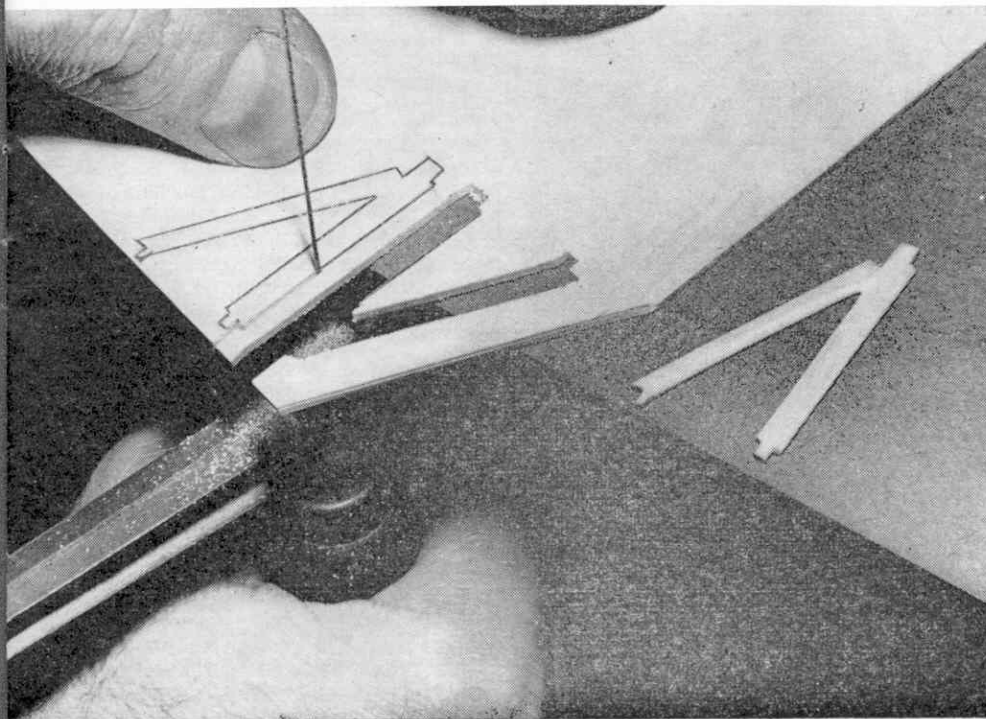




IT'S A BOMB



YES, the 'Mistel' was a bomb—a four-ton bomb, in fact, for that was the weight of high explosive packed into the nose of the lower aeroplane of the composite, a twin-engined Junkers Ju 88. On nearing the target, the pilot of the top plane would release the big pilotless bomber and direct it, by radio, to its goal. Several warships were sunk in this way, and in the closing stages of the last war the deadly weapon was used against the vital bridges over the river Elbe.

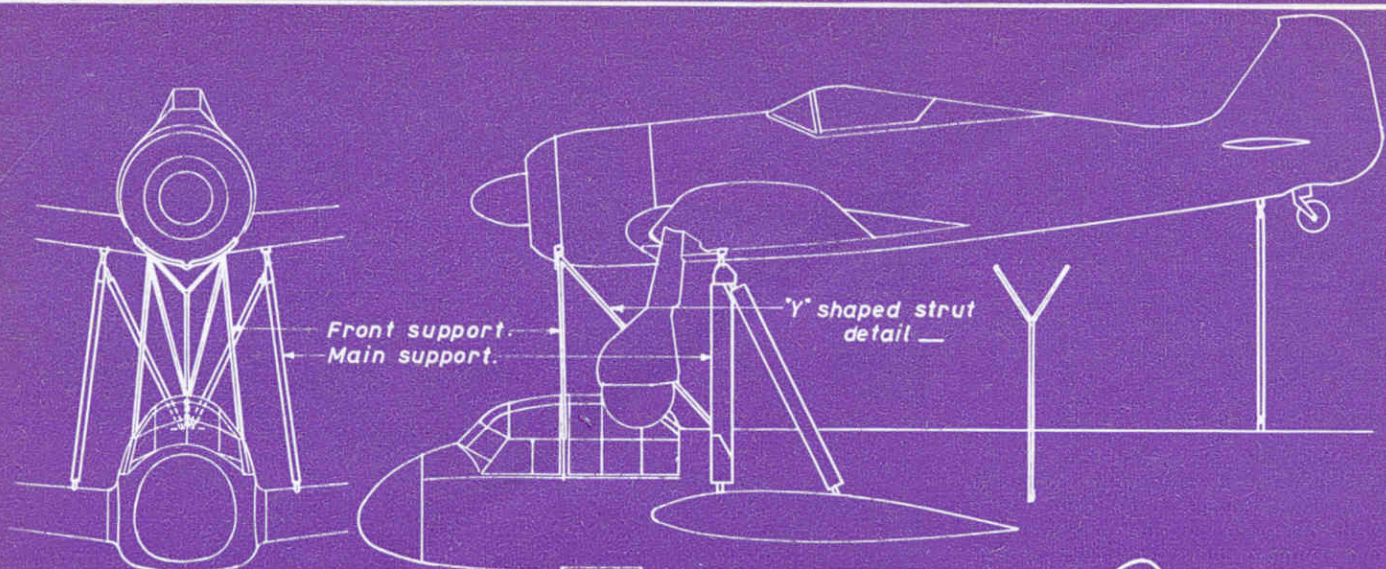
There are Frog kits for both the FW 190 and Ju 88, and Doug McHard's little exercise this month shows you how to combine the two into a passable representation of the "Mistel". Complete accuracy would be a much bigger job for the following reasons.

