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Obituary – Dr Peter John Tilbrook

William Block and Martin Holdgate

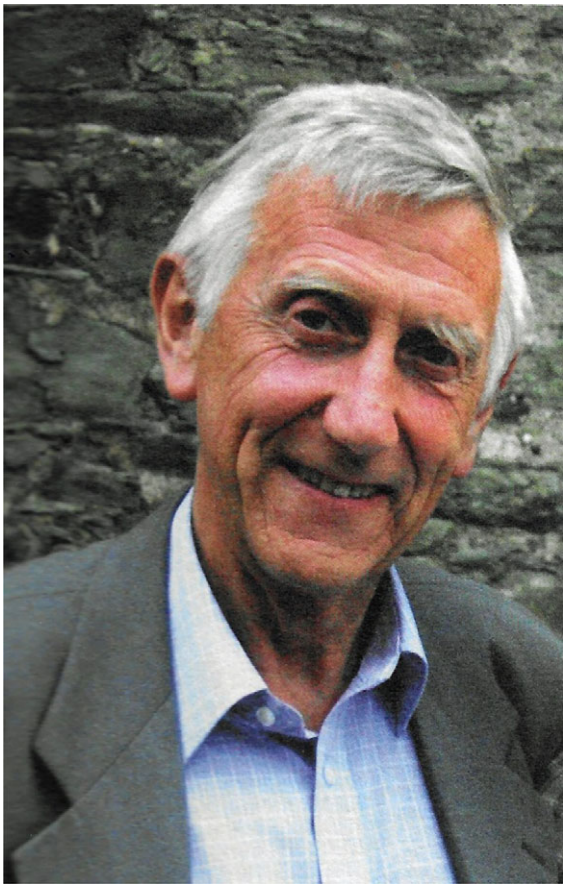
Obituary

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Peter Tilbrook, zoologist, polar scientist, conservationist, died on 18 July 2022, from an infection following his diagnosis of terminal cancer the previous year. He was 83. Born in Romford, Essex, Peter grew up in nearby Hornchurch, where he attended the Royal Liberty Grammar School, and excelled at sport especially football and cricket. He went on to Durham University to study Zoology and represented the University in football and cricket as well as developing interests in tennis, squash, badminton, dinghy sailing and classical music. He went on a University expedition to Svalbard in 1960 and this, together with visits to the Northumbrian coast, the island of Raasay and field trips to Moor House field station in the northern Pennines, influenced his subsequent career.



Peter was a member of St Cuthbert's Society at Durham and developed an interest in Antarctica having heard a lecture by Bill Sloman to the biology society on the work of the then FIDS (Falkland Islands Dependencies Survey – now the British Antarctic Survey). Peter graduated BSc with Honours in Zoology in 1961 and was recruited by BAS and spent the next few months preparing to work as a biologist in the Antarctic. He departed the UK that autumn, travelling by ship firstly to the Falkland Islands and then onward to Signy Island in the South Orkney Islands, where he overwintered in 1962 and 1963 at the British station (Base H). He was appointed Base Leader for both years and was well respected by his seven companions.

In the early 1960s, FIDS was in transition. Originally created at the end of the second World War to sustain British territorial claims in the Antarctic Peninsula, its primary purposes had been to fly the flag, map the terrain, describe the rocks (and their potential mineral value, if any) and contribute meteorological information as an aid to weather forecasting in the southern

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ocean where whaling was then an important industry. But by 1961, the Antarctic Treaty had "frozen" territorial claims and opened all the lands and ice shelves south of latitude 60° S for peaceful scientific exploration.

FIDS moved with the times, changing its name to the British Antarctic Survey, and strengthened and broadened its scientific activities. Its biological programme – hitherto largely concerned with birds and seals – was expanded under advice from Dr Martin Holdgate, then a staff member at the Scott Polar Research Institute, who accompanied Peter and fellow biologist Barry Heywood to Signy Island in November 1961 and subsequently became BAS Director of Biological Sciences.

At Signy, Peter undertook one of the first detailed studies of the moss turf ecosystems abundant throughout the maritime Antarctic, which later formed the core of his successful PhD thesis in 1974. This fundamental work showed the composition of the micro-arthropod and nematode populations of typical moss habitats on the island at that time. The results formed the basis of future ecological studies in what was to be a structured programme of research in terrestrial biology on Signy Island.



Loading soil and plant samples for heat extraction of nematodes (this apparatus required continuous 24 hour electrical power which hitherto had not been available at Signy station!)

During the austral summer of 1963–64, Peter undertook fieldwork at various sites on the Antarctic Peninsula and South Georgia (Tilbrook, 1967). Later, with Martin Holdgate aboard *HMS Protector*, he contributed in no small measure to the survey of the South Sandwich Islands and led a team ashore on Candlemas Island for three weeks. Tilbrook Point on Cook Island in the Southern Thule group is named in his honour.

Four new species of invertebrates were described from Peter's Antarctic studies: two mites (*Tydeus tilbrooki, Ayersacarus tilbrooki*), a springtail (*Freisia tilbrooki*) and a nematode worm (*Teratocephalus tilbrooki*).

