# HATFIELD

# MEMORIES

## RICHARD (DICK) WHITTINGHAM 1920 - 2010

### FOREWORD

I was a de Havilland Engineering Apprentice at Hatfield from 1935 until 1941. I then became an Inspector and in 1942 moved to the Experimental Department where I was authorised by the A.I.D. to inspect and sign aircraft out for flight on their behalf. Initially this was on Mosquitoes and I had the opportunity to fly with Geoffrey de Havilland Junior and his brother John on many occasions. Towards the end of 1943 I was engaged almost exclusively on the 'Spider Crab' (Vampire) prototype until I joined the RAF in December 1945.

Dick Whittingham, 2008

Dick died on 23rd April 2010 after a very short illness. We are very grateful for this legacy of his memories of de Havilland and Hatfield.

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Some of these articles have been published previously by DHAeTSA either in Pylon or in our newsletters. This compilation is illustrated with copies of contemporary items from "Flight" and "The Illustrated London News".



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#### MOTH MINOR

am sure that most of our members will be familiar with the D.H.94 Moth Minor, but would they know that it was built to a very large extent by boys? This, I understand, was at the express wish of Captain Geoffrey de Havilland. Nearly all of the production workers were boys, apart from the supervision, a wood machinist, a welder, a few fitters and the design staff, who were in a small office in the corner of the shop. They consisted of two people, J.H. Phillips the chief designer, and J.P. Smith his assistant. Everything was under one roof (the 94 shop), and this coupled with the simplicity of the design made the build of the Moth Minor a comparatively simple process. I was lucky enough to spend a few months in 1938 working in the shop as part of my training and started by installing the engine with another boy helping me.

On one occasion I was lucky enough to see the Chief Designer at work. J.H. Philips came out of his office, climbed into a half-finished fuselage, asked one of the boys for a wooden box and sat down in the forward cockpit. He then put his trilby hat on and asked the lad to fetch a thin wooden lath. He then instructed him to bend it above his head and tack it to the fuselage at each end so that it formed a "roof" over his head. After checking the clearance between his trilby and the lath he then got out and went back into his office. A few weeks later a new model D.H.94 appeared with a cabin top fitted which cost £625 as opposed to the £575 of the basic version. It should be pointed out that in those days many pilots, including Capt G de H, wore trilby hats whilst flying in aircraft with cabins.

After spending some time in the fitting section of the shop I moved outside onto the airfield getting the aircraft ready for flight and delivery. There was a hand written list of customers and the aircraft allocated to them stuck to the hangar wall so that we all knew how the sales were going. Again, all of us doing this work were boys and were supervised by a young man named McManus who I believe may have been an ex Tech School student. He taught me how to taxi the 94s around and was constantly making sure that we poured the petrol through a chamois leather when refuelling the aircraft.

One day, it must have been a weekend because I was on my own, John Cunningham arrived and said he was going to fly one of the aircraft. He got in and I swung the prop for him and off he went, only to return a few minutes later saying that the compass was a long way out and would I have a look at it, adding that he would be back again shortly to fly it again. After wondering for a moment how it would be possible to achieve a "quick fix" on my own I suddenly remembered that on the far side of the airfield there was a tree which was due north of our compass base. As the plane was quite near to the base I pushed its tail round until the plane was directly in line with the tree. I then unscrewed the compass and realigned it so that it was indicating true north. John came back and flew off again. He was gone for some time and I started to become worried in case he had become lost. However, he came back and when he got out I asked him how the compass was. He said "perfect!" I didn't see him or speak to him again for 37 years, until in 1975 I was waiting in line to collect my 40 year clock and looked round to see who was behind me in the queue. It was John Cunningham. Would he have been amused if I had told him about the compass episode? Probably not!



Saturday 8th May 1943.

Carried out a D.I. on W4052 (the Mosquito fighter prototype), ran the engines, and cleared it for flight. It rained during the morning, but cleared up after lunch, when Geoffrey de H arrived and said he was going to fly it over to Old Welwyn and give a demo in support of their Wings for Victory Fete.

About 20 minutes later he re-appeared, coming in to land with only the port wheel and tail-wheel lowered. He made a very good landing on the one main wheel and as he came to a halt the starboard wing tip dropped on to the ground. We rushed across the airfield to see what had happened and as we got to the aircraft we could see that the starboard wheel and its nacelle were missing!

Geoffrey got out and said that he was doing a high speed low-level run over the field in Old Welwyn when one of the wheels came down on its own and the rush of air blew the wheel and its nacelle away.

While he was telling us this, there was a screech of brakes and a butcher's van from Old Welwyn pulled up. The driver got out and said "I've got a bit of your aeroplane here. I came over as fast as I could as I knew you would want it right away!" He had brought back most of the nacelle, but of course it was too damaged to be of any use. We eventually found that although the undercarriage when retracted locked on to a substantial metal block, it was able to shake itself sideways and slip off the edge of the block.