The Frog Ju 88 represents the A 4 version of this much modified aeroplane and, as far as is known, the A 4 always carried an Me 109G as its piloted top plane. Unfortunately, there is no Me 109G in the Frog range. The Fw 190 upper plane (like the one we've used) was, we understand, always flown with a Junkers Ju 88H or G-7 (as shown in Ian Stair's drawing opposite) and no one makes a kit for one of these! So we've cheated a bit, and modelled the 'Mistel' composite that was seen just after the war at Farnborough, in an exhibition of captured German aircraft. This pair consisted of a Ju 88A4 and an Fw 190—just like our models. Unfortunately, we understand, this was a 'freak' combination and never actually flew. Nevertheless it did exist, and twenty years later—in our photo—it became airborne and was set upon by a flight of ghostly Spitfires—even if the spectacle did only take place in 1/72nd scale on our table top!

Top photo shows our models at rest—compare it with the photograph on page 43. Note the 'rear support catcher' just ahead of the fin which was used on training aircraft to prevent damage to the rear fuselage when this strut folded back following separation.

The crafty bit of flying in the centre photo shows the models to good advantage.

Left: main supporting struts are cut from 60 thou. thick styrene sheet and then sanded to a streamlined section. Full size patterns are given overleaf.



Front view

Side view

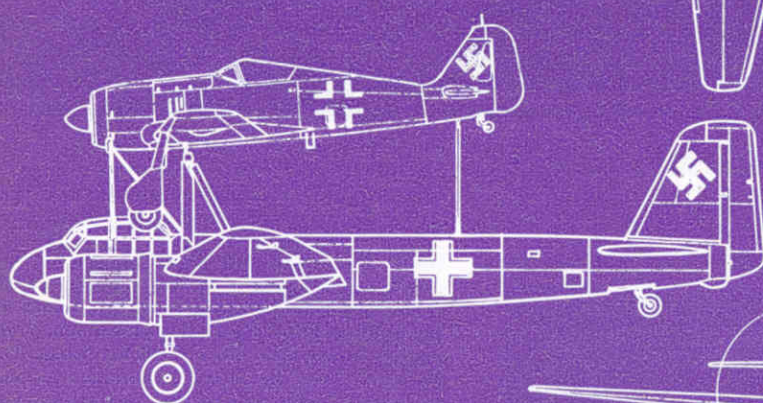
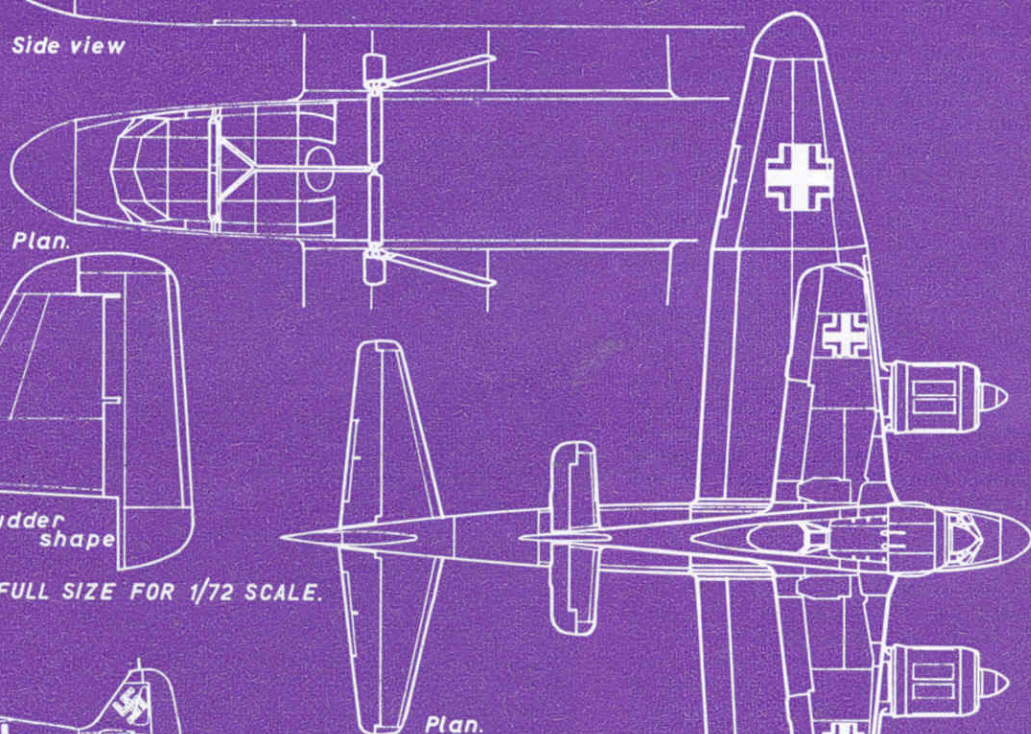
Main supports

