

Violet Rosemary Strachan Hutton

Dr Violet Rosemary Strachan Hutton passed away peacefully after a short illness at St Andrews Memorial Hospital on April 1st, 2004.

Rosemary, as she preferred to be known, was born on October 22nd 1925 in Dundee where she attended Harris Academy for her primary and secondary education. In 1943 she entered St Andrews University in the Faculty of Science, graduating in 1948 with an Honours MA degree in Mathematics and Physics. In 1949 she took up an appointment with the British Jute Association in Dundee, but she resigned after a few years finding that the physics of textiles was not sufficiently challenging.

Feeling an urge to travel, she moved to Africa in 1954 to take up a lectureship in Physics at the University of Ghana (then connected with The University of London). A lifelong attachment to the people of Africa, in particular furthering higher education in science, grew out of her auxiliary duties as Deputy Warden of Volta Hall. In addition to her main duties of delivering lecture courses to undergraduate students, she registered for a higher degree. Her thesis, 'Earth Current Variations in the Equatorial Region' was accepted for the award of a Ph.D. degree by London University in 1961. Thus began an impressive research career largely devoted to the investigation of how geophysical methods, and in particular electrical methods, could be applied to investigate the structure of the Earth's continental crust and upper mantle, with many of the studies being focussed on Scotland.

In 1963 she moved from Ghana to Nigeria to take up an appointment as Senior Lecturer in Physics at Ahmadu Bello University in Zaria, and she was promoted to a Readership in 1965. She then moved on to the University of Ibadan as Associate Professor in the Department of Physics. During the period of fifteen years spent on the academic staff of African Universities, she presented undergraduate Physics courses at all levels, and also optional courses in geomagnetism to final year B.Sc. degree students. Also, some 13 of her research papers were accepted for publication in scientific journals of world renown, demonstrating a remarkable combination of resourcefulness and self-reliance in the energetic pursuit of the research programme that she had set for herself. Consequently her name became widely recognised and respected among her peers in the international geomagnetic community (IAGA, the International Association of Geomagnetism and Aeronomy) and more widely across the broader field of geophysics (International Union of Geodesy and Geophysics). Most importantly, her research came to the attention of Professor Alan Cook FRS, Head of the newly established Department of Geophysics at the University of Edinburgh, and in 1969 he invited Rosemary to join the Department as Lecturer. She remained in Edinburgh for the rest of her career in academia, becoming Senior Lecturer in 1973 and then Reader in 1982, retiring as Honorary Fellow of the University of Edinburgh in 1991.

Over the two decades that followed she made a profound impact on the growth and development of the Department of Geophysics at Edinburgh, both on the quality and direction of undergraduate teaching and particularly on the research side, where she established a thriving and world-renowned group working principally on three general topics: the electrical conductivity structure of the Earth and planets; continental rift systems and geothermal regions; and source fields of geomagnetic time variations.

Consistent with her continued attraction to Africa, the first geophysical research study she undertook, together with her first Ph.D. student Dennis Rooney, was of the interaction of a solar eclipse with the Kenyan Rift. It is important also to record that they used state-of-the-art (1972) magnetotelluric equipment built at Edinburgh, because this illustrated another aspect of Rosemary's diverse research programme, namely the design and construction of instruments. The microprocessor-based magnetotelluric instrumentation developed by Research Associate G.J.K. Dawes (1983-85) for the NERC Geomagnetic Equipment Pool and the University of Alberta, Canada, of which several versions were sold internationally, is particularly worthy of note.

Next began her twenty year fascination with the enigmatic 'Eskdalemuir anomaly' which is now known to be a consequence of the closure of the Palaeozoic Lapetus ocean and continent-continent suturing of Laurentia (ancestral North America) with Gondwana. The geographical area of the investigation was then extended with the implementation of a number of field projects on Palaeozoic rock successions in the Southern Uplands of Scotland, Northern England, Ireland and neighbouring regions of continental Europe.

Rosemary's growing scientific reputation and the manifest enthusiasm she displayed in collaborative projects undertaken outside the British Isles, attracted several generations of young post-doctoral research workers hailing from institutes from across the EU and from other continents, to join her in Edinburgh. Through the years, about a score of graduate students not only from the UK, but also from West Africa, Kenya, India and Brazil, gained their Ph.D. degrees under her supervision.