Upon reporting our findings to the Design Office They said "we have already put out a Class 1 mod for a retaining plate to be fitted which will stop this happening". Unfortunately it was still going through the system and had not reached us at the 'coal-face' in the flight hangar. Note: W4052, which Geoffrey used for all his demos, and had already had a wheels-up landing at Panshanger, was repaired and I signed it out for flight again a month later on 8th June.

One day in 1942 Geoffrey Pike was due to fly a Mosquito with two dummy 1000lb bombs, one under each wing. I weighed both bombs; had them hoisted into position, jettisoned them , had them hoisted up again, ran the engines, cleared it for flight and went home to lunch. When I returned, Geoffrey arrived, made sure that I had checked that the bombs could be dropped and took off. We immediately saw that he was in trouble. As soon as he left the ground he went into a sudden left bank and had great difficulty in levelling up. He landed straightaway and I dropped both bombs only to find to my horror that one was filled with lead shot but the other one was empty and of course much lighter. Upon making enquiries I learned that while I was at lunch someone had come over from the Production Flight Test, borrowed a bomb for a few minutes, but brought a different one back! And no one had thought to tell me.....

I flew with Geoffrey Pike in Mosquitoes from time to time. On one occasion we were returning to Hatfield and were flying over Leavesden when Geoffrey said 'this will shake them' and feathered both props. After a few moments he leaned forward and un-feathered the port one. However, in his excitement he looked over my shoulder at the starboard prop which of course was still motionless. By this time he was starting to get rather agitated as we were starting to lose height so I pointed over his shoulder at the port prop which was windmilling away and waiting for a touch of throttle and he realised what he had done and all was well. Nothing was said!

#### MOSQUITO FIGHTER-BOMBERS



(Top left.) Stripping covers ready for flying. With the exception of cockpit and engine covers, the Mosquitoes stand out in all weathers with no protection. (Top right.) Bombing-up the port wing rack with a 500-lb. bomb by the aid of a pair of "hockey sticks."



OUR NEW RECONNAISSANCE BOMBER: The De Havilland Mosquito is powered by two Rolls-Royce engines driving De Havilland three-bladed hydromatic airscrews. Its similarity to the De Havilland Comet, shown on the opposite page, is somewhat remarkable.

## THE DE HAVILLAND MOSQUITO

Our Latest Reconnaissance Bomber : Logical Development from Comet Which Won England-Australia Race in 1934

Some weeks ago the Germans announced on their radio that they had brought down a new British aircraft type, the Mosquito. Official reticence prevented the British Press from making any mention of the existence of the new machine, and it was not until the daylight raid on Oslo that the name of the new type was divulged officially. Since then the Mosquito has figured several times in the war news, and it has now become possible to refer to it and to publish an illustration.

Designed and built by the De Havilland Aircraft Co., Ltd., the Mosquito shown in our photograph is classed as a reconnaissance bomber. It is, as the picture shows, a remarkably clean machine, with the wing placed approximately half-way up the fuselage sides, and the two Rolls-Royce liquid-cooled engines underslung from the wing in such a way as to leave a very smooth surface where the top of the engine nacelles merges into the upper surface of the wing. This is an arrangement which has been found (in the Avro Lancaster, for instance) to give very low drag, as the airflow over the top of the wing is but slightly disturbed by the power units.

Readers who remember the England-Australia race of 1934 will be struck by the similarity between the De Havilland Comet which won that race (piloted by C. W. A. Scott and T. Campbell-Black) and the new Mosquito. The Comet was a low-wing monoplane, whereas the Mosquito is a mid-wing, but that change is, of course, easily explained by the fact that the new machine has to carry bombs housed internally, whereas the Comet, designed for the greatest possible range at the highest possible speed, had its petrol tanks installed in the forward portion of the fuselage.

It will also be observed that in the Comet the crew of two were placed fairly far back. That position impaired the view somewhat, but was necessary to get the *l* centre of gravity in the right position, and could be tolerated in a racing machine. In a military aircraft, very different considerations obtain, and consequently we find the crew's stations in the Mosquito well forward in the fuselage.

#### Aerodynamic Cleanness

Bearing in mind the operational functions of the two types, which have resulted in the changes in outline design mentioned, it is quite obvious that the Mosquito may be regarded as the logical scaled-up development of the Comet. It is, therefore, natural to assume that the aerodynamic cleanness of the racing machine finds its counterpart in the military aircraft, and that, as a result, the Mosquito is very efficient aerodynamically. If that be so in actual fact (and external visual evidence gives good grounds for the assumption), the low drag can, of course, be utilised in two ways: to give very

More pages in "Flight", not reproduced here.

Towards the end of 1943 I was engaged almost exclusively on the Spider Crab (Vampire) prototype aircraft until I joined the RAF in December 1945. I have taken a few incidents that may be of interest from my diaries.