Front support

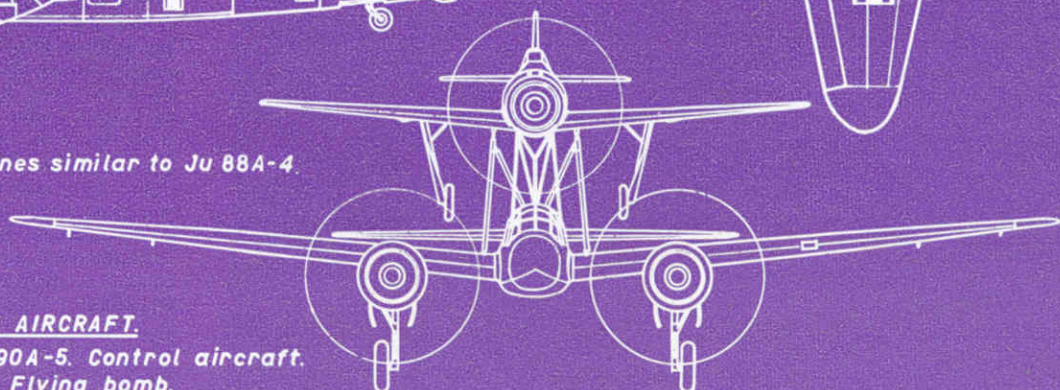
Attachment points
under FW 190.

Fin & rudder
shape

THE ABOVE DETAILS ARE FULL SIZE FOR 1/72 SCALE.



Note. Ju 88G-7. Engines similar to Ju 88A-4.

