

# Test Flight Refuelling On Montreal-London Run

Transfer of fuel to aircraft in flight over the North Atlantic carried out under winter conditions - - Lord Nathan explains government's stand

By BASIL CLARKE

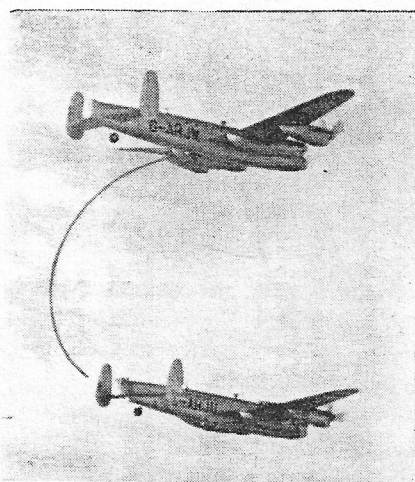
Associate Editor, Aircraft and Airport

Last year the South Atlantic, this year the North Atlantic is the story, as it unfolds, of the tests of flight re-fuelling.

Following a series of 11 round trips between London and Bermuda, in which B.S.A.A. Lancasters were re-fuelled in the air. The British Ministry of Civil Aviation has arranged with B.O.A.C. and Flight Re-fuelling Ltd., to carry out a similar series of experiments on the North Atlantic route.

An invitation from the Ministry to take part in one of the early flights was offered to me and, in company with two daily newspaper men, the only North Americans to be invited, I reported to Dorval on March 4th in time to be briefed and to take off at 1000 hours, local time.

Our flight plan called for a direct route to Gander, crossing Stephenville, followed by a Great Circle course to London, only one re-fuelling being required on the east-bound journey. This was to take place at 2030 hours, G.M.T., i.e. after 5½ hours flying. The aircraft, a Consolidated Liberator, G-AHYD, which had already made innumerable Atlantic crossings, had been fitted with the necessary re-fuelling apparatus by the B.O.A.C. engineers under the supervision of Captain J. T. Percy, an Atlantic pilot of long standing.



Typical refuelling operation.

All went well to Gander and beyond, the various points being passed exactly on E.T.A., but the first hint of trouble appeared when the tanker from Gander ran into difficulties with its radar equipment. Sometimes they claimed to be within 15 miles of us, sometimes five and once only one mile, but they could not see us and we could not see them in the thickening haze and declining light.

Finally Captain Heron, our commander, decided to call the test off for the time and sent the tanker home. then we returned to Gander, where we were delayed for a little over 24 hours, mainly due to weather difficulties at London.

At 0636 hours G.M.T. March 6th, we took off for an attempt to fly non-stop to London and this time everything went according to plan. The tanker intercepted us at 0940 hours at 43° 17' N., 51° 45' W. and established immediate contact at 9,000 feet, just above a sea of stratus cloud over which the rising sun was laying an ever-changing stream of colors.

Just before we reached the re-fuelling position the operator in the receiver aircraft trailed a line from a device known as the reception coupling, the line being fitted with a 30-pound sinker weight on the end and falling out astern in an arc. As the tanker came up behind and slightly below, to starboard, the tanker operator fired from a harpoon gun a grapnel attached to a line. This line shot out horizontally and then, due to the air stream, dropped back and down until it made contact with our trailing line. Sliding down it the line finally touched the sinker weight, also fitted with grappling devices, and so the two became firmly linked together, at the same time making an electrical contact which balanced the charges on the two aircraft, any spark occurring at a safe distance from the machines.

The tanker operator immediately started his winch and hauled our line in, detached the sinker weight and replaced it with the nozzle on the end

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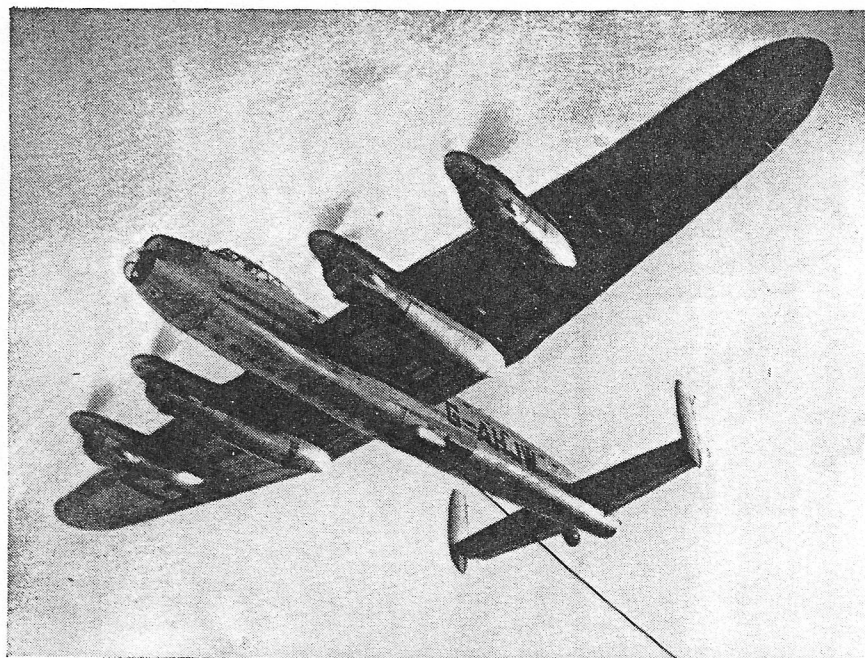
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(Aircraft & Airport Photo)

Looking up from the aircraft being refuelled, the tanker seems to hang in space as large as life—and twice as natural.

of the hose, an operation which took about three minutes to complete. On the hose there was a small drogue parachute and as soon as he released the winch brake the hose began to run off its reel, the receiver operator at the same time starting his winch and hauling in our line to bring the hose over to us.