1: Early flights revealed a tendency for the aircraft to snake in the air. Geoffrey de Havilland had some difficulty in persuading the Chief Designer, R Bishop, just how serious the problem was. Eventually to convince him he got them to stand at the edge of the airfield and took off in the prototype LZ548/G. In a few moments we saw him coming straight towards us at no more than 50 feet above the ground. As he reached us he made a tight 90 degree turn heading away from us. The snaking was so violent that it was frightening and he had reached the far side of the airfield before he had the aircraft under control again. Upon landing there was a discussion and it was decided that as extra nose and dorsal fins had not cured the problem they should now consider reducing the fin and rudder area. Geoffrey then suggested flying with one rudder removed to prove the theory. Although the design team were not very happy to take responsibility for this drastic step, one rudder was removed and I signed it out for flight on January 4th 1944. 'less one rudder at pilots request'. After the flight Geoffrey enjoyed pulling Bishop's leg and said "Right that's how I want it." In the event however, the upper section of the fin and rudder were sawn off prior to restoring the familiar D.H shape on later aircraft.

2: On 29th January 1944, MP838/G was fitted with drop tanks and ballast. Geoffrey Pike flew it in the morning, having previously taken it up on its first flight the week before. Having tightened the drop tanks that had worked loose, Geoffrey de Havilland flew it in the afternoon. Watching him coming in to land we were horrified to see him go straight into the ground without flaring out. Fortunately it was at quite a shallow angle. Nevertheless the plane bounced some way in the air before coming to rest. After taxying back in to the hangar Geoffrey called me over and invited me to lean into the cockpit to feel the control column. It was locked solid! The ailerons could be moved but not the elevator. Eventually it suddenly freed itself, only to lock up again after fitters sat moving the stick backwards and forwards for two days. By process of elimination the fault was finally traced to a rough ball race in the elliptical pulley that provided differential movement to the elevator. Upon removing the dust cover one of the ball bearings was found to have split in two. It was probably no more than one eighth of an inch diameter, but the fault could have been disastrous.

3: On Saturday morning, 5th February 1944, we pushed LZ548/G out and found quite a large crowd waiting on the airfield. In the early days the D.H Engine Company carried out the engine runs. While I was talking to one of their fitters who I knew, Sir Geoffrey de Havilland came over from the waiting crowd and asked us "Will the engine start first time?" We both said that usually about one in three is a false start. He then said "Could you do your best to make it start as I have just told Mr Whittle that our D.H. engine always starts first time and he doesn't believe me." I was not sure how we would achieve this but my companion told me not to worry. When the engine was ready to be started, he got me to come on the top of the wing with him where the engine cowlings had been left open. He then slackened off the igniter plug until it was finger tight. The engine was started and the revs built up, until after a few seconds we both knew that it was not going to ignite. My colleague then whipped out the plug, handed it to me, then lit a wartime 'Polo" lighter and pushed it into the plughole. There was a sudden 'whoof' as the fuel ignited and flames shot out of the plughole singeing the hair on the back of his hand. As the revs built up, the flames were sucked back in through the plughole, enabling me to replace the igniter plug and its lead/ Geoffrey gave one of his spectacular displays and no one, including Frank Whittle, ever knew that a humble fitter had saved the day.



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4: On May 23rd 1944 we pushed LZ548/G out for a flight. It was customary to leave the cowlings off until engine runs were completed. This was for safety reasons. The tailpipe on early engines was covered with soft lagging. This could become saturated after an abortive or 'wet' start and we were always aware that it could catch fire. On this particular day the engine runs had been completed. The engine was thoroughly checked over; the cowlings were refitted and their fasteners checked.. I then went to the hangar to see that the paperwork was all completed. As I came outside once more to have a last look around the aircraft a very observant electrician suddenly pointed to the plane and shouted, "Look at that! The yellow paint on top hinged cowlings was gradually turning brown." We both of us grabbed a fire extinguisher, got onto the wing, lifted the cowlings and a great gout of flame shot up into the air. Fortunately we were able to put the fire out fairly quickly, but not before a considerable amount of damage had been done.

5: Engine runs and preparation for flight was carried out in an outside compound that had high walls for security There were large gates at the airfield end that would be opened as the aircraft landed. Geoffrey de Havilland would then taxi in and brake before reaching the wall at the far end. The gates would then be closed behind him. On this particular day he took one of the prototypes up for an altitude test. On landing he taxied into the compound at a fairly brisk rate, but suddenly shouted out "It won't stop!" He then bailed out of the runaway plane and held onto it with his suede shoes dragging along the ground. Everyone present then threw themselves onto the booms. This caused the plane to tip nose up; the bumpers dragged along the ground and we managed to stop the plane just before it reached the wall at the far end of the compound. Geoffrey then told us that he had lowered the undercarriage at altitude to see what would happen! We told him what had happened. One of the brake hoses had frozen solid and snapped in two. The spec of the rubber was changed straight away.