Peter returned to the UK in the spring of 1964 and headed up a BAS terrestrial biology section at Queen Mary College London, which later transferred to Monks Wood Experimental Station near Huntingdon. Apart from his increasing role in management of the section, he developed his research towards the ecophysiology of Antarctic arthropods, particularly the ubiquitous springtail *Cryptopygus antarcticus*. His collaboration with Dr Bill Block at Leicester University in the early 1960s resulted in the measurement of individual collembolan respiration rates using a Cartesian Diver micro-respirometer capable of measuring 10^{-6}µl of oxygen. Individual live springtails weighing 2 to 120 µg were used in the experiments. They continued this collaborative research at Signy Island in the austral summer of 1971–72 where they measured individual oxygen consumption rates of 1 to 23µl × 10^{-3} h^{-1} over the temperature range 0° to 10°C. These data demonstrated significant cold adaptation in this species compared with temperate forms, which was supported by observations of its mobility in sub-zero conditions. Estimates of the total population metabolism of *C. antarcticus* under summer conditions were 77 to 768 ml 0_2 m^{-2} which was within the range for temperate Collembola.

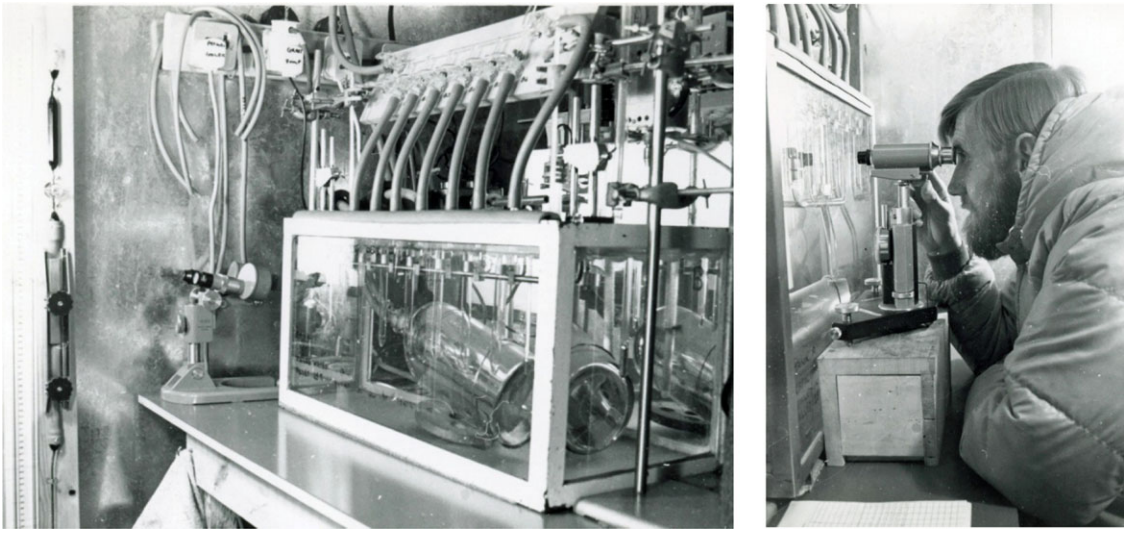
Comparable experiments were conducted at South Georgia using *C. antarcticus,* and the research resulted in several publications (e.g. Block & Tilbrook, 1975, 1978).

Peter and his team also established a long-term programme to investigate the ecology of two contrasting moss ecosystems (Signy Island Reference Sites – SIRS) during the 1971–72 season. The research programme was initiated by studies on the ecology of micro-arthropods (Don Goddard), tardigrades (Peter Jennings), terrestrial algae (Paul Broady) and microclimate (Ian Collinge). Many postgraduate students and BAS researchers who followed over the years all contributed to a complete analysis of the structure and function of these simple terrestrial communities. The resultant scientific publications (around 56 peer-reviewed papers) contributed to the final model (Davis, 1981). This was an important first analysis for any terrestrial site in Antarctica. Peter was honoured with the Polar Medal in 1967 for his contribution to Antarctic science.

Leaving BAS in 1975, Peter moved to Scotland to become deeply involved in nature conservation. He was initially appointed Assistant Regional Officer for the NW Scotland Region of the Nature Conservancy Council and succeeded to Regional Officer in1984 based in Inverness. With the creation of Scottish Natural Heritage (now NatureScot) in 1992, he was appointed Regional Director of the NW Region until his retirement in 1996. During his 21 years in Scotland, he became a major ambassador for conservation, tirelessly campaigning for environmental and social causes, and warmly respected for his strong and principled convictions, generous encouragement of colleagues, and unswerving friendships. His development of the highly successful Peatland Management Scheme for the Flow Country and his involvement in the Public Inquiry regarding the Lingerbay Super Quarry in South Harris, both extremely controversial, garnered respect across government, developers and conservationists. In retirement Peter remained active with many environmental charities, organising the building of a green home and enjoying sports, travelling and hill walking.

Peter Tilbrook was one of the pioneers in "modern" Antarctic ecology. Coming from a University Department, headed by the redoubtable Professor J B Cragg, with his outstanding reputation as trainer of animal ecologists, Peter carried that understanding to the maritime Antarctic at a time when the British Antarctic Survey was emerging from a less scientific past. He was Base Leader at Signy Island when it was being established as a focal point for ecological research. During his 14 years as a polar biologist, his fundamental ecological research was significant, and his supervision of others was widely respected. It undoubtedly prepared him well for his career in conservation, in the Nature Conservancy Council and Scottish Natural Heritage.

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Cartesian Diver micro-respirometer with Peter taking readings at Signy Island

Peter is survived by his wife Frances, daughters Cathy and Georgia, and four grandchildren.

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