The Polar Record, Vol 12, *No* 81, *p* 775–77
Printed in Great Britain

OBITUARY

Sir EDWARD VICTOR APPLETON, FRS, British physicist and pioneer of ionosphere research, was born in 1892 and died on 21 April 1965. He had been Principal and Vice-Chancellor of Edinburgh University for nearly sixteen years, and was one of the foremost physicists of his time. His investigations into the electrical properties of the upper atmosphere resulted in the discovery of what is now called the Appleton layer.

In 1901, when Marconi first transmitted long-distance radio messages across the Atlantic, there was no adequate explanation why the waves should follow the curvature of the earth. In 1902 Oliver Heaviside and A. E. Kennelly independently postulated that a high layer of the atmosphere reflected radio waves. With M. A. F. Barnett, Appleton initiated and carried through a series of experiments which in 1925 gave the first direct experimental proof of the existence of conducting layers of ionization which reflect radio waves. He followed this up by prolonged investigations into the structure and properties of this region, now known as the ionosphere.

This brief note cannot do justice to Appleton's researches, which will certainly be fully recorded and assessed elsewhere. He was also a most successful administrator, being Secretary of the Department of Scientific and Industrial Research throughout the Second World War. It is appropriate to recall here some of his activities connected with the polar regions during a long and distinguished career.

When the International Scientific Radio Union (URSI) met in København in 1931, Appleton was elected chairman of a committee to organize scientific radio observations of the ionosphere during the Second International Polar Year of 1932–33. They were to organize the collection of observations and the reduction of results. Appleton had already formulated the mathematical theory of radio-wave propagation in the ionosphere and measured the peak electron densities by the critical-frequency method. His committee proposed that the ionospheric layer heights and densities should be measured at stations as far north as possible, in particular at Tromsø, Scoresbysund, Thule, Angmagssalik and stations in northern Canada and Alaska. In the event, Angmagssalik, Fairbanks, Murmansk, Scoresbysund and Tromsø were operated. From his own observations at Tromsø Appleton announced the discovery of "Polar Black Outs" (1933), the relation of ionospheric and magnetic disturbances (1937), and he described the "auroral-E" type of ionization.

As chairman of the URSI Committee, he was again instrumental in sponsoring world-wide co-operation during the International Geophysical Year.

Dr LEONARD DUNCAN ALBERT HUSSEY, OBE, died in London on 26 February 1965, in his 72nd year.

During his training as a medical student he accompanied a scientific expedition to the Sudan as anthropologist and meteorologist and there read, in a month-old newspaper, of Shackleton's proposed trans-Antarctic expedition. He wrote offering his services and was accepted "because he [Shackleton] thought I looked funny"; with his cheerful temperament and indispensable banjo his was probably one of Shackleton's most felicitous appointments.

On the return of the expedition he served in the Royal Garrison Artillery during the First World War and also accompanied Shackleton to Murmansk when he was appointed to take charge of Arctic equipment and transport. In 1921, he again sailed with Shackleton in the *Quest*, and was with him when he died at Grytviken. Hussey took Shackleton's body to Montevideo but, at Lady Shackleton's request, returned with it for burial to Grytviken. Between the two World Wars Hussey practised in

London until he joined the Royal Air Force in 1940, and saw service in Iceland and elsewhere. In later years he continued his civilian practice and also, for a period, served as a ship's surgeon.

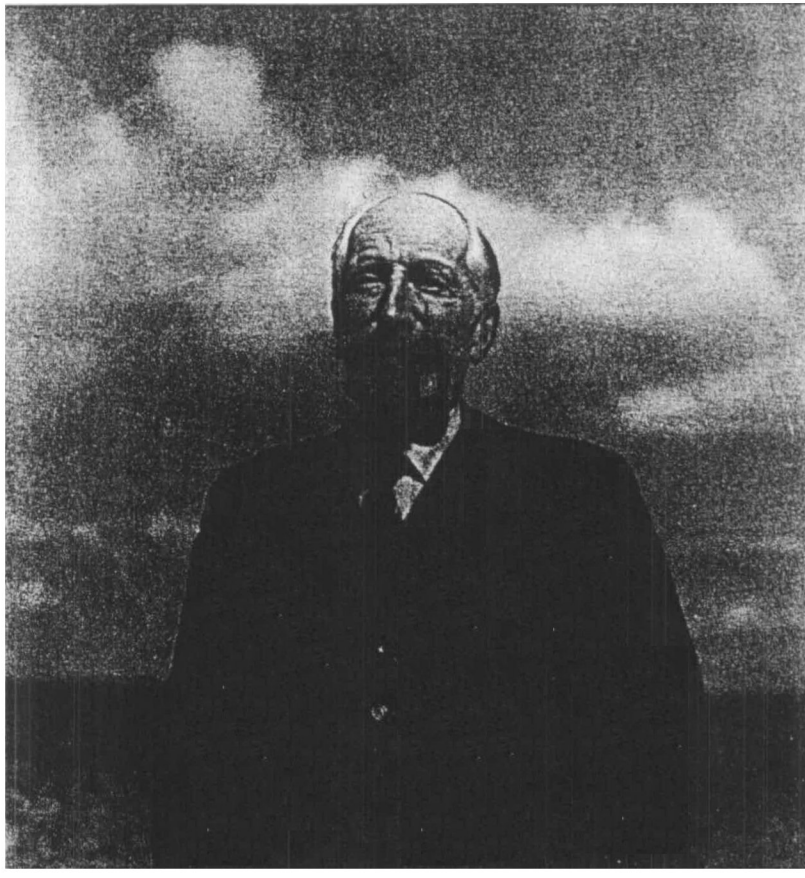
His book, *South with Shackleton* (London, 1949), was mainly concerned with the *Endurance* expedition, and only refers to the *Quest* expedition up to the time of Shackelton's death.

