



Gordon Petrie in 2013 during the annual conference in Glasgow of the British Cartographic Society.

GORDON PETRIE, Emeritus Professor of Topographic Science and Honorary Research Fellow at the University of Glasgow, passed away on 4 April 2020 at the age of 89. Born on 20 July 1930 in Peterhead, a small fishing town on the north-east coast of Scotland, he was educated at Stirling High School and Aberdeen Grammar School. He read geography at the University of Aberdeen, graduating MA with first class honors in 1952. He completed a Diploma in Surveying at University College London and in 1953 was hired by the Overseas Survey Service. He worked in Aden, now South Yemen, until 1957, on triangulation, levelling for photo-control, large scale engineering work and cadastral surveying. During this period, he served for a time under Colonel D. R. Crone, who kindled his interest in photogrammetry. At the Conference of Commonwealth Survey

Officers in 1955, he met Professor W. Schermerhorn, who undergirded this new passion and sowed the seed of what would become a fruitful relationship, destined to last more than half a century, between the University of Glasgow and the International Training Centre for Aerial Survey (ITC) in Delft, where Petrie graduated BSc in photogrammetric engineering in 1958.

That same year he was appointed Lecturer in Surveying in the Department of Geography of the University of Glasgow, as a result of the desire of the department chair, Professor Ronald Miller, to increase the Department's capabilities in surveying, photogrammetry and cartography, which came to be known in Glasgow as topographic science. Petrie was promoted to senior lecturer in 1964 and awarded a personal Chair of Topographic Science in 1977. Initially, he taught specialized option courses in surveying and photogrammetry within the BSc degree program in geography. In 1963, with John Keates, he was responsible for instituting postgraduate courses leading to diplomas in cartography, photogrammetry and (later) surveying. In 1966, he was also responsible for launching the BSc degree in topographic science, which was the first full-time honors degree in these subjects in the UK. In 1976, added a master's degree program by course and project in topographic science. He supervised several PhD students. By 1980 his department had the largest postgraduate enrolment in these subjects in the United Kingdom.

Petrie's research interests were broad. He was keenly aware of the foundation on which he built and studied the history and development of stereoplottting machines. He worked on digitizing them for cartographic purposes, especially using computer-controlled devices. He worked on small-scale topographic mapping, especially the possibilities of mapping from satellites and high-altitude aircraft, including the use of non-metric reconnaissance cameras. He was intrigued by orthophotography and orthophotomapping before their widespread adoption. He applied photogrammetric measurement and mapping to research in the field sciences and directed the production of the large number of geomorphological, vegetation, geological and orienteering maps produced by his department at Glasgow. His Glasgow colleagues in specialisms such as geomorphology and biogeography were eager beneficiaries of these endeavors. As technology evolved, he anticipated the importance of technologies such as side-looking airborne radar and infrared line-scan and bridged the gap between remote sensing and its predecessors surveying and photogrammetry better than most.

Petrie was a Scot and proud of it, but traveled extensively. He took up a Carnegie Fellowship at ITC in 1969-70. He attended and addressed innumerable conferences. He relished the

semesters he spent at the University of Georgia (twice) and Miami University of Ohio. He directed and participated in a large program of mapping glaciers in Switzerland, Iceland, Norway and Alaska to detect glacial and landform changes. From 1971 to 1973, he was a member of the European Research Panel in Geodesy, Photogrammetry, Cartography and Geography of the United States Engineer Topographic Laboratories. With P. J. Carmody from the University of Newcastle upon Tyne, he visited the Sudan to advise on the setting up of university courses in surveying and photogrammetry. He was consulted by Professor M. A. R. Cooper, regarding the mapping of Stone Age shelters in Swaziland. He was British National Correspondent for the International Society for Photogrammetry (ISP) Commission VI for 1966-74, for Commission II for 1974-77 and for Commission IV for 1977-79. He was a member of the ISP specialist working groups on standard tests, digitising and automation. Petrie had a wide and catholic list of publications.

Petrie married twice, first to Dorothy Bewick in 1953. There were three children, but the marriage was ultimately unsuccessful. Petrie met Kari Dahl, an ITC alumna, two further children were born and the couple married in 1991. His long, happy relationship with Dahl resulted in research into Dahl instruments for photogrammetry and surveying. Both wives and one son predeceased him. There were five grandchildren. In the last years of his life, his companion Jean McCulloch supported him and they enjoyed contented times together, based on common interests such as cycling and concerts.