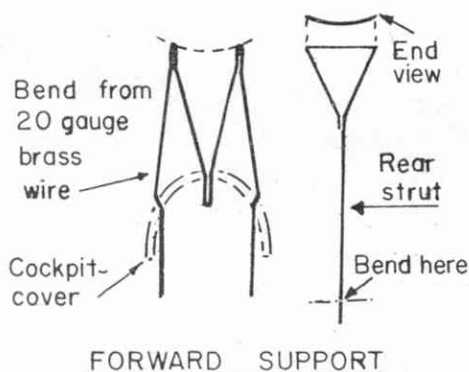
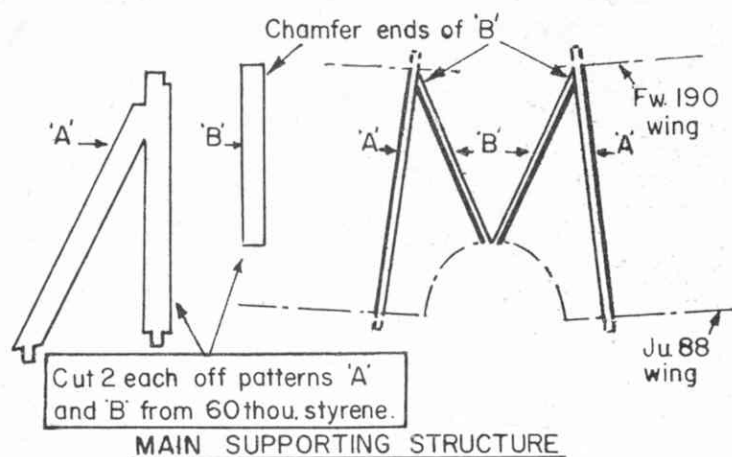
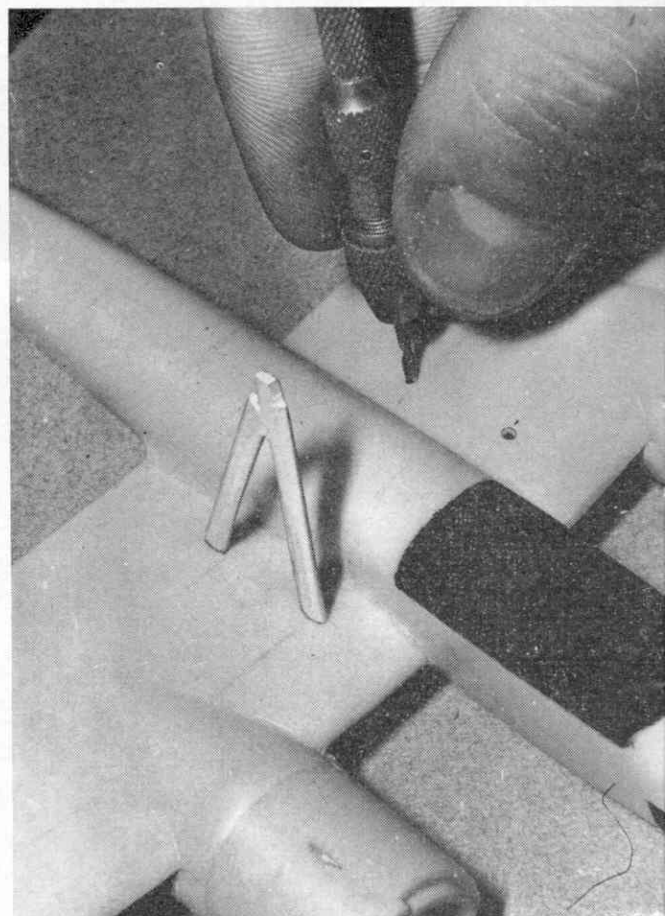
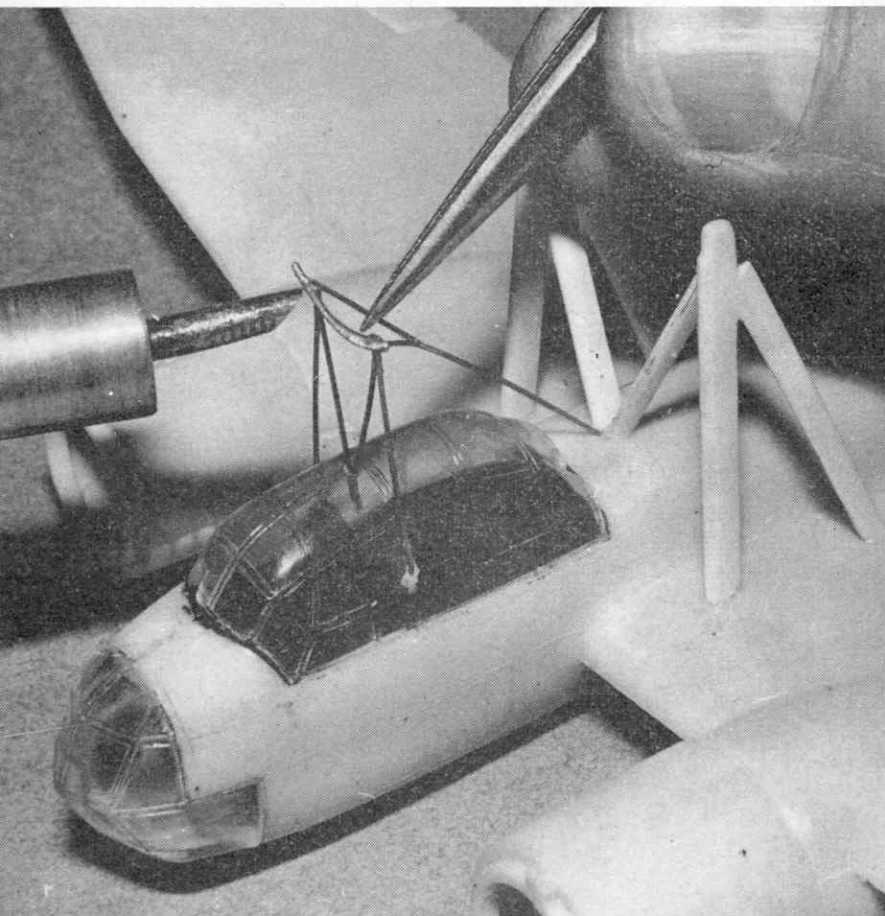


MISTEL COMPOSITE AIRCRAFT.

FOCKE-WULF Fw.190A-5. Control aircraft.
JUNKERS Ju 88G-1. Flying bomb.

Drq. by Ian R. Stair. 1966.

Scale. feet



In the photo top left the wire front support is being soldered up. If you are not confident of your ability with a soldering iron you *can* use Araldite to stick the wire parts together.

Small holes are drilled in the sides of the canopy to take the side wires and the existing aerial hole is used for the centre strut.

