

## MALCOLM STEWART MUIR

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The death of Calum Muir in Edinburgh on 21 June 1995 robbed the world of one of its most distinguished epidemiologists, who during his life was deeply committed to developing a precise science from 'geographic pathology'. During his career abroad, he remained fiercely proud of his native Scotland and through his knowledge, wisdom, integrity and unflinching courtesy attracted world-wide admiration and friendship.

Calum Muir was born in Sorbie, Wigtownshire, the son of a headmaster, on 23 April 1930. He attended Stirling High School and studied medicine in the University of Glasgow, graduating MB ChB in 1952. Following house posts in the Royal Victoria Hospital, Newcastle and Glasgow Royal Infirmary (where he met Jessie McClymont Walker, his future wife) he undertook preliminary training in Pathology in Neath General and the Birmingham Accident Hospitals before serving with the RAMC as a junior specialist, first in Sudan and then in the Far East Land Forces Laboratory, British Military Hospital, Singapore.

In 1956 he seized the opportunity to remain in Singapore as an assistant lecturer in the Department of Pathology, University of Malaya (now National University of Singapore), returning home only for 2 weeks to marry Jessie. In that department he rapidly gained promotion to lecturer and assistant curator of the Keith Museum, then reader. He graduated PhD and was elected MRCPATH in 1963 and to the Academy of Medicine, Singapore in 1964. In Singapore he recognised the unique opportunity to study differences in the incidence of disease amongst its composite ethnic groups, publishing a series of papers first on heart disease and subsequently on a comprehensive range of cancers. With Professor R Kirk he provided the first experimental evidence of the carcinogenic effect of betel quid in hamster cheek pouches, but this was to be his only laboratory study. His interests became firmly settled on the variations in the nature and incidence of cancer in Singapore and surrounding territories, this forming the subject for his PhD thesis and stimulating a lasting collaboration with Professor Shanmugaratnam, then head of department. Calum recognised the importance of valid statistics for accurate cancer registration, contributing data from pathology records to the first volume of *Cancer Incidence in Five Continents*, which led to the institution of the Singapore Cancer Registry. He was a founding member of the Singapore Cancer Society and served as its secretary from 1964 to 1967.

Singapore was then relatively distant from the rest of the world, and each 2 years he took his family on vacation by sea, allowing him the opportunity to visit those with similar interests with whom he established a world-wide network. In 1962 he spent a sabbatical year in the National Cancer Institute as a resident pathologist specialising in oncology to Dr Harold (Red) Stewart, then a pioneer exploring the borderline between epidemiology and pathology.

During his time in the University of Malaya, Calum was known as a gifted and devoted teacher. He spent many hours perfecting his lectures - usually given with only one or two slides - and in encouraging with kindness and consideration the appreciation of knowledge by the young.

In 1967 Dr John Higginson, distinguished environmental epidemiologist, was appointed the first director of the International Agency for Cancer Research (IACR) in Lyon. Recognising the need to recruit research staff with the potential to integrate epidemiology with laboratory science, he invited Calum Muir to head a Unit of Epidemiology and Biostatistics. Calum accepted, and first directed his efforts to the essential requirement of cancer registration statistics to provide valid and accurate information. He understood the pitfalls of false diagnostic criteria and variations in disease coding practice, and was co-editor of the *International Classification of Diseases in Oncology* and a leading (later principal) member of the editorial team of volumes II-VI of *Cancer Incidence in Five Continents*. At the time of his death he was working on the VIIth volume. With Parkin and Stjernsward he published the first assessment of the frequency of twelve (later extended to sixteen) major cancers worldwide.

