

German Aircraft*

No. I

THE history of the German aircraft industry during the war is one of ceaseless endeavour to overtake and hold technical superiority over the Allies. In spite of all that German industry and ingenuity could contrive, the fact remains that German aircraft, even in the earliest days of the war, could not wrest air supremacy from the British, and later from the Allies. The most notable example of this failure is probably the Battle of Britain, when, although the Luftwaffe had undoubted numerical superiority over the R.A.F., the combination of superior per-

formance of British fighters and the pilots who flew them and inspired tactics produced a defeat from which the Luftwaffe never really recovered. Apart from a brief moment when the F.W.190 appeared to offer a hope of revival for the Luftwaffe fighter force, superiority in this class was maintained until the German collapse.

Although the German bomber force was adequate for its intended purpose, as a weapon to overwhelm and terrorise small nations, that rôle failed when the Luftwaffe was turned against this country. There was, consequently, nothing to take its place as a strategic bombing force, owing to the lack of long-term planning. The Germans produced nothing to equal the "Lancaster," either in performance or as a weight carrier. Frenzied attempts were made to manufacture the Heinkel 177 in sufficient numbers to build up a new bomber force, but it was a failure from the start, and although many of the teething troubles were eradicated it never became a serious menace. There were, of course, many other experiments with heavy bombers, but little had appeared at the time of Germany's collapse to challenge Allied superiority in this field.

German experiments in jet propulsion and rocket-assisted take-off produced much that was revolutionary in aircraft performance and design. British and American developments in this direction still remain a secret, and there is, at the moment, no means of comparing Allied progress with that of Germany. It appears, however, that one of the main difficulties confronting the Germans was a lack of endurance, and although some of the performance figures appear to be staggering, in actual fact they could be maintained for such a small space of time as to make them doubtful quantities in operation. Whether these particular difficulties would have been overcome under the stress of the tremendous Allied bombing offensive, can only be a matter for speculation at the moment.

To sum up, it would seem that the German aircraft and aero-engine designers suffered mainly from a lack of co-ordination and direction from above. They appeared to be engaged in frantic competition with each other to produce a weapon which would overcome Allied superiority and turn the air war in their favour. Many prototypes were produced only to be scrapped

* Air Ministry News Service.