**6**: There were a number of occasions when the high- pressure fuel hose on the engine burst during flight. Geoffrey Pike had to make a forced landing at Benson and later at Hatfield where he wrote off LZ548/G. He hit a post on the edge of the runway after gliding all the way from High Wycombe. The same problem caused Geoffrey de Havilland to make a dead-stick landing at Hatfield and again at Cranfield.

On the latter occasion Geoffrey Pike flew myself and two fitters to Cranfield with a new hose. Our flight, in a Mosquito was not too comfortable. The two fitters squeezed together in the cockpit while I was locked in the rear fuselage (in the dark.)

The arrival of the jet caused great excitement at Cranfield, as they hadn't seen one before. After the new hose had been fitted and Geoffrey was about to leave the C/O asked him if he would give a demo to the crowd that had gathered. Geoffrey told him that much as he would like to oblige, he was not allowed as the aircraft was still on the secret list. He then took off and disappeared into the distance. Moments later he re-appeared making a high speed run over the airfield. When he reached the crowd he turned and doing a series of rolls, left in the direction of Hatfield. Later, on being asked, "What do you do when the engine cuts out?' He replied, "I glide in."

7: During the final build stages the D.H.100 prototype was in a secure section of the Experimental Department. One day there was a knock on the locked door. I opened it to find Sir Geoffrey de Havilland who asked, "Do you think that I could come in?" I said that I was sure that he could. He continued, "Only I have my friend Fred with me." I peered through the doorway to see who this 'Fred' was. It was Sir Frederick Handley Page!



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## **GEOFFREY de HAVILLAND JNR - TEST PILOT**

I got to know Geoffrey de H quite well during the war years ,as from the middle of 1942 until the end of 1945 I carried out daily inspections on the experimental aircraft that he flew and signed them out as being safe for flight. This was a great responsibility and privilege as I was only 22 years old when I was first assigned to this position.

The first time that I had the opportunity to speak to him was on the first day that I had cleared his aircraft for flight. After he landed the Mosquito I asked him if he would be flying it the next day. He replied "yes, the crack of dawn." When I told this to the flight test foreman I said "whatever time will that be" and he said "twenty to ten!" Geoffrey was a brilliant pilot, the ultimate professional. A man of few words, modest, private and unassuming, like his father and his brother John who was also a test pilot. He was utterly focused on his job and because of that had no time for jokes or small talk with those who worked with him, although I am sure that other pilots and friends who socialised with him in the evenings when he relaxed would have seen another side of his character.

He would never blame anyone if mistakes were made, and once when due to the failure of a ball-race on a Vampire that nearly caused him to crash I tried to explain to him what caused the problem he merely said "but when will it be ready to fly again?"

Very occasionally one would catch a glimpse of his more "human" side. He had a passion for model steam engines, and once said to me "if you had a model steam engine, would your wife let you start it up in the kitchen?" I said "of course she would." To which he replied "they won't let me do it at home." I only saw him get really annoyed on one occasion. He was flying a Mosquito locally when part of the perspex canopy broke off and his precious hacking jacket that he always wore and stowed behind his seat was sucked out and blew away. He got as many of his pilots as possible into the air and we watched them circling round and round somewhere near the "Crooked Chimney" looking for it. It was never found!

In 1942 Geoffrey visited Canada and the U.S.A. This was in order to hand over a Mosquito to the U.S.Army Air Corps and also to test the first Canadian built Mosquito.

Whilst in Toronto he gave demos to the workers there, and it gives one a good insight into his character when reading his report on his time at the Canadian factory when he writes....."this was my most unpleasant day out there as three speeches were required from me: they were short speeches."

Before leaving Canada he flew the Mosquito in a demonstration flight over Toronto in aid of a War Bonds sale drive. He wrote...."This was a truly amusing show to do, and one gained a fine impression of speed going well below the tall skyscrapers with 400 (m.p.h.) indicated."

He then toured the U.S.A demonstrating the Mosquito to Army and Naval Air Staff who gave him an opportunity to fly many of their aircraft. It is worth recording a meeting he had with Howard Hughes. Geoffrey wrote....."He is at present engaged on the design of, and construction of a 30,000lb wooden-plastic transport for the Army Air Corps (the Spruce Goose?). This plane was to have been the very acme of simplicity in construction, but Hughes was dumfounded when he looked at the Mosquito. Turning to me he said 'I guess I'm going to give those goddam designers of mine holyjeeze.' Sure enough the following day there arrived at the field half a dozen long faced gloomy looking individuals, members of the Hughes design staff. They enjoyed several hours inspecting the Mosquito and asking questions. In sympathy, Burrell (his observer) and I stood them lunch in the fine Glywayo restaurant."

On occasions, I had the opportunity to fly with Geoffrey in the Mosquito. It was always an exhilarating experience. In the air he was always focused on the job in hand and was completely unflappable. Once we were diving almost vertically through thick cloud and suddenly broke out into sunlight, just missing a Catalina that was flying past just below the cloud-base. It was so close that I could see the horrified expression on the gunners face, looking at us from his perspex blister. Geoffrey was completely unmoved by the incident as if it was nothing unusual. When on the ground however, ready for take-off he would not move until you assured him that there was no plane about to land on top of us. (The Mosquito had no rear view mirrors!)