Dr Tom George Longstaff was born on 15 January 1875 and died on 26 June 1964, aged eighty-nine. He was the eldest son of Llewellyn Longstaff, a munificent supporter of Captain Scott's British National Antarctic Expedition, 1901–04, who shared all his enthusiasms with his children and encouraged them to take an interest in travel and natural history. Tom Longstaff was educated at Eton and Christ Church, Oxford. In 1903, he qualified as a DM at St Thomas's Hospital, London, but he never practised medicine. His interests in mountain exploration and ornithology led him instead on a series of adventures to many remote parts of the earth. He returned between each of these to his Hampshire home near Ringwood in the New Forest, where he was a constant source of help and inspiration to three generations of climbers and explorers. Later—after his second marriage—he "retired" to a small cottage near Achiltibuie on the north-west coast of Scotland, which became a place of pilgrimage for his many friends.

In 1903, after many seasons' climbing in the Alps, he went to the Caucasus. In 1905 he visited the central Himalaya with two alpine guides. They travelled through great stretches of little-known or unknown country in Kumaon, Tibet and western Nepal. During a second expedition to the Himalaya (1907) Longstaff explored the approaches to Nanda Devi and Kamet, and climbed Trisul, 7120 m (23360 ft), which for twenty-three years remained the highest summit reached. He then turned his attention to the Karakoram (1909), where, among other achievements, he discovered the Siachen glacier, the largest outside the polar regions. He also made expeditions to British Columbia (1910), Spitsbergen (1921 and 1923), Mount Everest (1922) Garwhal Himalaya (1927) and west Greenland (1928, 1931 and 1934); the last of these also including a visit to Baffin Island. The bare list is impressive but does not do justice to the innovations in logistic techniques which he introduced. His expeditions were organized with great simplicity and at relatively small cost. He was a pioneer exponent of "travelling light", unencumbered by the gangs of porters and extensive baggage trains which were commonly regarded as essential until only thirty years ago.

No one in the past half-century had a greater influence upon young British explorers and mountaineers. His advice was pithy and sound. Many will recall the council he gave to those who wanted to become an explorer. It always started with the same advice: "Qualify yourself", but then he would immediately go on to discuss the practical possibilities with enthusiasm and understanding. He was unfailingly stimulating to meet; a breath of fresh air in the atmosphere which often prevailed among those elders who seemed so anxious to damp youthful aspirations.

His first visit to the Arctic was in 1921 with the Oxford University Expedition to Spitsbergen, organized by George Binney under the leadership of F. C. R. Jourdain. The objects were primarily ornithological, but its success encouraged Binney to organize and lead two much more comprehensive expeditions to Spitsbergen in 1923 and 1924. Longstaff also took part in the 1923 venture. The Oxford University Exploration Club, launched by Charles Elton, Max Nicholson and C. G. Trapnell in 1927, grew from these expeditions. Needless to say, Longstaff's influence and advice played an important part in establishing this Club and setting the pattern of its early activities. He was himself leader of its first official long vacation expedition—to west Greenland—in 1928. The writer of this note has had occasion to read much of his correspondence with the leaders and organizers of later Oxford and Cambridge Arctic expeditions. It would



Dr Tom George Longstaff

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https://doi.org/10.1017/S0032247400059817 Published online by Cambridge University Press

be hard to overestimate the practical help which he was always so ready to give. It was typical of him that he never reproached expeditions which got into financial difficulties. He did not care for too much caution in these things, and, during the 1930's, especially, he was an effective chairman of more than one "emergency committee" set up to raise desperately-needed funds.

The 1928 expedition was concerned mainly with ornithology and general ecology in the region near Godthåb. In 1931 he returned to west Greenland to continue his investigations at Disko; this time accompanied by one of his daughters.

In 1934 Longstaff was bound further north along the west coast of Greenland for Kap York and a secret design on the North West Passage, with J. M. Wordie. Ice conditions were unfavourable that year and their chartered vessel, the *Heimen*, could not penetrate beyond Melville Bugt. Longstaff, then fifty-nine years old, offset this disappointment by making several difficult climbs with Pat Baird, Sir John Hanham and Michael Ritchie.

Longstaff was a prominent member of the Alpine Club, of which he was elected President in 1947, and also of the Royal Geographical Society and the British Ornithologists' Union. In 1928 he was awarded the Founders Medal of the RGS, and during the period 1930–37 served as Honorary Secretary and then Vice-President of the Society. For varying periods he served on the Councils of all three of these organizations, an activity which he never regarded as a sinecure.

In his autobiography, *This my voyage* (London, 1950), Longstaff looks back through the perspective of years on a long life of adventure combined with scientific research. The book also contains a useful bibliography. He wrote numerous articles for the *Geographical Journal*, *Alpine Journal*, *Ibis*, *Journal of Animal Ecology* and other periodicals. The scientific results of his 1928 Greenland expedition were brought together in *Greenland and Spitsbergen papers* (Oxford University Press, 1934).

He was one of the last survivors of an age of amateur exploration which is already becoming legendary. It is sad that we shall not see his like again. B. B. R