SINGLE-SEAT FIGHTERS

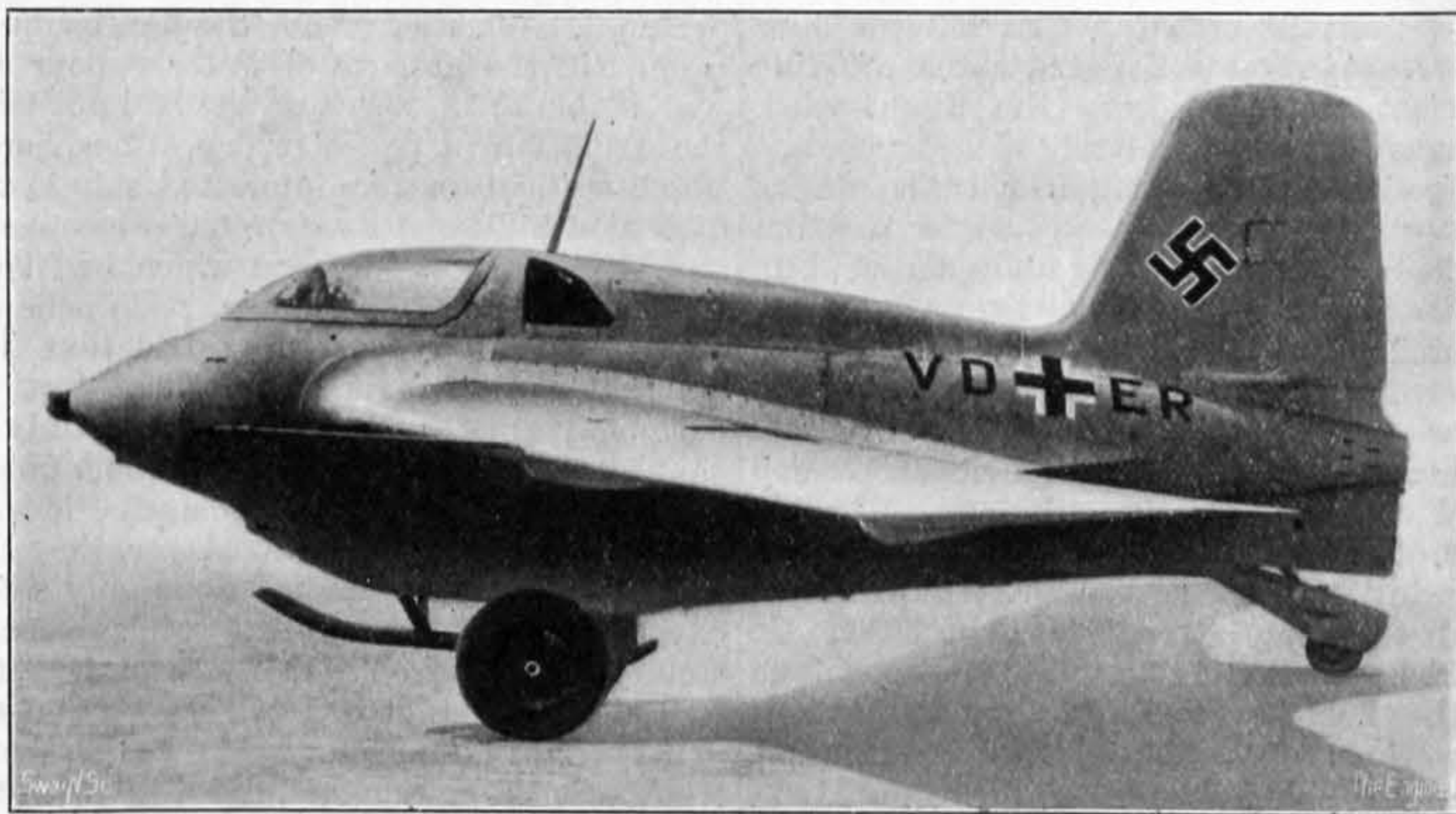
Single-seat fighters were by far the most important category in Germany during the later



ME 262 A SINGLE-SEAT JET-PROPELLED FIGHTER

phases of the war, and the most interesting from the technical standpoint. They will, accordingly be dealt with first.

It is a significant fact that apart from the jet-propelled types, which will be dealt with later, the Germans used only two basic designs of single-seat fighter, whereas the Allies employed at least a dozen. Standardisation of these two types (Me.109 and Fw.190) was an excellent thing from the view point of production and maintenance, but meant that to offset the progressive modernisation of the "Spitfire" and the introduction by the Allies of new fighter



ME 163 B ROCKET-PROPELLED INTERCEPTOR

types, ceaseless improvement was imperative. This is particularly well illustrated in the case of the Me.109, now about ten years old. In 1937 the Me. 109A had 500 H.P. and was slower than the "Hurricane." At the end of the war, its most modern descendant—the 109K—had nearly 2000 H.P., was about as fast as the "Mustang," and had ten times the fire power of the original 109.

In conjunction with the GM.1 (nitrous oxide)

and MW. 50 (methanol) power-boosting systems, engine and airframe improvements enabled the 109 throughout the war to tackle our fighters at least on something approaching equal terms. But high performance was not all that was demanded. The American daylight heavy-bomber offensive called for heavier fire power, so the armament of the Me.109 was gradually stepped up from one 20 mm. gun and two light machine guns—this was the standard armament in 1941—to three guns of 20 mm. or 30 mm. calibre, and two of 0.5in. bore. That was a very heavy load for a small fighter, and its resistance and weight detracted appreciably from the increased performance allowed by the newer engines and power-boosting systems.

As an alternative to the wing guns on the Me.109, a pair of 21 cm. rocket projectiles were sometimes hung below the wings for attacking "Fortresses" and "Liberators." At one time this 21 cm. rocket seemed menacing, but it soon proved to be very inaccurate.

