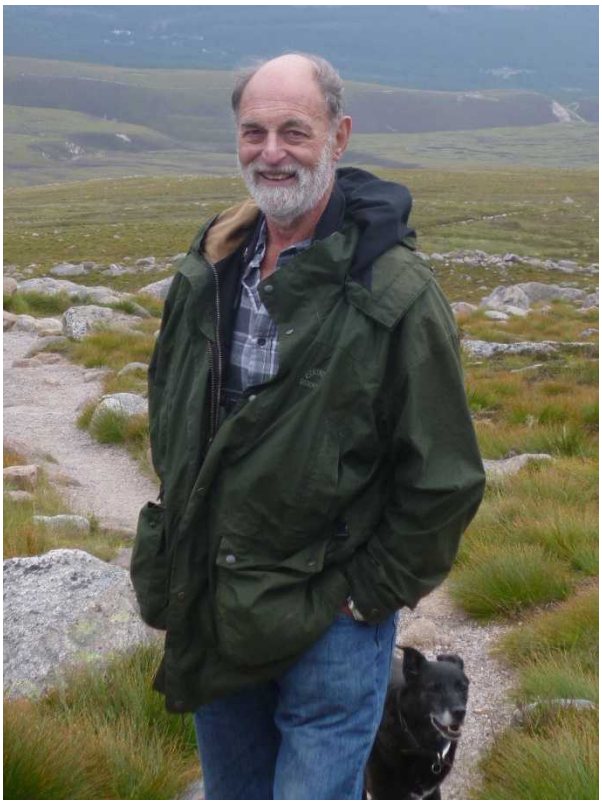
Professor John Terry Knowler MIBiol PhD, 1942-2017.
Biochemist and Natural Historian



The distinguished Glasgow-based biological scientist, John Knowler, who died of pancreatic cancer on 24th October, soon after his 75th birthday, had a career in two distinct parts: first as a biochemist, and then, converting his childhood passion into a 'retirement' occupation, as a natural historian.

John's route into academic science was unconventional. He was a farmer's son, born near Faversham in Kent, and learned to love wildlife, especially birds, plants and insects, roaming his local countryside, especially the marshes. Having failed his 11 plus, he left school at 14 to work on the farm, but curiosity concerning the natural world took him back into education, first at Kent Farm Institute and then to Canterbury Technical College, where he took Zoology A level, and, just as important, met Penny, who became his wife in 1967. His early employment was as a technician in pesticide development, which allowed day release to study for Membership of the Institute of Biology, a degree level qualification. His excellence in Biochemistry led to an Industrial Fellowship paid by Pfizer's which allowed research towards a doctorate, supervised by Professor Martin Smellie at Glasgow University, and completed in 1972. John and Penny had just settled into the resultant post-doctoral research positions in the USA, when John was offered a lectureship in biochemistry back in Glasgow.

His time as a lecturer, later senior lecturer, was happy and productive, researching the influence of steroid hormones and other substances on gene expression, investigating molecules important in diabetes and Alzheimer's disease, and studying the mobilisation of starch in potatoes: a very wide range of topics. During this time, John enjoyed research abroad spells in Australia and the USA. He was an enthusiastic and able teacher of undergraduates, particularly in laboratories, and of postgraduates; he supervised 20 postgraduates, published many research papers and contributed to two editions of *The Biochemistry of Nucleic Acids* (a key text whose first edition was written by Glasgow's J.N. Davidson in 1950, three years before Watson and Crick's momentous discovery of DNA's structure). Postgraduates remember John's laboratory as a happy place: productive, with rigorous attention to detail, but also a lot of fun.

In 1990, John was appointed Professor of Biosciences and Head of the Department of Biological Sciences at Glasgow College (soon to be Glasgow Caledonian University), with a remit to improve research rankings and expand both research funding and staff and student numbers. These were all achieved, with the 1992 UK-wide Research Assessment Exercise grade of 1 (poor) raised to a very creditable 4 in 2001; staff increased from 22 to 43 and students from 211 to 760. In 1992, the growing department moved to brand new premises (the Charles Oakley Building) with custom-built teaching and research laboratories. Later re-branded as the School of Biological and Biomedical Sciences, under John's leadership it became one of the largest and most successful multidisciplinary biosciences units in the Scottish university sector. During this time, John turned up at all departmental seminars, no matter the subject, and was always first to ask a question, usually with a biochemical or molecular twist, sometimes to the discomfiture of the speaker! However, all this was achieved at a cost to his personal research output, which slowed to a trickle. Academic management can be a bruising business, and John decided to take early retirement in 2001 at age 59.

