Richard Howarth was born on 27 June 1941 and grew up amidst the effects of the WWII on London, England. He attended Highgate School in north London and performed creditably at both 'O' Level (age 15/16 examinations in a broad sweep of subjects) and 'A' Level (age 17/18 examinations, specialising in maths and science).

Richard had, however, from an early age regularly visited Lyme Regis on England's south coast with friends of the family. This area of Dorset is famous for it's Jurassic sediments and ammonite fossil hunting, and it drew out of Richard a lifetime's interest in geology. This was despite the pressures exerted by the family to make art his specialisation and ultimate career. The presence of 2 Royal Academicians in the family cannot have helped with choosing the science route! Nevertheless, Richard showed the quiet strength of character that was to become one of his trademarks and decided to undertake a degree in geology at Bristol University in 1960.

It was during this period that Richard was first introduced to numerical geology when, studying vertebrate palaeontology, he was struck by a paper on numerical taxonomy. Little did he realise at the time how important to his career this chance discovery would be. In 1963 after graduation with a B.Sc. 2i with Honours in Geology, Richard decided to continue onto a Ph.D. and approached his Head of Department about the new world of carbonate reservoir studies as a potential thesis topic. He was, to put it bluntly, told to think again - "This is no job for a gentleman"! In fact he was 'encouraged' to look at the more 'traditional' problem of whether the Donegal Tillites or Boulder beds, as they were then known, were really of glacial origin. Into the large field area in Donegal strode Richard under the supervision of Dr. (now Professor) Bernard Leake, only to find that he had drawn the short straw with poor and limited outcrops compared to the northern part of the field region, which was being studied by another student under Professor Wally Pitcher. Undaunted Richard turned to the new area (for geologists that is) of statistics to help resolve the issues. During his Ph.D., he undertook the statistical calibration of the first XRF spectrometer to be installed in a British University geology Department and began using multivariate methods for the interpretation of geochemical and other data.

As his Ph.D. was conducted under the auspices of a Shell scholarship, Richard went to work for Shell Coal (Bataafse International Petroleum Mij N.V.) in The Hague on completion of his doctorate in 1966. There he was placed on a top-secret project to use statistical tools to correlate stratigraphic sequences around the World to hydrocarbon occurrences. Although the project was highly successful and he enjoyed working for Peter Dearborn, a Swiss geologist Richard rates as one of the brightest he has ever met, social life (or should I say lack of it) in The Hague was not to his or his wife's liking. Consequently, when they were considering an offer to move within Shell to Amsterdam, it was opportune that they should be approached by Professor John Webb at Imperial College in London to join the fledgling Applied Geochemistry Research Group (AGRG) under Ian Thornton.

Imperial then became Richard's home from 1968 to1985 initially as Post-Doctoral Research Fellow (1968-1972), then Probationary Lecturer (1972-1975), Lecturer (1975-1978) and finally Reader in Mathematical Geology (1978-1985). His principal activities during this time concerned the unique and innovative application of statistical and computing methods to mapping and interpretation of regional geochemical survey data for mineral exploration, geological and epidemiological purposes. He wrote the software that underpinned the production of regional Geochemical atlases of Northern Ireland, England and Wales, Uganda, Nepal, parts of Zimbabwe, Colorado in the US and Georgia. Although these activities were rewarding from a scientific viewpoint, Richard found the Department to be highly compartmentalised and jealousy, especially of the AGRG's finances, was rife. When (now Sir) John Knill took over the running of the Department, members of the AGRG were forced to teach introductory geology courses as well as maintaining their research activities. Richard thereafter became rapidly disillusioned and started looking for alternate ways in which his talents could be employed.

He applied to British Petroleum and in 1985 was asked to join the central computing resource, acting as an internal consulting service. After one year, he was requested to work more closely with the geologists in Sunbury-on-Thames (just to the West of London) as most of them had little idea about the potential use or abuse of statistical applications in exploration or production of petroleum. He quickly made his mark with the stratigraphers in particular and eventually he was seconded and then moved permanently into the Applied Statistics Group (1988). It was during this time he met Dr John Athersuch, then an up and coming BP biostratigrapher, with whom he now works as a consultant in John's company Stratadata.