So much for the Me.109, the mainstay of the German day-fighter force. A fine aeroplane, but a poor second to the "Spitfire," "Mustang," or "Tempest." Professor Messerschmitt did attempt to build better fighters—the 209 and 309—but neither of these was enough to warrant retooling for production. The 309 was, nevertheless, an interesting design with a tricycle undercarriage. Contrary to reports, neither the 209 nor the 309 ever became operational.

The introduction of the radial-engined Fw.190A in 1942 gave the Germans a temporary superiority in performance at medium height. This excellent little aircraft remained in service until the end as a general-purpose fighter, bomber, and low-level attack aircraft. It was capable of carrying a 4000 lb. bomb, but a more normal load was 1000 lb. to 1500 lb. Its armament and handling characteristics were admirable, but poor altitude performance, due to the characteristics of the HMW 801 engine, was a very serious drawback. Towards the end, the Fw.190 was fitted with a liquid-cooled Jumo 213 engine. This was the so-called "long-nosed 190" or the 190 D. Eventually, it was completely redesigned as the Ta.152, virtually a new type. This Ta.152, although not so spectacular as the jet fighters, has an excellent performance, particularly one version of it, known as the 152 H. This aircraft has an amazingly long wing span—nearly half as much again as the "Spitfire." This feature, together with the two-stage supercharger of the Jumo 213 engine, gives it a very high per-

formance at altitude. The top speed is over 460 m.p.h. at 41,000ft. Kurt Tank, the designer, whose practice it was to fly all aircraft of his own design, tells with some satisfaction how, when testing a Ta.152 H a few weeks before the collapse, he outstripped a flight of pursuing "Mustangs." The 152 H was coming into service when Germany capitulated.

An even more remarkable high-altitude

fighter under development was of Blohm and Voss design—the Bv.155. This has a liquid-cooled DB 603 engine, with a special turbo-supercharger known as the TK 15, and was expected to attain its top speed of nearly 430 m.p.h. at over 50,000ft.—above the ceiling of present-day fighters. Had this Bv.155 come into service, it might have set some new problems.

One of the newest single-seat fighters using conventional engines, or Otto engines, as the Germans call them, was the Do.335—the strange aircraft with a propeller fore and aft. Dorniers prepared the basic designs for the 335 several years ago, but were only recently authorised to proceed with development work. The single-seat 335 day fighter was not used operationally, but was a promising design with three high-velocity 30 mm. guns and two 20 mm. guns. The top speed was over 470 m.p.h. There was a project for installing a turbo-jet unit in place of the rear engine.

Sufficient has already been published to show that the Germans were quick to appreciate the advantages offered by jet propulsion. The term "jet propulsion," it should be remembered, covers not only turbo-jet units as used in the

apparent towards the end, and highly specialised rocket-propelled interceptors of various designs with extremely short duration were under development.