John had always kept up his early wildlife interests, with family holidays often to places where he could increase his world list of birds personally seen in the wild (eventually over 6000 species). The most hair-raising was a near fatal shipwreck on a coral reef off Irian Jaya in New Guinea: the later sightings of Birds of Paradise were worth it! Retirement allowed John to make this private passion into a new occupation, albeit unpaid. He was appointed Honorary Professor of Ecology back in the University of Glasgow and devoted his time and energies to a range of projects and organisations, especially the Scottish Ornithologists Club (SOC), Butterfly Conservation and Glasgow Natural History Society (GNHS). He served a term as GNHS

President (2005-7) and then as Vice-President (2008-10). During that time, he delivered tutorials on moths and a Presidential Address on the natural history of Spitzbergen. All this led to a new and distinctive list of publications mainly on the birds and insects of Scotland.

John had a long interest in ornithology, travelling much in Scotland, the rest of the UK and abroad to see birds. He contributed the chapter on the short-eared owl to the SOC's magnum opus *The Birds of Scotland* (2007), and he was in the exalted club of those fortunate enough to add a new bird species to the British List, the Barrow's goldeneye, which he found and identified at Irvine, Ayrshire in November 1979. John also had a wide interest in and knowledge of plants, particularly orchids, of which he had seen most British species. He was particularly proud of a wonderful colony of lesser twayblade near his home in Milngavie, which he showed to Anne and Simon Harrap, authors of *Orchids of Britain and Ireland*.

John's knowledge of moths, particularly macro-moths, was unsurpassed, and his interest in their larval foodplants was enhanced by his general botanical knowledge. From 2004, he was the official moth recorder for Watsonian vice-counties 86, 87 and 99, verifying, collating and analysing a huge amount of data, ultimately leading to his *Annotated Checklist of the Larger Moths of Stirlingshire*, *West Perthshire and Dunbartonshire* (2010) published by GNHS. This meticulous and inspiring work (143 pages) built on several of John's previous papers, including accounts of the moth assemblage of Flanders Moss (where he surveyed Rannoch brindled beauty, and argent and sable) and his confirmation of a Welsh clearwing population in the Trossachs. He also discovered a number of species new to the region such as alder moth and Blair's shoulder-knot. From 2009, John was identifier of the Rothamsted insect survey light trap at Rowardennan, a huge undertaking that resulted in significant contributions to our understanding of insect populations in the ancient woodland of east Lochlomondside. As well as finding new species, John was able to re-examine some of the older anomalous records. And he did not simply stick to moths; he co-authored papers on the Rowardennan nocturnal Ichneumonidae (2014) and caddis (2016) too. John also travelled throughout the British Isles in search of moths. His 'best moth trap ever' came as recently as August 2015 when, in unpromising conditions at Sandwich Bird Observatory, he trapped three very special migrants: bordered straw, orache moth and beautiful marbled.

John showed generosity with his entomological expertise in the museum sector. He volunteered on many collection-based projects latterly. In 2014, he assisted in cataloguing the British moths in the W.B.L. Manley collection held by Glasgow Museums; his expertise added considerably to the value of this collection. At the University of Glasgow's Hunterian Museum, 2015-17, he re-organised a large proportion of the British macro-moth collection, updating nomenclature, checking identifications, checking storage boxes, annotating variations and rarities, and extracting historical records for the national recording schemes. His work at the Hunterian inspired his co-authorship of a paper on the common wave, *Cabera pusaria* (2016). Even when very ill in August 2017, John began work on the most species- rich moth group, the Noctuidae, but sadly was unable to complete the task. In addition to all this work, John made the staff room a more interesting place with his colourful reminiscences of his innumerable natural history adventures. The attention to detail required for all this natural history work was a hallmark of John's approach. One prominent Scottish ornithologist rated John as 'the best all-round naturalist that I know'.

In addition to his interests in science, especially natural history, John was a skilled photographer and amateur painter. He was also devoted to his family, Penny and their two daughters, Clare and Sheila and his grandchildren, who survive him.

In 2012, John was diagnosed to be suffering from oesophageal cancer; an agonising year of chemotherapy and surgery followed, but he emerged, remarkably well, to carry on with his natural history work. Sadly, he was struck with pancreatic cancer in 2017. He was glad to be able to survive to celebrate his 50th wedding anniversary, his 75th birthday, and the award of Penny's PhD for research into a neurological disease of dogs, supervised by their daughter Clare.

Acknowledgements
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