The Air Work of the British Arctic Air Route Expedition.

By Flight Lieutenant N. H. D'Aeth.

The air work carried out by the Expedition can be divided into two completely separate groups, summer and winter flying, and these will be dealt with separately. The first aircraft to be erected and flown in Greenland was the D.H. 60x Moth seaplane, registered letters G-AAUR, and all the flying during the first summer was done in this aircraft. The flying programme for the first summer consisted of taking survey photographs of the coast from Angmagssalik Island to Kangerdlugsuak Fjord, carrying out a few reconnaissance flights over the border of the Inland Ice to find a safe route through the crevassed area, finding any suitable flying bases, and getting general information about flying conditions. From 3.8.30 until 10.9.30 23 flights were carried out, totalling 32 hours 15 mins. Nine of these, making up 18 hours 20 mins., were for photography, during which flights 450 plates were exposed, and the whole of the coast with the exception of the small portion from Angmagssalik Island to Bjørne Bugt was photographed. The remainder of the flights were for general reconnaissance purposes. Owing to the unexpectedly good conditions during the first summer, very little was left to be done during the summer of 1931. Only two flights, totalling 7 hours, were made. During these flights, photographs were taken of the coast from Sermilik Fjord to Umivik, as well as a large portion of Sermilik Fjord itself.

The winter programme was not definitely decided on before leaving England, as we had no idea of the flying conditions likely to be experienced. The chief job was to find out these conditions, and the possibility of running a commercial air route all the year round over Greenland. If conditions proved favourable, we hoped to make a flight to Winnipeg in the early Spring. Actually, conditions proved far worse than we had been led to believe, and we had to abandon this project. During the winter of 1930—31, 49 flights were carried out, totalling 46 hours 50 mins. These flights were chiefly local reconnaissance flights, though a few long flights up to 4¾ hours duration were made over the Inland Ice. There were also a few photographic flights, and a few Eskimos were given trips.

The conclusions arrived at during the year are as follows. During the summer the weather was persistently fine, and conditions for flying were excellent. The large amount of ice in the sea, however, makes

flying away from a properly organized base difficult and not a little dangerous. However, during the course of the Expedition, several large Lakes were discovered, one on Angmagssalik Island, and the other at the head of an un-named fjord in Lat. about 66°. Both of these are quite large enough for the largest type of commercial flying boat or sea-plane at present in use, and owing to the fact that they are ice free, should make ideal Bases. There was no fog, and no strong winds during the summer.

During the winter the most serious problem we had to contend with was the very large number of Föhn gales. The actual trouble was chiefly due to the fact that we were quite unprepared for them. We found that they were very local in their effect, and I consider that, given two fairly well separated bases, efficient meteorological organization, and wireless to communicate with aircraft while in flight, this difficulty could easily be overcome. Apart from these gales, the weather conditions are quite suitable. Again, the Fjords are not suitable for Bases as, in the event of the freeze up taking place during a period of on shore winds, the surface might freeze up when the fjord was full of pack ice so that it would be too rough for flying all the winter. This difficulty would not be present if the lakes already mentioned were used as bases. If the cockpits and cabins of aircraft are efficiently heated, no trouble should be experienced from cold.

The only really serious drawback to an air route over Greenland is the long period when no flying could take place from the coast due to the sea freezing over during the Autumn, and the ice breaking up again during the spring. During the years 1930--31 we were unable to fly from 15.9.30 till 19.12.30 and again from 19.5.31 till 20.6.31. These times would have been less if we had been operating from a lake, and the difficulty would have been overcome if we had had a flying base on the edge of the Ice Cap.

The total amount of flying done during the course of the Expedition was, 72 flights totalling 79 hours 05 mins.

Preliminary Account of the Geology and Geomorphology of the Angmagssalik District and the Coast Northwards to Kangerdlugsuak Fjord.

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The few geological specimens which had previously been collected from this area had suggested that the only rocks were Archaean