### Safety Measures

Nitrogen was next passed through the system at high pressure so as to prevent an explosive mixture being formed when the gas flow began. During this part of the operation the tanker had moved to a position about 70 feet above and slightly to starboard of the receiver and gas was fed by gravity at the rate of about 100 gallons a minute. We took on 400 gallons on this occasion. Nitrogen was again passed through the entire system and then the receiver winch allowed the hose to run away on the end of the hauling line. This time, however, the line was run out to a much greater length to allow a "weak link" in it to reach a position about 150 feet away from the receiver.

At this stage the tanker turned gently away from us and as soon as the strain came on the weak link it parted and we were separated. Another sinker weight was placed in position and we were ready to repeat the operation whenever necessary. The whole job took only 15 minutes.

Nine hours later we landed at Bovington, having been diverted from London Airport due to fog conditions, where we were met and entertained by representatives of the M.C.A. and the companies interested in this series of tests.

Two days later we took off again with a flight plan for a direct flight from London to Montreal, including two mid-air re-fuellings. Apart from stronger headwinds than were forecast, the trip went according to schedule, the first tanker contact being made at 1430 hours at 56° 30 'N, 21° 30 'W, where we took on 800 gallons at a height of 18,000 feet.

The second re-fuelling took place at 2150 hours at 56°0'N, 53°40'W at 10,000 feet, where we again received 800 gallons. The time for these two operations was just over 20 minutes on each occasion, and no difficulty was experienced in intercepting. We landed at Dorval after a flight of 19 hours 12 minutes feeling a little tired and more than anxious for cigarettes.

During our stay in London we were received by the Minister of Civil Aviation, Lord Nathan, who explained the reasons why the British Government were so interested in fostering this series of experiments. He told us frankly that it would be a considerable time before any British airliner of the post-war series would be available for service, apart from the Tudor, which is,



of course, under a very dark cloud at the present time, and that Britain just could not afford the dollars to buy more American aircraft.

They therefore felt that if flight refuelling could be employed to extend the range and increase the payload of existing types of aircraft it might provide part of the answer to a very difficult problem. For that reason they had initiated the North and South Atlantic tests so as to obtain really comprehensive data on the success or otherwise of the system under conditions which would be a very severe trial of its merits.

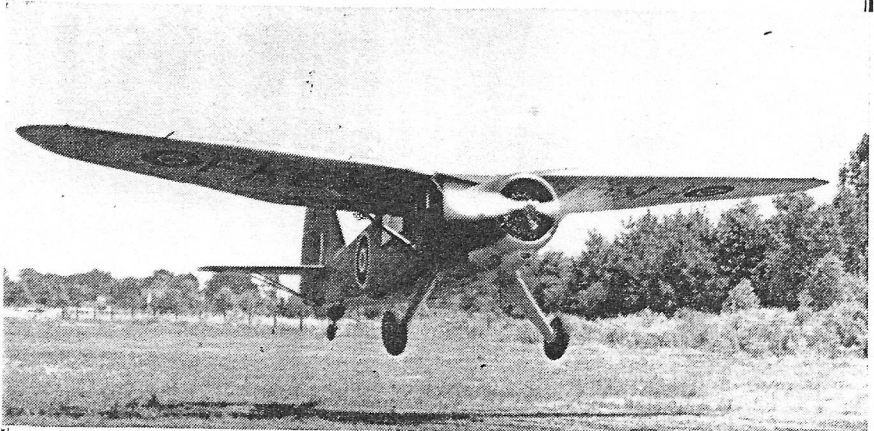
I asked Lord Nathan if any pressure would be brought to bear by the Ministry on the airline Corporations to make use of the system in the event of it being approved for civil air line operation. He said that it was not the Ministry's policy to do so, but naturally they hoped that the Corporations would fall into line with their views. It was stressed, however, that the Ministry had no power to compel the adoption of any system or aircraft if the Corporations do not wish to adopt them.

The Minister asked us what we thought of flight refuelling from a passenger's point of view, and while admitting that the transfer of fuel and the safety precautions in the fuel system were well carried out we did express the opinion that the failure to make contact was regrettable. We also felt that the lay passenger might be happier if the two aircraft were further apart during the refuelling, since a separation of only 70 feet looks so very little when there is nothing else nearby with which to compare distances.

#### Proven Over 15 Years

Representatives of Flight Re-fuelling Ltd., the company which has developed the methods and apparatus, and which is managed by Sir Alan Cobham, the veteran flyer, also talked to us about their side of the proposition, and naturally they consider that the whole operation is completely safe. Certainly they have expended a tremendous amount of energy and ingenuity, and no small sum of money, in the last 15 years to make it so. There is no doubt that they have a strong case regarding the economics of their plan and, while admitting that some passengers would be nervous, they consider that the majority would merely be interested.

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