Rosemary soon became aware of the need to boost the rather limited amounts of funding available from the UK research councils. In 1985 the Royal Society funded her project entitled 'Lateral variations in lithospheric electrical conductivity structure in Italy'. Importantly, she was one of the earliest staff members of Edinburgh University to be awarded a research contract from the E.E.C. (in 1985) to carry out a feasibility study of magnetotelluric measurements on Milos, Greece. Having yielded successful results this exploratory project

was followed up in 1986 by a two year E.E.C. contract to support geothermal exploration in an active volcano-tectonic environment. This work involved collaboration with the Universities of Berlin and Braunschweig and other Institutes located in E.E.C. countries.

Rosemary also succeeded in gaining substantial financial support for her research programme from several different industrial sources. In 1985 her group carried out a mineral exploration survey in Portugal, and in 1989 a project entitled 'Broadband electromagnetic induction studies in the Olkaria geothermal field' in Kenya. A geothermal project supported by the Camborne School of Mines comprising a magnetotelluric traverse across the Cammellis granite was undertaken in 1987 to search for fluid filled fractures.

To commemorate and honour her overall research contribution, her peers of many nationalities organized the 'V.R.S. Hutton Symposium' entitled 'Electromagnetic Studies of the Continents' during the 1992 Assembly of the European Geophysical Society held in Edinburgh. Its central theme epitomised the diversity of Rosemary's interests and the regard in which she was held by the community. It provided a fitting tribute to Rosemary Hutton. The papers were published as a special volume of 'Physics of the Earth and Planetary Interiors', edited by Alan Jones (then at the Geological Survey of Canada) and Volker Haak (of the Geoscience Centre, Potsdam, Germany).

Her achievements have been recognized by election to Fellowship of The Institute of Physics (1965 - 80), The Royal Society of Edinburgh (1983), The Royal Astronomical Society (1970), by membership of the American Geophysical Union (1963 - 89) and by membership of the Society of Exploration Geophysicists (1982 - 93). She was also a member of several influential committees relevant to her research. These included the International IASPEI/IAGA Committee for the Electrical Conductivity of the Asthenosphere Project (1983 - 88); the UK National Committee for Geomagnetism and Aeronomy (1985 - 87); and, as a representative of The Royal Society of Edinburgh, the British National Committee for Geodesy and Geophysics (1984 -87).

She was invited on many overseas visits, notably in 1984 by the USSR Academy of Sciences for a three week visit to the Academy Institute at Troitsk, Moscow and the University of Leningrad; in 1985 to the University of Calabar, Nigeria; and also in 1985 to the University of Tasmania, the Australian National University at Canberra, La Trobe University, Melbourne, and the Victoria University of Wellington, New Zealand. In 1986 and 87 she went as a NATO Visiting Professor to the Istituto di Fisica Terrestre, University of Padua, Italy; and also in 1987 to the University of Uppsala, Sweden; in 1988 to the Institute of Planetary Physics at the University of Alberta, Canada as a Distinguished Visitor; also in 1988 returning to the Academy Institute at Troitsk, and to Sochi to participate in the International Electromagnetic Induction Workshop; and in 1989 to the National Geophysical Research Institute, Hyderabad, and to the Institute of Geomagnetism, Bombay, sponsored by the British Council.

Beyond these tangibles, Rosemary was a pioneer, both in her science and in her personal life. Rosemary began research in her chosen discipline of magnetotellurics in the very early days of the 1970s when data were transcribed onto paper charts then digitized from paper. For over twenty years Rosemary and her group stayed at the cutting edge of development of many aspects of the method, from instrumentation development to processing and analysis methods, to modelling and interpretation, and finally to multidisciplinary integration. In terms of advancing the method through organizational activities, Rosemary was the principal organizer of the first-ever workshop on electromagnetic induction in the earth, held in Edinburgh in 1972 and since held biennially. This workshop attracts typically between 200–250 participants, and is one of the most successful activities of the IAGA.

As for her personal life, the early 1970s was a time when there were very few women in geophysics. Through her example and her dedication to education, many young women were encouraged to consider geophysics as a career option.

Those of us fortunate to have known Rosemary will recall many happy memories from our association, in particular the social gatherings she hosted, especially when she had guests from overseas, at her home at Peebles. She is greatly missed by all staff of the Department of Geophysics - academic, secretarial and technical.

Kenneth M Creer

Violet Rosemary Strachan Hutton, MA (St Andrews), PhD (London). Born 22 October 1925, elected FRSE 7 March 1983, died 1 April 2004.