in the Delanne, the pilot's nacelle is actually in the tail plane. The main plane, of the new triangular tapered form, carries the motor, guns and undercarriage. The motor is a Rolls Royce one thousand horse-power Merlin. This fairs into the wing, which is of thick section. Four machine-guns as well as landing lights are built into the leading edge of the mainplane.

Two strong, but thin tail booms connect up to the trailing edge of the mainplane. Between them is a flap. These booms support the tail plane and nacelle. The tail plane itself is very thick. In its centre section is the streamlined cabin that holds the pilot. This position gives him a clear view forward, while he can see both above and below his wing – thus disposing of any chance of a surprise attack. Another advantage claimed is that the pilot can see his wheels when landing, making high speed landings easier. The rudder fits on the tail end of the streamlined pilot's cabin.'

Looking back, we can now see how these two designs were taken forward in that period of flying history when everything and anything was to be considered in order to gain supremacy in the air.

Delanne 10-C2



This aircraft is recognized for its unique tandem wing configuration, where the rear wing acted as the horizontal tailplane, and the pilot and gunner sat in a shared canopy at the rear of the fuselage.

Given the timing, the 10-C2 never made it into service, let alone combat. When the German's overran France in June 1940, the prototype was being assembled. They cleared out anything of interest, which did not apparently include the 10-C2, even though it was in quite an advanced state of construction.

With the occupation, the French aircraft factories were now having to make supplies for the Nazi war machine, but development of the aircraft was able to proceed, though at a slow rate and under supervision. In October 1941, the 10-C2 was to make its first flight and begin a brief test program, flying a total of six hours over fifteen flights.

This seems to have shown that the interesting design philosophy had some promise, and the aircraft reportedly made a top speed of 342 mph. Given the rather low-powered engine, it is likely that this performance – if accurate – was due to the aircraft's stripped condition, obviously not carrying any weapons or significant equipment.

This short test period came to an abrupt halt at the end of 1941 when the factory was told to stop wasting effort and the 10-C2 was transported to Germany and, like many other such designs, effectively vanished.

So ended the Arsenal-Delanne 10-C2, a decidedly odd-looking aircraft that is remembered pretty much just for that fact.

Here are the key details regarding its *brief* flight history:

- **Purpose:** It was an experimental French tandem-wing two-seat fighter designed by Maurice Delanne.
- **Test Program:** After its first flight in October 1941 (under German authority), it underwent a brief flight test program in France, flying a total of about six hours over fifteen flights.
- **Performance:** During testing, the aircraft reportedly achieved a top speed of 342 mph (550 km/h).
- **Fate:** Following the tests in France, the aircraft was ferried to Germany for further trials in 1942 or 1943, where it was likely scrapped.

Airspeed AS.31

British Air Ministry **Specification 35/35** was issued in December 1935 for an experimental high-speed aircraft designed to regain the world air speed record. Although often referenced with an "F" prefix (F.35/35), the original specification did not include it, as it was primarily a research project rather than a combat-ready fighter.

Key Requirements

- **Experimental Research:** The primary goal was to explore high-speed flight, with a mandate for "boldness and originality" rather than standard designs.
- **Fighter Potential:** It required that the design be capable of future development into a multi-gun single-seat fighter.
- **Engine:** It typically envisioned using high-performance engines like the Rolls-Royce Merlin or the Bristol Hercules.

Proposed Designs

Several manufacturers submitted or considered unconventional proposals, though the specification was eventually withdrawn:

- **Airspeed A.S.31:** Which we will look at shortly.
- **Bristol 151:** A single-seat monoplane powered by a Bristol Hercules engine, with an estimated top speed of 440 mph.
- **General Aircraft GAL.28:** Featured a variable-area wing to manage high speeds while maintaining safe landing characteristics.
- **Hawker:** A variant of the Hawker Hurricane.
- **Gloster:** A design by Henry Folland based on the Gloster F.5/34 fighter.

Ultimately, the Air Ministry chose to adapt the Supermarine Spitfire for its high-speed research instead, leading to the development of the "High Speed Spitfire".

Boldness and Originality

Airspeed certainly fulfilled the requirement specified for “Boldness and Originality” with their AS.31. This was a British single-seat, twin-boom fighter concept from 1938, designed to meet Specification 35/35 for a high-speed, 8-gun armed experimental aircraft. It featured a central, egg-shaped nacelle for the pilot and was intended to be powered by a Rolls-Royce Merlin E engine.

Key details regarding the Airspeed AS.31 included:

- **Design Configuration:** The aircraft was a tractor monoplane featuring a twin-boom layout, with the tailplane supported by two metal booms designed by Airspeed and A.H. Tiltman.
- **Dimensions:** It had a wingspan of 33 ft and a length of 29.5 ft.
- **Features:** It incorporated a wide-track undercarriage and split flaps located on the trailing edge of the wing between the booms, with wide-span ailerons situated outboard of the booms. The pilot was located in an egg-shaped, streamlined nacelle positioned on the tailplane, which was supported by twin metal booms.
- **Armament:** The design was intended to be armed with eight guns.

- **Performance Issues:** Wind tunnel testing of this high-speed tractor monoplane, revealed that this configuration would have created severe, potentially fatal, G-force issues for the pilot during high-speed manoeuvres, leading to the project's cancellation.

The Airspeed AS.31 was never built as a full-scale flying aircraft and only ever existed in the project stage. Needless to say, this design was considered highly unconventional for the time.