

Statement issued by Folland Aircraft Ltd., in connection
with the visit by Press photographers, film and television
cameramen to Chilbolton Airfield, on 27th August, 1954, to
photograph and film the
M I D G E.

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The aeroplane you have been invited to film and photograph is the Folland Midge, which can most aptly be described as the prototype of the Folland Gnat, the world's first light jet fighter. The Midge owes its existence to a 12-months break in the development of a suitable engine for the Gnat; to have waited for a suitable engine would have seriously delayed the testing of the Gnat's flying and handling characteristics, and Folland decided to build a prototype with an adapted form of an established engine, the Armstrong Siddeley Viper turbojet of 1,640 lb. thrust. To distinguish this version from the other, it was given the name Midge.

Externally, there is little difference between the Midge and the Gnat and for all practical purposes it can be said that the distinction between them is largely one of engine. The Gnat will have the Bristol Orpheus, which is designed to give roughly three times the power of the Viper for only a slightly greater weight and slightly larger diameter.

Flight trials of the Midge began on 11th August, 1954, well under three years from the date on which design work was started. The first flight was made at the Ministry of Supply's Aeroplane and Armament Experimental Establishment, Boscombe Down, Wiltshire.

It was taken by road, structurally complete, from Hamble, near

Southampton, where it was built, the 53-mile journey being covered in seven hours. It was unloaded, given the customary pre-flight tests, taxied, "hopped" once, flown and then flown away - all within eight hours of its arrival.

Four flights were made at Boscombe Down. The first was no more than a circuit and landing, with a light fuel load. The Midge was then refuelled, and the pilot took off on a flight that lasted half-an-hour. In the course of this he performed eight slow-rolls and put the machine into several tight turns at high speed - a demonstration of his confidence in the machine after an acquaintance with it, in the air, of only a few minutes.

Two more flights followed and then, entirely satisfied, the pilot took off once more and flew the Midge to Chilbolton, near Winchester, Folland's experimental airfield, where its flight trials have continued.

So far, the Midge has fulfilled every hope and expectation of the company that produced it. Folland had not built an aeroplane of their own design for more than fourteen years, having been exclusively employed on sub-contract work, yet such is the Midge's simplicity that they were able to design, build and test the prototype in less than three years. Modern fighters of conventional pattern take from five to six years to design, build and test.

The movement of the Midge from Hamble to Boscombe Down by road not only saved three full days' work re-assembling the machine; it also demonstrated one of the merits of the light fighter - its mobility.

The Midge has also proved the soundness of another merit claimed

for this type of aeroplane - a low maintenance time in relation to flying time. Some standard fighters now in operational service need at least 100 man-hours of maintenance for every hour of flight. In the thirteen days following the first flight, it logged nine hours in the air and made no fewer than thirty take-offs and landings.

One reason for the low maintenance time is the absence of some of the complicated equipment carried by the standard fighter and the accessibility of all items needing routine attention. Neither trestles nor staging is required to reach them.

At this stage, Folland have every right to contemplate their light jet fighter project with the utmost satisfaction and optimism, so far as performance is concerned. In addition to a far more powerful engine, the Gnat will have power-operated inboard ailerons which will give it an exceptionally high rate of roll over a wide range of speed and altitude. Like the Midge, it will also have a power-operated "flying" (or variable incidence) tailplane, a device which enables the pilot to adjust the angle of the tailplane to suit changing conditions of flight and to maintain complete control of the aeroplane at high subsonic and supersonic speeds, both in level flight and in turns.

Although it has only a 1,640 lb. thrust turbojet, the Midge can be flown at a speed in excess of 600 miles an hour in level flight*. Obviously, with an engine three times the power of that of the Midge, the Gnat will be considerably faster than the Midge. Neither the speed nor

* It is interesting to recall that the Meteor twin-jet fighter which made a world speed record of 606 m.p.h. in 1945 had a total thrust of more than 7,000 lb.

any other aspect of the Gnat's performance can yet be revealed, and it can only be stated that the little fighter will eventually be supersonic in level flight. It will also have a rate of climb better than that of any turbojet engined contemporary.

This light fighter project is a private venture - that is to say, it has no official backing of any kind. Folland embarked upon it because there was urgent need for a smaller and lighter fighter. Trends that had been unchecked for forty years had so increased the size, weight and cost of the standard fighter, and the difficulties of its design, production and operation, that many countries could no longer build or buy the numbers they needed for their defence.

Folland claim that five Gnat airframes can be built in the man-hours required for the construction of one standard fighter airframe; that 20 fully-equipped Gnats can be bought for the price of six standard fighters; that the Gnat can be built in factories having only the ordinary machinery and tools of an engineering workshop by workmen of no more than average skill, whereas the standard fighter calls for elaborate and costly machine-tools and the services of highly competent technicians.

Furthermore, considerable skill is required to fly the standard fighter, and pilots need a long period of training before they become operational. The Gnat will be a simple aeroplane to fly and its pilots will need shorter periods of training.

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If the weather is good, today's demonstration should give ample proof of the flying qualities of the Folland light fighter - especially when it

is remembered that the Midge is but the "shadow" of the Gnat.