Much more could be said further to demonstrate the extraordinary contribution which Petrie made to British photogrammetry, both at home and internationally. Since the demise of Professor E. H. Thompson in 1976, he was for some time the doyen of UK academic topographic science, which was taught in several university departments and recognized worldwide. Those who heard him speak, either in formal settings such as the lecture room or conference stage, or in less formal conversation, could not but be impressed by the breadth of his reading, the depth of his knowledge, the grasp of detail, the clarity and perception of his intellect and his command of the English language.

Petrie was perhaps more of a teacher than a researcher, though his work on the histories of stereoplotters and map-making go deep, involving heavy use of original source materials and personal interviews. He was generous with his time in a manner that is not so easy today. He would take the time for one-on-one meetings to explain concepts to troubled undergraduates and did all his own grading of essays and practical work, methodically marking all errors, whether technical, spelling, grammar or syntax, usually with his vivid purple pen. Many of his publications were review papers, meticulous contributions involving reflection on the development path of the subject – or category of instrumentation – followed by painstaking teasing out of all the detail he required. He liked to introduce a taxonomy of whatever he was presenting: undergraduates up to the 1970s did not go short of classifications of analog stereoplotters. Many of his contributions followed this template, in both professional periodicals and, especially late in his career, more popular but less exalted publications: introduce a technology or instrument type, with clear exposition, usually illustrated by original graphics created by technical staff at the University of Glasgow; provide a taxonomy; then consolidate with characteristics of exemplars of each class in the taxonomy. This approach is didactic and valuable. It has found followers, for example, in the readership of the two editions of the highly regarded *Topographic Laser Ranging and Scanning: Principles and Processing*, edited by Jie Shan and Charles Toth. Many more papers

proselytized topographic science to audiences less well versed in its capabilities, such as a piece on orthorectification in *Transactions of the Institute of British Geographers* in 1977.

For the writer and, doubtless, many readers of this account, the most telling aspect of Petrie's academic duties was the career advice he gave to undergraduates. Often this involved leaving Scotland to pursue graduate degrees or take up posts in locations that must have seemed very exotic to the young Scots sitting in his brimming study. They absorbed his counsel, then ranged far and wide in exciting careers, which they would perhaps have left undiscovered had it not been for his encouragement. Petrie was fond of his students and maintained a list of graduates and diplomates with information about their whereabouts after leaving Glasgow.

Petrie was a staunch member of The Photogrammetric Society, which awarded him the President's Essay Prize in 1959, for a submission he had made under a pseudonym; the President's Medal in 1979; and honorary membership in 1995. Other honors included the 2006 Photogrammetric Award (Fairchild) in 2006 and the Bartholomew Globe by the Royal Scottish Geographical Society in 2008.

As funding crises and departmental amalgamations beset the universities, Petrie's academic position in Glasgow reached a dramatic denouement. He and his colleague Barry Methley (ITC alumnus) decided to retire early, on condition that the University used the funds thus released for a new, full-time position in topographic science. Gordon continued part-time into 1995 and topographic science marched on, albeit with changes in the courses: a postgraduate Diploma in Digital Mapping & Automated Cartography introduced about 40 years ago was one of the earliest programmes that most would label GIS, and there is now a suite of taught master's degrees. Naturally, too, the relationship between topographic science and the other pillars of modern academic geography has evolved over the decades.

Petrie's passing ended an era. He had been a leader in UK photogrammetric education and practice for more than half a century. The University of Glasgow became a top school in topographic science as a result of his efforts. Students who had passed through his care traveled the world to follow the profession and contributed to the leadership of surveying and mapping on a global scale. All of them will remember his enthusiasm, patience and insistence on the highest of standards. We all suffer the loss.

On 8 March 2020, Petrie e-mailed Stuart Granshaw, editor of *The Photogrammetric Record*, that he was, still engaged in a number of topics, including further investigations into the historic aerial photography of Ethiopia; more delving into the archives of Barr & Stroud Ltd., a Glasgow optical engineering firm involved in photogrammetric and surveying instrumentation; a new study of the secret pre-WW-II spy flights over Germany; and a book chapter on mobile mapping.

The restrictions associated with covid-19 resulted in a very sparsely attended funeral (as a result, an event celebrating Petrie's life is planned to take place in Glasgow in 2021). The eulogy from the eldest son, Donald, was a fine, lively encapsulation of Petrie as family man. For those of us unable to be present, the order of service, made available by the officiant, University of Glasgow chaplain Reverend Stuart MacQuarrie, was poignant. The service concluded with the apposite words of Robert Burns's *Epitaph on my own Friend*. Let us remember Gordon Petrie, photogrammetrist, teacher, researcher, mentor, husband, father, grandfather, enthusiast, with an excerpt: "An honest man here lies at rest, As e'er God with

His image blest. Few hearts like his, with virtue warm'd, Few heads with knowledge so inform'd."