The only time I saw him enjoy a joke was when he persuaded Ronald Bishop, the chief designer, whom he called "Bish" to get into a Vampire and taxy it around the airfield. Geoffrey had complained of difficulty in steering it on the ground, whilst Bishop had not taken his complaint seriously. When Bishop careered all over the airfield in all sorts of trouble it made Geoffrey's day!

For some reason he seemed to have a very cool relationship with the Air Ministry, particularly when they sent R.A.F. officers to have a flight in one of his beloved prototypes. On one occasion when an officer was ready to have his first flight in the Vampire, Geoffrey gave him verbal instructions on how to fly it, but when the chap said "how do I start the engine up again if it dies on me in the air?", Geoffrey just said "oh, Dick will tell you" and left him to it.

In the event, he did lose the engine in flight and succeeded in starting it again. When he left Geoffrey came over to me and said "what did you tell him?"

What I shall always remember him for is when he was about to take the newly-built Vampire jet on one of its first flights. As he was taxying it out he suddenly stopped, called me over and said "how is your wife?" He had heard that she was seriously ill in Barnet Hospital. This shows that he had a kind-hearted side which perhaps was not apparent to many people that he worked with.

He lived for flying. He had been taken up for his first flight in his mother's arms in his father's first aircraft that he had built. And sadly it was when flying he was eventually killed. FLIGHT

APRIL 18TH, 1945

No. 5 GEOFFREY DE HAVILLAND, O.B.E.

Britain's

Test

(Left) A characteristic photograph of Geoffrey de Havilland in the cockpit of the jet propelled Vampire. (Below) With his father after a flight in one of the early Moths about 20 years ago.

As a test pilot young D.H., as he is universally called, has not an exceptionally long history. He took over the chief test pilot's position in October, 1937, when R. J. Waight unfortunately lost his life on the T.K.4. Being, however, the son cf his illustrious father, Sir Geoffrey de Havilland, who designed, built and testflew his own aircraft from 1911 onwards, young Geoffrey can be said to have been "in the industry" from the very cradle. It is not generally inown that Sir Geoffrey took his R.Ae.C. ticket No. 53 in February, 1911, on the second machine of his own design and construction, and that he has made many of the first flights on new D.H. types right up to the Moth Minor in 1938.

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Geoffrey's first flight is lost in the dim past, but certain it is that at the tender age of six he was flying with father at Hendon in a D.H. 6 (also known as the Clutching Hand). When 18 years of age he left school and came to de Havillands as a premium apprentice for 4 years and learnt to fly on Moths at the firm's reserve training school. After spending two years in the drawing office-much of the time being spent looking out of the windows envying the pilots--he joined the Air Operating Company, who were doing a lot of air survey work in South Africa. This, however, gave him but very little flying, and at the end of six months, he came back to England to become a flying instructor to the D.H. Technical School. The aircraft were wooden Moths built by the students. In 1929 he took his B licence; a very simple business in those days. Some 20 or 30 hours' solo flying, a little cross-country work, a simple "Met" exam, and about one hour's night flying at Croydon was sufficient to qualify.



In 1934 Capt. Hubert Broad was chief test pilot of de Havillands, and Bob Waight looked after the production side. There was so much work, however, that Geoffrey was given the opportunity to lend a hand testing Tiger Moths, Dragons, Rapides, Express Air Liners, and Hornet Moths.

Broad left the company in 1935 and Waight took over, starting, with the Dragonfly and later the Albatross. It was during the period when the prototype Albatross was going through its development flying that Waight lost his life, and de Havilland took over as chief test pilot. Nobody could have taken on a more interesting or more complex job because the Albatross was completely experimental from tip to tail. Engines were new, construction was new, and the layout was extremely advanced. He had a curious experience on the Albatross. While



APRIL 18TH, 1946

#### FLIGHT

The very experimental D.H. Albatross which was one of the types on which Geoffrey de Havilland did most of the development flying. It had some of the earliest close-cowled aircooled engines.

its strength was ample for all flying loads, some unfortunate drilling had weakened the fuselage under ground loads, and shortly after landing from a test flight the machine broke in halves on the ground.

When war broke out he was busy testing Oxfords and Flamingoes, but when things became desperate at the time of the Battle of Britain, de Havillands did a big job doing emergency repairs to shot-up Hurricanes.

Dick Reynell of Hawkers came over and gave Geoffrey the "know how" on Hurricanes. A little later Dick went out on operations with his old squadron (No. 43) and was, unfortunately, shot down." He was an excellent test pilot and a gallant gentleman.

#### Improvised Runway

Geoffrey flew the first Mosquito at Hatfield on November 21st, 1940, but he is more proud of the first flight of the prototype Mosquito fighter. This was built at a dispersal factory with no airfield. To save some six week's wasted time in transport and re-erection at Hatfield,

Geoffrey used local fields by having bridges built over ditches to give him a 450yd run for take-off, and then flew the fighter to Hatfield.