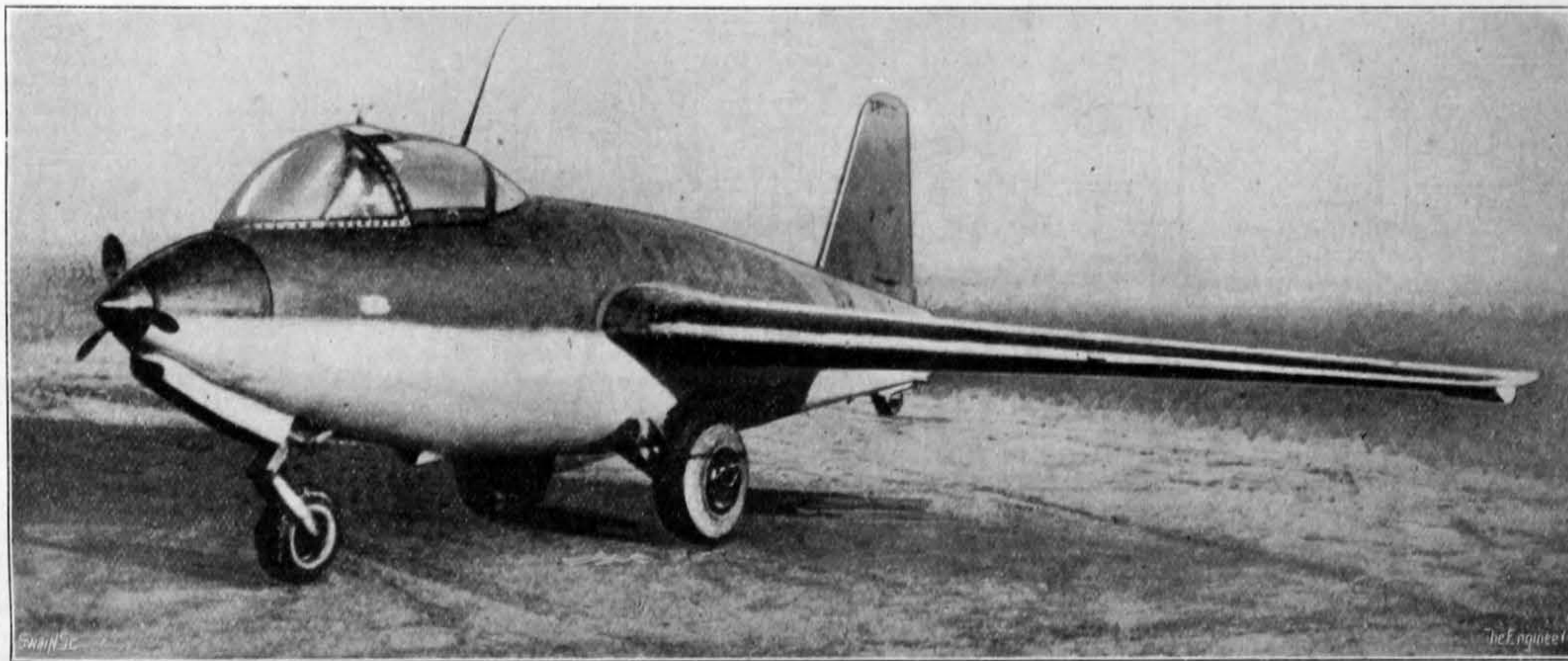
One type actually went into service several months before the collapse. This was the amazing little Me.163 "Komet," a semi-tailless design, capable of a level speed of about 550 m.p.h., and able to climb to 30,000ft. in just over 2½ min. The Me.163 normally took off under its own power, jettisoned its wheels and landed on a skid. It was armed with two 30 mm. guns and was built partly of wood. In order to increase the endurance, a later model, the 163 C, had a special rocket unit incorporating a second jet, to give cruising economy. The endurance under power was about 12 min. and the maximum speed 590 m.p.h.

The development of the 163 was finally taken over by Junkers, who designed an aircraft of similar characteristics, which they called the Ju.248 (later the 263). This 263 was designed to climb to 49,000ft. (far above the operating height of our bombers) in 3 min.

Rocket-propelled interceptors of this sort were comparatively quick and cheap to build, but were very seriously handicapped by their

was designed for a speed of 590 m.p.h., and an endurance of up to 3 hours. The Messerschmitt was generally similar. One version of the Ta.183 was to have a liquid rocket above the turbo-jet tail pipe to improve climb and emergency speed.

The performance of some of these German jet fighters, particularly the 163 and 263, is quite staggering judged by the standards of 1939, but the enemy was developing a "last-ditch" project which would have made them seem sluggish. This was the Natter or Viper, a project of the Bachem concern. Although Natter is rightly classed as an aircraft because it has wings, controls, and a pilot, its proposed method of employment was such that it might be regarded as a piloted Flak rocket. Natter, or the BP 20, to give it its number, was a tiny aircraft of about 18ft. span and powered by a liquid rocket, as installed in the Me.163. It was to take off vertically with the assistance of auxiliary rockets, climb at the rate of about 37,000ft. a minute, and destroy a bomber with its battery of rocket projectiles. This being accomplished, the pilot was to be ejected and descend by parachute. Simultaneously, the rear half of the fuselage containing the liquid



JU.263—ROCKET PROPELLED INTERCEPTOR FIGHTER

British jet fighters, but liquid rockets, almost exclusively a German development.