Calum Muir was ahead of his time in recognising that geographic patterns of the incidence of cancer and the effect of these on migration could be attributed to environmental causes; and in the 1970s, with Day and with Higginson, he published early papers on various potential environmental carcinogens. To further this work he initiated a series of studies of time-trends and of cancer maps, intent on filling in gaps. In 1985, with Kemp, Boyle and Smans he produced the *Atlas of Cancer in Scotland 1975-1980*, the first of its kind. He fully accepted the need to weld epidemiology and basic laboratory science into a new discipline of 'molecular epidemiology', as he stressed in a keynote address to the UICC International Cancer Congress in 1986. He was a member of the editorial board of several journals, including the *American Journal of Epidemiology* and *International Journal of Cancer*, served on numerous governmental advisory committees on cancer registration and cancer epidemiology and from 1972 to 1990 was executive (with typical modesty self-termed 'deputy') secretary to the International Association of Cancer Registries which he founded. He was its president in 1992. He was a member of the General Motors Cancer Research Foundation Assembly 1987-91 and chairman of its Mott selection committee.

In 1979 Calum was appointed head of the Unit of Descriptive Epidemiology and in 1986 deputy director of IACR. Despite an increased administrative load he continued his primary interest in time-trends in cancer incidence, publishing with Fraumini and Doll a survey of likely interpretations and producing a classical monograph *Human Cancer: Epidemiology and Environmental Causes* with Higginson and Munoz which was published in 1992. He was elected FRCPath in 1975 and FPHCM in 1983.

While in Lyon, Calum Muir was an advisor to the Scottish Office Cancer Registration Committee, chaired by Sir Alastair Currie, past-president of this Society, and was the natural choice as Scotland's first Director of Cancer Registration in 1991. He had recognised the inadequacies in the existing Registry, and that support and re-organisation were needed to ensure that the quality and extent of its data-set met international standards. He was determined that the Scottish Cancer Registry should become the best. Enhanced by his international reputation he rapidly produced, in collaboration with colleagues, a series of reports on the accuracy of incidence data on common cancers in Scotland, which were used to institute the changes which have now led to the launch, in 1997, of a revised and greatly improved system of cancer registration in Scotland.

Calum was a member of the Scottish Cancer Co-ordinating and Advisory Committee and was deeply involved in the development of a strategy for cancer control in Scotland, on which, with Patricia McKinney, he produced a report published by the Scottish Forum for Public Health Medicine. He was also joint author with Philip James of a report on Scottish diet, modification of which he regarded as an essential factor in cancer control. With clinical colleagues he strongly supported the institution of the Scottish Cancer Therapy Network as a means of ensuring that best practice reached the cancer patient; but, through his initiation of a case-control study of factors responsible for the high incidence of oesophageal cancer in Scottish women, he remained loyal to his scientific background in epidemiology.

An honorary senior lecturer in pathology to the Universities of Edinburgh and Glasgow, he was a member of the Board of Governors of the Beatson Institute for Cancer Research in Glasgow. He was elected FRSE in 1994.

Following his retirement in 1995, Calum had hoped to accept an invitation to return to the National Cancer Institute in Bethesda to work with Constance Percy (with whom he had collaborated in a study of the impact of varying death certification on international mortality rates) as a Special Expert in the Division of Cancer Prevention and Control Surveillance Programmes. While there he was to focus his unique qualities on national and international comparative studies and on the integration of molecular biology and population-based clinical surveillance through their Surveillance, Epidemiology and End-Results (SEER) Programme. He was excited by the prospect; but the disease to which he had contributed so much knowledge denied him the opportunity to make this final contribution.

Calum Muir's talents in the field of epidemiology were equally balanced by exceptional personal qualities. He was a superb administrator, encouraging staff to achieve beyond their own perception of their capabilities. He had a remarkable comprehension of published work and unerring wisdom in assessing the usefulness of particular research to the general problem. He was a master of written English. Complete integrity, unfailing politeness, gentleness, humility and absolute loyalty to his staff, brought wide respect and endearment and ready access to all countries, even when international relationships were strained. His understanding of local customs and protocol did much to open the door to collaborative epidemiological research between IACR and China. Although he did not suffer 'chancers' with good humour, he never disparaged them, even in private. He had a 'dry' Scottish humour, was a master of anecdote and was with Jessie a generous and genial host when, in French style, he would expound the particular qualities of each serving of food and wine. He had three sons, Lindsay, Ewan and Douglas, respectively orthopaedic surgeon, mechanical and electronic engineer. But in his chosen field, his 'family' of young men and women worldwide was many times greater.

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A PATRICK FORREST