He is, of course, one of the only two men in Britain to have made first flights on jet-propelled aircraft. The Vampire was flown for the first time on September 21st, 1943, but Geoffrey had already flown the Gloster E.28 at Famborough.

The first airing of the Vampire proved it to be a tribute to the D.H. design and aerodynamics staff, as it behaved almost exactly as they had forecast. There was, however, somewhat of an aileron overbalance which limited the speed to 250 m.p.h. and a rather severe tip stall.

Geoffrey de Havilland had made a number of investigation flights on Mosquitoes for compressibility effects, but on the Vampire he has done extensive work. The Vampire, under the effects of compressibility, executes a series of sudden high-speed stalls. The path of the machine is similar to an artist's conception of a streak of lightning, and unless the pilot is strapped in tightly he is likely to be kaocked out t' hitting the cockpit roof.

Geoffrey, with another pilot, has

flown the Vampire in tight formation at over 500 m.p.h., and to investigate snaking, which is causing considerable trouble on most jet aircraft, he has flown the Vampire with rudder locked.

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Like most of the test pilots, he is living on borrowed time, they having at some stage of their careers had close shaves. Strangely enough, Geoffrey's nearest go was on about the mildest type he ever flew. It was the first production Moth Minor. The prototype had completed its spinning tests, and the same tests on the production model appeared to be only a matter of form. He was flying with John Cunningham (now Group Capt., D.S.O., D.F.C., and test pilot for the D.H. engine division) at the time. The Minor was put into a spin at 5-6,000ft, but after it had failed to come out in five turns and the engine had stopped, a panic decision was made to abandon ship.

Test-flying a Hurricane, too, almost saw him off. This particular aircraft had had a gruelling time in the Battle of Britain, and the whole canopy came off at 4,000ft. hitting him in the face as it blew backwards. At first blind

through the amount of blood in his eyes, he flew more by instinct than anything else until he found he could get a little relief by holding his face close to the instrument board. The blood dispersed a little and he was able to land through what appeared to be a thick yellow haze. He wears the scars across his nose to this day, and there was a terrible moment during that flight when he thought he was really blind.

On another occasion the oxygen bottle contained only compressed air, and the effects from this were at first blamed on the previous night's party.

At the other end of the scale was the test of the T.K.5, a tail-first aircraft built by the technical school. Impecunious at the time, Geoffrey had already mortgaged the bonus for the first flight. Imagine his consternation then when, after roaring the whole length of Hatfield airfield, the machine showed no sign of lifting. The forward elevator was ineffective. The T.K.5 never did fly and was finally abandoncd.

In the days of peace before the war Geoffrey de Havilland was to be seen at all the air meetings and twice finished 4th in the King's Cup Race flying the TK1 and TK2.



Checking slight a'terations to the Vampire's allerons before another test flight.

## THE HIGH-ALTITUDE MOSQUITOES

In September 1942 I was working as a Flight Inspector in the Experimental Flight Hangar at Hatfield when I was asked to attend an urgent meeting in the main workshop. When I arrived I was surprised to see that the prototype pressure cabin Mosquito MP469 had been pushed into the workshop and was standing amongst the benches with a group of workers gathered round it. After a few moments Fred Plumb, the Manager of the Experimental, arrived, stood on a box by the nose of the aircraft, and started to address us.

He said that a German aircraft had started to fly over the country at such an altitude that no R.A.F. aircraft could reach it and that we were going to start right away working night and day to modify the aircraft standing beside us in order that it would be able to intercept the enemy plane and shoot it down. He went on to say that as MP469 was a bomber, the first thing to do would be to cut the nose off and replace it with a fighter nose carrying 4x0.303 machine guns.

At this point he suddenly stopped and said "you are not listening to what I am saying. I said that we are starting straight away - hasn't anyone got a saw?" He stared down at the assembled workers and a "chippy" shot off, and came back with a rip saw. Fred indicated where he was to cut the nose – just forward of the pressure bulkhead – and the man started sawing.

Fred then continued, but it was difficult to hear what he was saying because of the noise of the sawing! He said that in order to lighten the aircraft the pilot's back armour plate would be removed and a ply substitute fitted. The fuselage fuel tanks and wing outer tanks would be removed and it was hoped that smaller main wheels would be available. In addition, 4-bladed props would be fitted and the wing tips extended.

As he finished talking, there was a crash as the sawn-off nose fell to the floor!

The work took a week to complete and on September 16th 1942 an R.A.F. pilot arrived to take delivery. The R.A.F. were obviously weight conscious as the pilot was not very large and went by the appropriate name of P/O Sparrow!