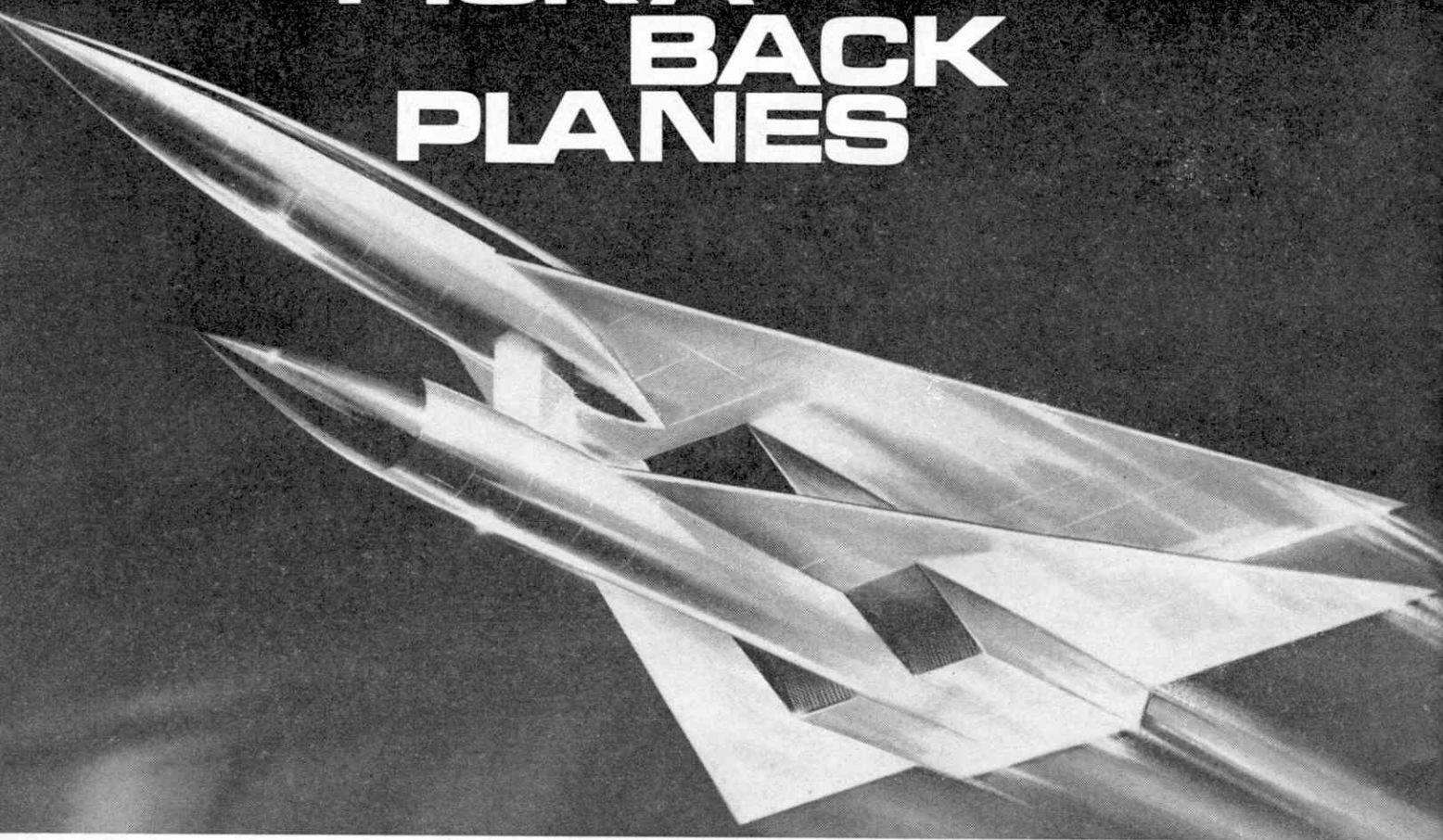
$\frac{1}{16}$ in. diameter holes are drilled in the top wing surface to coincide with the small pegs on the lower ends of the main support struts. Use the engraved 'first rib line' as a guide for spacing these holes.

Notice the cockpit interior, which is painted before the fuselage is assembled. If the 'Mistel' is to represent an operational machine no crew should be installed, but a training aircraft would have a pilot and radio operator. The remaining crew member supplied with the J.U.88 kit can be used in the Focke-Wulf as shown in the photo on page 21 as this kit does not provide one!

Colour scheme of our model was light and dark green upper surface and light blue under sides. If you build a J.U.88 G-7 it should be painted light grey and mottled with dark grey on the upper surfaces.

Small details, such as the direction finding loop beneath the F.W.190 rear fuselage, are best made from thin wire fixed in place with Araldite. Notice that the tailwheel of the F.W.190 must be cut to appear in the semi-retracted position shown in our photos if the main undercarriage is to be retracted. Holes are cut in the underside of the F.W.190 wing to accept the upper ends of the main supporting struts. It is not necessary to cement the aircraft in place.

PICK-A-BACK PLANES



IF, in 1944, any British intelligence officer had learned that the *Luftwaffe* was training pilots for Beethoven duets, he might have been suspicious but would hardly have associated the report with Germany's 'secret weapons' programme. Yet the code-name *Beethoven-Gerät*, or *Mistel-Programm*, referred to a type of two-plane air attack that might have proved highly effective if it had become operational on a larger scale.

Allied troops and naval units first made its acquaintance during the invasion of Europe in the Summer of 1944, when a number of Junkers Ju 88 twin-engined bombers dived towards them at high speed. Instead of pulling out of the dive and releasing their bombs, the aircraft crashed into the target area and exploded. It seemed as if the *Luftwaffe* had decided to form suicide units, like the Japanese *Kamikazes*. Only later was it realised that the Ju 88s were unmanned and were being dropped near their targets by the pilots of Bf 109 carrier-aircraft.