The first jet-propelled aircraft to fly in Germany—or, for that matter, in any country—was a Heinkel, the He.178, a counterpart of our Gloster-Whittle. This little single-seater made its first flight on August 27th, 1939, four days before the Germans marched into Poland. The 178 had an experimental Heinkel turbo-jet unit with a thrust of only 1000 lb. It was purely a flying test bed and was not developed for military purposes, but it did provide useful data for the construction of the twin-jet He.280 fighter which flew in 1941. The 280 was an attractive-looking aircraft, but tests showed that it did not hold the same promise as a contemporary Messerschmitt design, the now-famous Me.262.

Work on the Me.262 (known also as "Sturm-vogel") was started in 1939, and it flew in 1940 with a conventional Junkers engine and propeller. In 1941 two Heinkel turbo-jets were installed, but the aircraft did not take off, as it was found to be under-powered. In July, 1942, Junkers jet units were installed and an intensive development programme commenced.

The standard Me.262A single-seater, which was in service at the time of the collapse, had a top speed of 525 m.p.h. at 23,000ft., and a service ceiling of just under 40,000ft. It carried over 500 gallons of fuel and was armed with four 30 mm. guns. The bomb load was 500 lb. or 1000 lb. Handling qualities, considering its high performance, were good, and the landing speed not unduly high, about 120 m.p.h. This emphasis on rapid climb became increasingly

short endurance in the air. It was accordingly decided to produce a cheap fighter with a lower performance and a longer duration, and the Heinkel Company was instructed to develop the aircraft which we now know as the He.162 or "Volksjäger"—the People's Fighter. Design work on the 162 was started on September 23rd, 1944, and the first flight was made on December 6th, 1944. It was not surprising that some fairly serious teething troubles were experienced. For example, on the second flight the leading edge of the wing collapsed and the aircraft broke up in the air. This did not seriously hinder the development programme, and after considerable modification to the wing the aircraft was ready for issue to squadrons. We have examined and flown a number of these "Volksjägers." They are largely of wooden construction, have a tricycle undercarriage, a catapult seat, and are powered with a single BWM turbo-jet unit mounted above the fuselage. Their speed is about 500-520 m.p.h., and the armament a pair of 20 mm. or 30 mm. guns. Landing and take-off are difficult for inexperienced pilots, but credit must be given to the Germans for having produced what they set out to produce—a cheap fighter with a better performance than standard Allied types.

The single-jet lay-out is, of course, very attractive to designers, and both Focke-Wulf and Messerschmitt were working on new fighters with one turbo-jet unit. The Focke-Wulf effort—the Ta.183—had a jet unit in the fuselage, a very sharply swept-back wing, and a strange, but theoretically efficient tail unit. It

rocket would break off and itself descend by parachute. The aircraft was designed for quantity production in small wood-working shops. It was also attractive in that it would reduce the training of pilots to a minimum.

Published reports have referred to a development of the flying bomb intended for use as a fighter. The fact is that the power of the impulse duct engine as used on the V 1 falls off rapidly with height, so that a fighter with such an engine would have a very limited application.

(To be continued)

CAPTURED LIFEBOATS.—The last that the Royal National Lifeboat Institution heard of its lifeboats in Jersey and Guernsey before the German occupation was on June 29th, 1940. They had been ordered to sail for Cowes, but that afternoon Jersey telephoned that the Governor would like to keep the lifeboat. The Institution agreed, and heard nothing more for three years. Then, in June, 1943, a cryptic message came from Jersey, on a printed form of the German Red Cross, from which the Institution knew that the boat was at her station and seaworthy. Again nothing was heard for two years until the war in Europe was ended. When the chief inspector visited the two Channel Island stations in June, 1945, he found that the Guernsey boat, which had been armed by the Germans with two guns and used as a fishery patrol boat, had been so mis-handled that she was unfit for lifeboat work. The Jersey boat was in better case. She, too, had been used by the Germans, but she had also gone out five times as a lifeboat, with her crew under German guards, and had rescued thirty-five lives. After overhaul and repair she will return to the Institution's fleet.