Amongst the numerous projects Richard undertook at BP were biostratigraphic data analysis, chemical stratigraphy, applying estimation techniques for regional hydrocarbon reserve calculations, petrophysical data analysis and study of uncertainty in rock property prediction, inter-laboratory comparison of petrophysical data, calibration of Sr-isotope dating methods, techniques for the univariate and multivariate laboratory quality control, human resource database studies and statistical analysis of engine test and fuel oil databases. All of these were interesting and challenging, but eventually BP decided in one of it's innumerable downsizing exercises of the time that statistics was not core to it's business and subsequently Richard agreed to accept a redundancy package when in 1993 he reached the age of 50.

This enforced change of careers has however been remarkably beneficial in that it has freed Richard to undertake and indulge in activities he had been thinking about for many year but never had the time to put into action. He now splits his time between acting as a self-employed consultant in mathematical geology and the role of Visiting Professor of Mathematical Geology at University College London. In his role as a consultant, he has conducted projects as diverse as chemostratigraphy, company recruitment performance and pipeline corrosion analysis. In contrast, at UCL he has concentrated on the application of modern statistical methods in the Earth Sciences and the history of the development and application of quantitative methods in geology and geophysics. He has for example spent

considerable time bringing to publication stage a book on the history of geophysics from its beginnings to the 1950's.

He has also during this period increased his burgeoning publications list to over 140. This now includes books on Computer applications in geology (1982), Statistics and data analysis in geochemical prospecting (1983) and Applied geochemistry in the 1980's (1986), the internationally renown Wolfson geochemical atlas of England and Wales, plus numerous journal contributions and reports on resource assessment, computer mapping, statistics, analytical error and quality control, pattern recognition, history of geology and geophysics, isotope stratigraphy and applied geochemistry. He has also continued his active role in supporting the IAMG, as a Charter Member (1968), Council Member (1977-1984) and on the Editorial Boards of Mathematical Geology (1977-1980) and Computers & Geosciences (1978-1995), together with numerous other societies such as The Geological Society where he acted as Honorary Secretary (1993-1996) and is a Chartered Geologist (1993).Richard has somehow still managed to retain an interest in art (it must be in the genes) and he ahs accumulated a large book collection on contemporary art, most of it late 20th century painting, sculpture and photography. Wherever possible this collection is augmented by modern prints and paintings, but wall space in his house is at a premium due to the addition of numerous antiquarian science books on geophysics, mathematics and physics, a collection of modern fiction that veers from detective stories to AS Byatt and JG Farrell, and non-fiction such as biographies and the history of warfare. Taking into consideration, Richard's catholic music tastes with plenty of minimalism (Kronos Quartet, Latin Jazz, Massive Attack, Kurt Weill, early harpsichord music etc.) and a 25-year involvement with the Richmond Film Society, we begin to appreciate the wide-ranging and eclectic interests that impact Richard's working and home life. It is amazing to us mere mortals that so much can be packed into one lifetime.

Digressing for an amusing moment, Richard told me that the Richmond Film Society shows mostly foreign 'arthouse' productions and yet he holds the record for choosing the film which caused the greatest number of audience 'walkouts' during the performance - a Swiss film called "Diary of a Flea Circus Director", which he loved when he saw it at a viewing session but most of the members found it too boring or obscure to be bothered with.

Richard, it is with great pleasure that the International Association for Mathematical Geology recognise your significant contribution to the IAMG and the geoscience profession as a whole by awarding you the IAMG's highest award the William Christian Krumbein Medal for the year 2000.

John Cubitt
Energy Resource Management Limited
Newhaven
Church Street
Holt
Wales LL13 9JP

June 9 2000