Zeppelins

There was nothing new in the idea of using pick-a-back, or composite, aircraft. As long ago as 1916, during the First World War, an aircraft had been carried into the air by another and released in flight. On that occasion, however, it was the British Royal Naval Air Service that was trying to evolve a weapon for use against German invaders, in the shape of giant Zeppelin airships.

Nowadays, we remember Zeppelins mainly for the bombing raids they made against England and tend to forget the part they played in the war at sea, around our coasts. Their ability to fly slowly for very long periods enabled them to shadow Allied naval units and report the latter's position by radio to the German navy and shore bases. If they decided to drop some bombs on the Allied ships, there was little to stop them. They cruised high enough to be out of range of light guns and could outclimb the R.N.A.S. seaplanes and flying-boats that were sometimes sent up to drive them away.

What the navy needed was a force of high-speed single-seat fighters to defend the fleet at sea. Unfortunately, the true aircraft carrier was still a year or two away. All kinds of alternatives were investigated, such as flying the fighters from wooden platforms built over the gun turrets of warships, launching them from lighters towed behind fast destroyers—and launching them from a larger aeroplane in flight.

The man responsible for the last of these ideas was Sqn. Cdr. John Porte, who designed the majority of the big flying-boats used by the R.N.A.S. in 1914-18, using the American Curtiss' boats as the basis for the most widely-used versions. Having just designed a real monster named the *Porte Baby*, with a span of 124 ft. and weight of 8½ tons, he realised that this flying-boat was large enough to carry a fighter-plane far out over the North Sea in search of Zeppelins, so overcoming the

fighter's short range.

On May 17, 1916, a little Bristol Scout was hoisted up on to the top wing of the *Baby*, so that its main wheels rested on crutches forward of the wing leading-edge, while the tail-skid was secured by a quick-release hook. Piloted by Porte, the *Baby* took off and climbed to a height of 1,000 ft. over Harwich. Above him, in the cockpit of the Scout, Flt. Lt. M. J. Day started up the fighter's 80 h.p. rotary engine and climbed away without any apparent difficulty; but the experiment was never repeated.

Trapeze

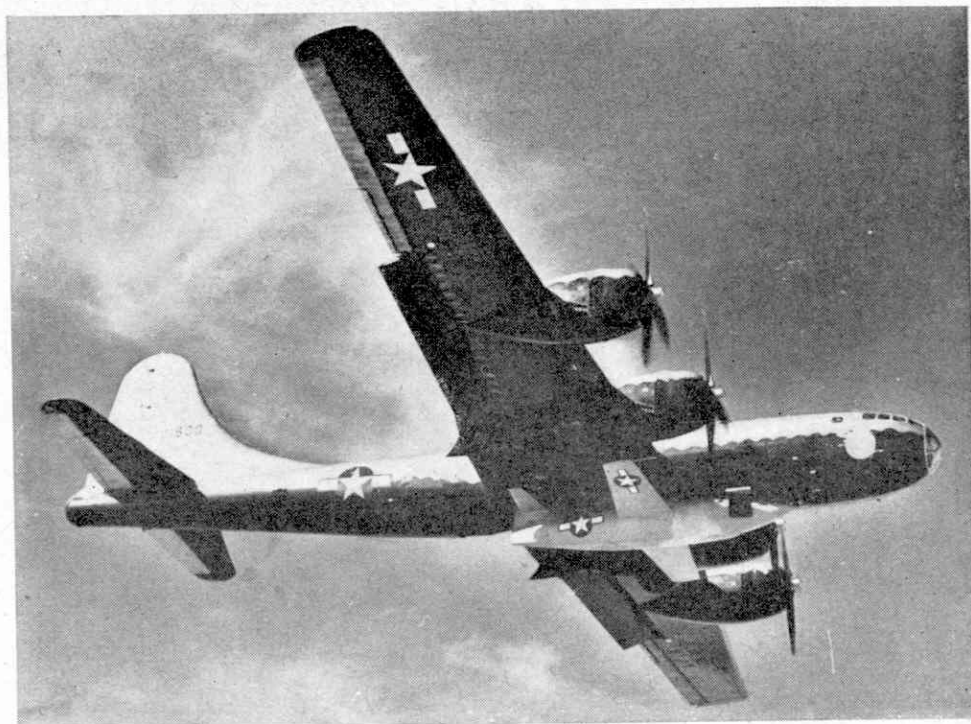
The composite idea was resurrected, in different forms, on several occasions during the following 20 years. Both Britain and America carried out trials in landing and retrieving defensive fighters from large airships, using trapeze structures on which the aircraft were 'hooked'. Russia went a rather remarkable stage further by carrying a fighter on each wing of one of its big Tupolev monoplane bombers and launching them in flight.

Once again, however, it was in Britain that the next major achievement by a composite aircraft was planned. Imperial Airways and Pan American flying-boats succeeded in making the first airline crossing of the North Atlantic by heavier-than-air machines in July 1937; but it was clear that commercial services would not be practicable until longer-

range aircraft were available, able to carry a reasonable payload as well as sufficient fuel for the flight.