Unfortunately, or perhaps fortunately, the German plane, a J.U.86P, did not return and so was never intercepted. Four more Mosquitoes were subsequently converted into "high fliers", and on February 16th 1943 I was fortunate enough to go up in one, DZ417, with George Errington, the Chief Test Pilot of Airspeeds that had been taken over by DHs the previous year.

When we reached 42000 ft George suddenly reached across me and switched off the pitot heater. Immediately the A.S.I. dropped to zero. He pointed at it, and as we were wearing oxygen masks and couldn't speak to each other looked at me for an explanation. I switched the heater back on again and of course the A.S.I. went back to normal. He stuck his thumb up but a few moments later did the same thing again. In the end I held my hand over the switch so that he couldn't touch it.. Then he turned to me and motioned that I should take over the flying, whereupon he leaned back in the brilliant sunshine and shut his eyes!

I had never flown a Mosquito; in fact I had never flown anything, but I made a few tentative movements with the control column to find that there was no response whatsoever. The plane was wallowing about unable to gain any more height. Fortunately the pilot then "woke up", took over, and we started to descend. The cabin pressure was only one and a half P.S.I. which was not much compared to the 8 P.S.I. we are used to today and it caused a lot of stomach rumblings coming down from such a height, so we took it in easy stages with a few "stops" on the way.

Thinking about it later, there couldn't have been many people at that time who had reached that height.

It had been a marvellous experience and one which I shall never forget. My abiding memory is how black the sky was when looking upwards at that altitude.

This photo from "Famous Fighters of the Second World War" shows one of the five N.F. Mk. 15 Mosquitoes developed from MP469. These were converted from B. Mk. 4 airframes and had AI radar in the nose, with the guns in a ventral blister. The extended wingtip is clearly visible.



The high-altitude Mosquito N.F.XV with extended wing and machine-guns in a ventral blister.

## THE BIG GUN MOSQUITO

In May 1943 we were out on the airfield in front of the Experimental Dept: at Hatfield when we were surprised to see an Army lorry appear towing a 6 pounder field gun. It stopped in front of our flight hangar and unhitched the gun which was then quickly wheeled inside. We had no idea whatsoever why we needed a field gun, unless it was to provide DH's Home Guard with some artillery – which seemed rather unlikely.

It shows how efficient wartime security was in the factory, because it was some time later when we found that the gun had been removed from its carriage and was being installed in a Mosquito in the Experimental Flight Hangar. We had been working on HJ732 for a few days without realising it was to become the prototype FB.XV111 with a 57mm gun fitted in the space normally occupied by the four 20mm cannons! There was a rumour that the gun feed mechanism had been made by a cigarette machine manufacturer, but it was not until after the war that we found out that this was true, and that the mechanism had been produced by Molins of Peterborough.

According to my wartime diary we spent the last week in May and the first week in June carrying out mods to the airframe, and getting it ready for flight, and on Saturday afternoon, June 5th, we towed it over to the gun butts which were situated on the northern edge of the airfield. There was a rough track leading to the butts and we positioned the aircraft on the track, and then raised it into a flying position by lifting the tail on to an adjustable trestle.

On the following day, a Sunday afternoon, we returned, and an electrician and I decided to check the gun's firing mechanism one last time. While we were underneath with our heads in the gun bay I don't know what the electrician did, but the gun's loading mechanism suddenly came to life. Something which I can only describe as a large drum stick – a steel bar with a padded knob on the end – shot forward and attempted to load his fist into the breech of the gun! Judging by the yell he gave, it must have been extremely painful. Having satisfied ourselves that the loading mechanism was working we then waited to see who was going to fire the gun.

Before very long an RAF officer, accompanied by an Army officer, arrived and climbed into the plane. They then asked if it was lined up with the gun butts. There was no gun-sight fitted at this stage so someone had the bright idea of peering down the barrel. We all took turns in looking through the barrel and jacked the tail trestle up until we all agreed that we could see the heap of sand that was in the butts. We then gave the officers the thumbs up, and just had time to get into a ditch that was alongside the track when they fired the gun. We were absolutely appalled at the noise it made, and certainly didn't expect it to be so loud.

One of the officers then got out and said "would someone start the engines, as we want to fire the next round with the engines running." He was told that I would do that, but as I walked over to the plane I noticed that the blast from the muzzle had dented the underside of the nose. I then wondered what effect the blast would have on the propeller blades when they were rotating. Nevertheless I got into the cockpit with the two officers and removed the escape hatch in the roof to give myself a means of exit. I then started the engines, and when they were running at a fast idle speed, locked the throttles and said "I'm going to leave you to it now." I then got out of the hatch and was almost blown towards the tail where I was caught by the lads as I dropped to the ground.

We crouched down in the ditch again and the gun was fired for a second time. We were pleased to see that there was no further damage to the nose and the plane was towed back to the hangar.

It flew for the first time on the following Tuesday, June 8th 1943 and was delivered to Boscombe Down for acceptance trials on Saturday June 12th.

It became known as the "Tsetse" Mosquito. We called it the "Big Gun Mossie", but a wartime DH pamphlet dubbed it the "Flying Field Gun" which is perhaps the best description of what was a remarkable achievement.

