
Dr. Alfred T. Cowie

Alfred T. Cowie died on July 3, 2003, aged 86, one of the last of that generation of scientists who began our understanding of the control of mammary gland growth and function by hormones, using the classical methods of endocrinology. He was born on August 16, 1916, in Inverurie, Aberdeenshire, Scotland.

His education was very much in the Scottish tradition of respect for learning. He qualified as a veterinary surgeon at the Royal (Dick) Veterinary College in Edinburgh in 1938, taking a BSc in veterinary science at Edinburgh University at the same time. The College then offered him a research fellowship. As a result he spent an influential period in England in the Cambridge laboratory of Sir Joseph Barcroft, working with him and with Professor D. H. Barron on the physiology of foetal sheep (1). On his return to Edinburgh, he spent short periods, using respiration calorimetry to study the energy metabolism of pregnant sheep and the digestibility of alkali-treated straw.

In 1941, he took up a post at the National Institute for Research in Dairying at Shinfield, near Reading. He worked first with S. J. Folley and G. W. Scott-Blair on a pregnancy test for cattle based on the rheological properties of secretions of the uterine cervix, later publishing an extensive review of the uncertain art at the time (2). However, he soon became interested in John Folley’s work on lactation, the beginning of a lifelong enthusiasm for the field in which he made his major research contributions. His work covered that period, unbelievably distant to today’s endocrinologists, during which first steroids and later, largely due to the U.S. National Institutes of Health, highly purified pituitary hormones became available in large enough quantities to enable their experimental administration even to farm animals.

During the years of the Second World War and supported by the U.K. Agricultural Research Council, he was involved in trying to improve the productivity of dairying by inducing lactation in barren cattle. Folley had begun studies on induced lactation in the 1930s, using the newly available synthetic estrogens. With Folley and Frank Malpress, Alfred set up an extensive series of field trials. These were not without incident as he himself recalled (3), including difficult journeys in the blackout on wartime roads and the management of estrogen-treated cows that he realized were in constant estrus. The milk-yield response was too erratic for more extensive practical application, but led to basic research on mammary growth carried out with colleagues and overseas visitors attracted to an exciting and progressive department after the war. Progesterone became available in sufficient quantities to use goats as experimental animals. In ovariectomized goats, mammary growth was more normal when estrogen and progesterone were given together, but the role of anterior pituitary hormones was also recognized (4).

During the late 1930s and early 1940s, Bill Lyons and his colleagues in California were developing the methods of surgical ablation and replacement therapy in rats that clarified the roles of hormones in mammary growth and function. Inspired by this work and encouraged by Folley, Alfred set up the techniques of adrenalectomy and hypophysectomy in rats. An extensive series of papers on the role of

the adrenal cortex formed the basis of his Reading University PhD thesis in 1947, while later work on rats studied the roles of the posterior (5) and anterior (6) pituitary. Posterior lobectomy rats in their second pregnancy were found to recover normal milk ejection, a fascinating early observation on the ability of neurosecretory tissue to reorganize (5). Alfred also developed the difficult methodologies of endocrine ablation for the goat (3) and rabbit. These procedures enabled him to determine the complex of hormones necessary to first initiate and then maintain the secretion of milk in dairy goats and firmly to establish the later much exploited role for growth hormone in ruminant lactation (7). His studies, most strikingly on rabbits (8), showed that species differ in the minimum hormone combination that will support lactation. He was also involved in some of the earliest uses of isotopes to study the synthesis of milk fat and attempts to avoid in vivo experiments by using isolated perfusedudder tissue (9). His skills as a veterinary surgeon combined with meticulous laboratory work and quantitation formed the foundation that made his research so successful.

Reading University awarded him a DSc in 1959. He was elected as a Fellow of the Institute of Biology in 1974 and a Fellow of the Royal College of Veterinary Surgeons in 1976. In 1963 he was consultant to the World Health Organization scientific group on the physiology of lactation. From 1970 to 1977, Alfred was a member of the Veterinary Products Committee of the Ministry of Agriculture, Fisheries and Food, then the responsible body for the licensing of veterinary medicines in the United Kingdom. He brought to this role his customary tact and discretion. When Professor Soley died in 1970, he succeeded him as Head of the Physiology Department, retiring in 1981. As a Head of Department, he continued to be active in research and provided generous help and support to colleagues, visitors, and students. Before the availability of computer searches, he set up a departmental reprint collection and a punch card system for retrieving information, invaluable to those writing papers and theses. After retirement, he was editor of the Journal of Endocrinology from 1981 to 1984, having previously (1966–1972) served on its Editorial Board and been (1971–1977) a member of the Committee of the Society for Endocrinology. As a reviewer, editor, and examiner, he was eminently fair but thorough and rigorous in his judgments. A memory from one examinee illustrates this: he “complimented me on a chapter in my thesis and then immediately proffered two publications from 1933 which had beaten me to it by more than 4 decades! He was, as you would expect, very nice about it.”

Alfred Cowie was widely read, had a great interest in the works of James Joyce, and wrote with great lucidity and style. This contributed to his skills as author and editor and the readability of his two comprehensive books, The Physiology of Lactation (10) and Hormonal Control of Lactation (11). These balanced accounts have a perspective in which the history of the subject plays a significant part. They remain valuable guides to the older literature. As recently as 1999, he wrote a very valuable account of the history and achievements of the National Institute for Research in Dairying, from its foundation in 1912 to its closure in 1985 (12). He had a great interest in language, using his school Latin to translate early works on the mammary gland and acquiring some Russian and Japanese on visits to those countries. He also worked for periods at the universities of Harvard, Sydney, and Perth. His internationalist outlook, good humor, fairness, sense of fun, and commonsense judgments made him many lasting friendships among the scientists he worked with. His kindness is universally remembered. He was a proud Scot and his Hogmanay dinners (which became lunches in his later years) were a great joy to anyone lucky enough to have attended one.

REFERENCES