Major R. H. Mayo suggested that the answer might be a pick-a-back machine, consisting of a relatively small four-motor seaplane carried on top of a large four-motor flying-boat, to take advantage of the principle that an aircraft can fly with a heavier load than it can lift off the ground or water. In this case, the little *Mercury* seaplane, heavily laden with fuel and payload, was designed to be carried into the air by the flying-boat *Maia* and released at height. There was little doubt of its success.

On July 20-21, 1938, *Mercury* separated from *Maia* over Foynes, Ireland, and made the first-ever non-stop flight between the British Isles and Montreal, during which it not only broke the record for the East-West Atlantic crossing but also gained the distinction of making the first commercial crossing by an heavier-than-air machine, by carrying a 1,000 lb. payload of mail. Then, in October of the same year, it flew non-stop from Dundee to the Orange River, South Africa—a distance of 5,998 miles—setting up a seaplane record that stands to this day.



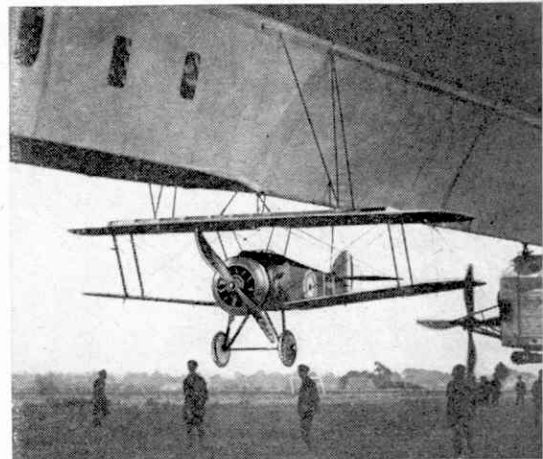
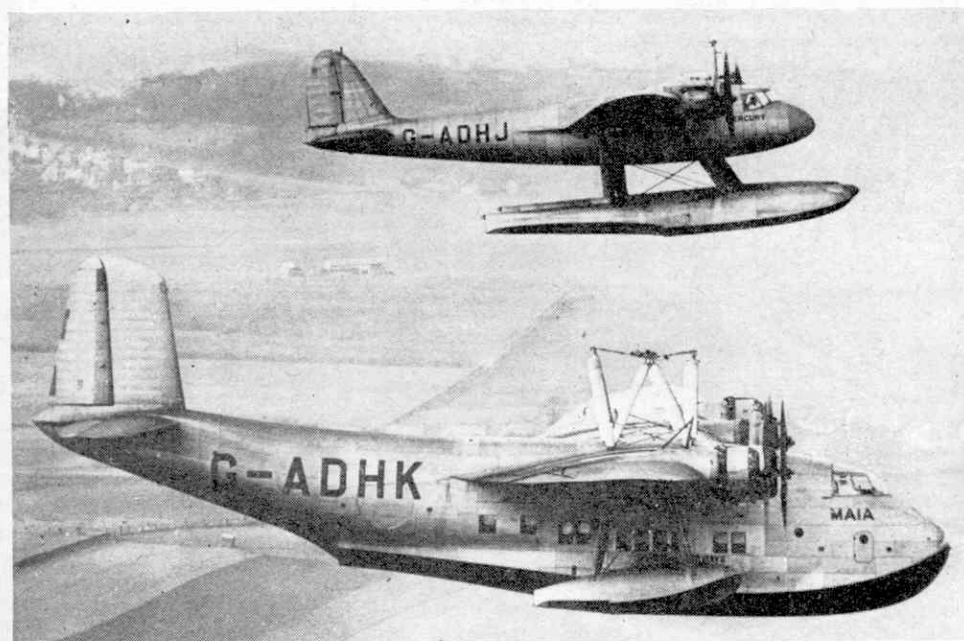
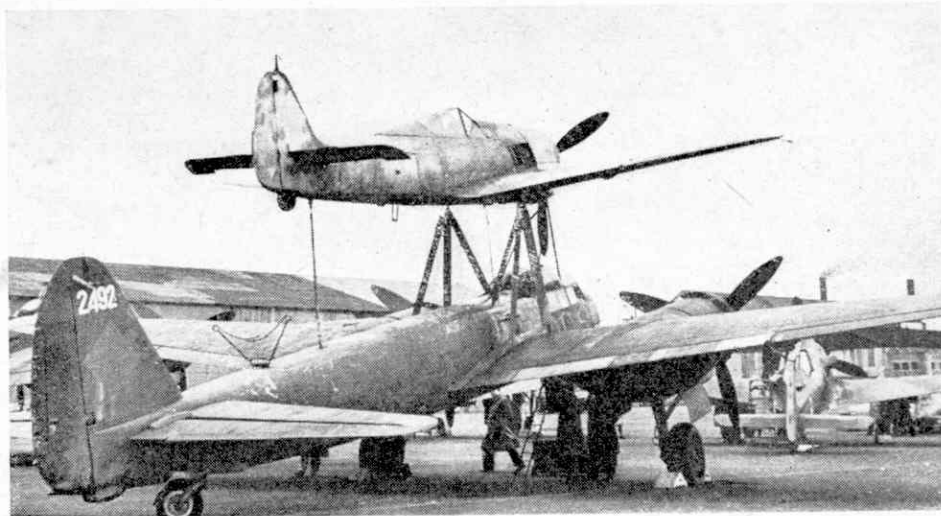
War-Weary