Overleaf is a reproduction of a very worn copy of the front page of The Illustrated London News of Saturday, December 2, 1944. The lower photo shows an aeroplane with drop tanks. The wing mounting could take either a 50 gallon or 100 gallon drop tank, a 500 pound bomb or four 60-pound rocket projectiles. The Mk. XVIII was recorded as being in action from 4th November 1943, over a year before being revealed publicly, apparently for the first time, in "Flight" for November 23rd 1944.

Roger de Mercado



#### A DAY TO REMEMBER

Sunday, August the 8th 1943 started as a normal working day for us in the Experimental Flight Test at de Havilland's, Hatfield. W4050, the prototype Mosquito was got ready for flight and we waited to see who was going to fly it. It had been fitted with a number of stub exhausts, all made from different materials, and the pilots were told to fly around at low level and at high speed so that it could be seen which exhausts blew apart and which survived. This naturally appealed to the pilots and the aircraft was in great demand!

Eventually, John de H arrived in the afternoon to fly it and I went up with him. After only about 15 minutes or so we dropped down even lower, flying down an avenue of trees which led to a lovely old building at the end. John said "Do you know where we are?", and when I replied "No", said "We are near Buckingham and this is Stowe, where I went to school." He zoomed over the school saying "This will get them out" and then flew around the countryside for a few minutes. By the time we came back the whole school was out, standing on the steps of the main entrance and waving. We flew down the avenue of trees again, low over the school, and climbed away with a series of rolls. I remember that I was quite concerned for the safety of one lad who was jumping up and down, fully clothed, on the high board of an empty swimming pool!

Flying back to Hatfield, once again, we were so low, that looking out at the passing tree tops etc I forgot that we were flying and had a shock when we suddenly went over the edge of a deep quarry! Landing back at Hatfield, John left the aircraft outside the pilot's office at the Ellenbrook end of the airfield and I walked back to the Experimental.

About an hour later the telephone rang; it was John's brother Geoffrey saying "I can't get this boiler to start." He called aeroplanes "boilers" as he was a model steam engine enthusiast. "Get a tractor" he said, "and take it back, it's useless."

I got hold of an engine fitter – Tom Carter – and we walked over to the pilot's office. We didn't take a tractor as we knew what the trouble was. W4050 had recently been fitted with Stromberg carburetors, which needed extra priming when starting the engines. As we got to the aircraft, which was parked just outside the pilot's office, all the pilots were looking out of the window wondering where the tractor was.

I got in, Tom got on the priming pump, and we started one engine and then the other, but as Tom started to get into the plane with me Geoffrey jumped out of the window, and across the flower beds, shouting "Keep her going," He then got into the observer's seat and strapped himself in!

As all the pilots were cheering and waving at seeing Geoffrey in the passenger seat I thought that I had better go along with the joke and taxied the aircraft past their window and down to the Manor Road end of the airfield where I swung it round ready for take-off and put the brakes on. I then turned to Geoffrey ready to change places but he said something like "No, you're the one who knows what he's doing, it's all yours, off you go."

I must say that for a split second I was tempted to try my luck. Geoffrey surely knew that I couldn't fly, but I had no way of knowing whether he was joking or not. However, I declined. We changed places and took off.

We roared along at low level trying to blast the stub exhausts off and a few minutes later I found myself looking down on a familiar avenue of trees. At this point Geoffrey asked if I knew where we were, and I replied "Stowe", which seemed to surprise him until I explained that I had already been here with John earlier that afternoon. He said "We will have to stop doing this, but now that we are here I'll give them another show." He then went through the same routine as John had earlier, zooming low over the school to get them out, and returning to give them a display of aerobatics.

I then thought that we would be returning to Hatfield, but Geoffrey asked "do you know where the chap lives who brings me eggs each week?" I said "Yes, he lives on a farm about a mile north of Hitchin." When we reached the area, I couldn't locate the farm, so I asked Geoffrey to go back to the town centre and take the Bedford road out which he did. I then got him to make a left turn onto the farm track and we flew low over the farm. We spent a few minutes flying round the adjacent fields and woods and then came back over the farm, by which time the "egg supplier" and his wife were standing on top of a dung heap in the farmyard waving at us.

On the way back to Hatfield we were passing over Welwyn Garden City when we saw a Mosquito below us circling over the town centre. Geoffrey said "It's John", and immediately dived on to his tail, whereupon John went into a tight turn. As their turn got tighter and tighter, Geoffrey said "Let me know when you black out." When I eventually said "Now" he seemed rather disappointed saying "I thought that I should have lasted longer than you but I didn't."

Quite a number of the exhausts were blown apart during these low level tests and eventually what had become a "jolly" for the pilots came to an end and more serious testing was resumed.

I have never stopped wondering whether Geoffrey really would have allowed me to attempt a take-off. And if he had, what would have been the outcome. I will never know.

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