The demonstration will be given by Squadron Leader E.A. Tennant, D.F.C., who, after much operational flying during World War II - mainly on night fighters and fighter bombers - went through the Empire Test Pilots' School at Farnborough and was a Boscombe Down test pilot for three years before joining Folland Aircraft, Ltd. last year as the company's Chief Test Pilot. He has been responsible for all the test flying of the Midge and will fly it at the S.B.A.C. Air Display next month. He is 32, married, lives at Stockbridge, and is a keen and knowledgeable angler.

Head of the design team responsible for the Midge and the Gnat is Mr. W.E.W. Petter, C.B.E., Folland's managing director and chief engineer. When still in his twenties, Mr. Petter designed the Westland Lysander army co-operation monoplane, and followed this with the Whirlwind fighter bomber and the Welkin high altitude interceptor. Later, he became still more famous as the designer of the Canberra, the R.A.F.'s first jet bomber, which is also being made in the United States, as the B-57, for the U.S. Air Force.

In his latest enterprise, he aimed to create a fast, hard-hitting, highly manoeuvrable fighter that could match the flying and fighting performance of the best of its standard contemporaries, yet by simplicity of structure and limited equipment bring with it advantages which the standard fighter neither has nor can be given. The evidence supplied by the Midge suggests that he is about to add the name of another notable aeroplane to those for which he has already been responsible.

The first Gnat, parts for which are now being made, should be flying in about a year's time. The following are its principal dimensions:-

Span	..	..	..	..	..	..	20 ft. 8 in.
Length	..	..	..	..	..	..	28 ft. 9 in.
Height	..	..	..	..	..	..	8 ft. 3 in.

27th August, 1954.

Visit of Photographic Agencies, News Reels and Television
Cameramen to Chilbolton Airfield, near Winchester, on 27
August, 1954, to photograph and film the Midge.

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Summarised Statement by Folland Aircraft Ltd.

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The Folland Midge is the prototype of the Gnat, the world's first light jet fighter. It is powered by an Armstrong Siddeley Viper Turbojet engine of 1,640 lb. thrust, and was built to test the soundness of the basic design pending delivery of the Gnat's standard engine, the Bristol Orpheus, which will have three times the power of the Viper when fully developed.

Despite the low power of its engine, the Midge can fly at a speed in excess of 600 m.p.h. It is purely a development aircraft and carries no armament. It made its first flight on August 11, 1954, at the Aeroplane and Armament Experimental Establishment, Boscombe Down, near Amesbury, Wilts., having been transported there by road, structurally complete, from Hamble, near Southampton, where it was built.

Within eight hours of its arrival it had been given its pre-flight tests, taxied, "hopped" once, flown and then flown to Chilbolton, the Folland airfield near Winchester, Hampshire, where its trials have continued. In the first 13 days it completed nearly 10 hours of test flying, and made more than 30 take offs and landings - a remarkable record for an aeroplane with a comparatively short flight endurance.

Externally, the Midge is identical with the Gnat except for the ailerons which, on the Midge are of the conventional type but are inboard and power-operated on the Gnat. The Gnat's ailerons give it an exceptionally high rate of roll over a wide range of speed and altitude.

In common with the Midge, the Gnat will have a powered "flying tailplane", a device which enables the pilot to adjust the angle of the tailplane to suit changing conditions of flight and to maintain complete control of the aeroplane at high subsonic and supersonic speeds.

Precise figures relating to the speed of the Gnat cannot yet be given but it can be disclosed that this fighter will ultimately be supersonic in level flight. Its unusually high thrust-to-weight ratio will also give it an outstanding rate of climb.

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Although only half the size and one-third the weight of the standard fighter the Gnat will match, and in certain respects surpass, the performance of the standard fighter, both as an interceptor and as a fighter bomber. It will be fast, hard-hitting and highly manoeuvrable, easy and cheap to build and simple to fly.

Its makers claim that five Gnat airframes can be made in the same number of man-hours as those required for one standard fighter airframe, and that twenty fully-equipped Gnats can be bought for the price of six standard fighters. The manufacturers also stress the ease with which it can be transported by air freighter, ship or lorry, and the adequacy of its endurance for long-distance air ferrying when fitted with wing tip tanks.

Work on the construction of the first Gnat has just started and should be completed in less than a year. The principal dimensions of both Midge and Gnat are:-

Span	20 ft. 8 in.
Length: .. .	28 ft. 9 in.
Height: .. .	8 ft. 3 in.

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Both the Midge and the Gnat are "private ventures" undertaken by Folland Aircraft Ltd., without practical support from the British or any other Government, in an attempt to check trends which over the past forty years have so increased the size, weight and complexity of the standard fighter and the difficulties of its design, production and operation that few countries can now either build or buy it in numbers adequate to their defence - trends which, if not halted, will, within the next five years, double the weight of present-day standard fighters and multiply the penalties which weight imposes.

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The Midge is scheduled to take part in the flying programme at the S.B.A.C. Air Display at Farnborough next month.