Whether or not the Germans were influenced by *Mercury's* achievements when they conceived the *Beethoven/Mistel* programme is not known. The lead came from their glider designers who suggested that it would be much better to carry gliders under aeroplanes than to tow them behind, at the end of cables.

The first tests were made with a small DFS 230 cargo glider, carried under a Klemm lightplane. The carrier-aircraft was not powerful enough to take off with its load, so the whole thing was towed off the ground by a Ju 52. Eventually, a Bf 109E was made available as the carrier, and this was able to take off, fly and land atop the DFS 230, unaided.

At this stage, someone suggested that if the glider were replaced by a war-weary bomber, packed with explosive, the result might be a very effective and inexpensive weapon. Junkers

Continued on page 48



Top of page: modified Boeing B-29 carrying aloft the supersonic Bell X-1 rocket plane

Middle: subject of our plastic conversion this month; Focke-Wulf-Junkers 88 'Mistel' combination at Farnborough after the war

Above: Sopwith 'Camel' suspended from airship R 23 at Howden

Left: Seaplane 'Mercury' lifting off the flying-boat 'Maia'

were given the task of developing a system by which the pilot of the carrier aircraft could operate the flying and engine controls of both halves of the composite and cause them to separate at the right time. This they did and, as a start, repaired and modified 15 Ju 88A-4s as 'payloads' for the Bf 109F-4s allocated to the *Mistel* programme.

In its operational form, the Bf 109/Ju 88 composite had a take-off weight of 36,960 lb. and could cruise at 280 m.p.h. to attack targets up to 440 miles away. Separation usually took place at heights between 3,000 and 10,000 ft., and the Ju 88 reached a terminal velocity of about 370 m.p.h. as it dived into the target with its 7,700 lb. hollow-charged warhead.

Following the *Mistel's* initial success against Allied shipping off the coast of Normandy, in early July 1944, it was decided to switch to an even more formidable Focke-Wulf FW 190/Ju 88G combination for the full production version. The first 50 Ju 88G-1s, suitably modified, were delivered quickly. The second batch of 25 was not so lucky, many of the aircraft being reduced to scrap metal by

12 P-38 Lightnings whose pilots spotted them at Mockau airfield.

Altogether, 95 *Mistels* were produced. Some were used against railway targets and bridges in a vain attempt to stem the Allied advance, between September 1944 and January 1945. In the following month, others were employed to attack the Oder bridges on the Russian front. They achieved little, and within a few weeks the remaining *Mistels* were in the hands of the victorious Allied forces.

Since then, there have been many more composites, some of which have joined the ranks of the great pioneering aeroplanes of history. For example, the Bell X-1 was launched in mid-air from a Superfortress when it made the first faster-than-sound flight on October 14, 1947, and the North American X-15 was dropped from a Stratofortress on the flights which have taken it to a speed of 4,104 m.p.h. and height of over 67 miles. Weapons like Blue Steel and Hound Dog are modern '*Mistels*' of infinitely greater destructive power. And this is only the start, for many designers favour the carrier-plane principle for launching future hypersonic orbital and space aircraft.

J. W. R. Taylor

Make your own '*Mistel*' Pic-a-back from our conversion feature on page 20.

New readers will be interested to know that the May issue dealt with the conversion of the Frog 'Wallace' kit into a 'Wapiti', and the June conversion was the Fokker F.VIIa from a 'Southern Cross'. Limited numbers of both issues are still available from our Back-Numbers Department, price 2s. 6d. each, including postage.

Next month the subject will be the Airfix Hawker Hart—order your copy now!



1. A railway line gradient post indicating a slope of 1 inch in 200 inches.
2. No. A compass needle points to the magnetic north which is some thousands of miles away from the actual Pole.
3. False. Oaks grow in all temperate climates.
4. Nefertiti, the sister-queen of the Egyptian pharaoh Akhnaton.
- 5.
6. Maximum is 21 years. (Only in rare cases do they exceed this.)
A. 123-45-67-89-100
B. 1, Scatter; 2, Dogged; 3, Staggered; 4, Million; 5, Paper; 6, Covered; 7, Pottery; 8, Bullet; 9, Grateful; 10, Boxer.
- C. $6\frac{1}{2}$ miles.
- D. Scarborough, Margate, Southsea, Worthing, Clacton, Southend, Hastings, Herne Bay.



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