Serving both academe and the industry

Professor Richard Selley describes himself as " one of the geologists of the old school - tweed-suited, bearded, pipe-smoking, whisky-drinking individuals with bodies full of interesting tropical diseases and more knowledge of wilderness-survival than office-survival."

He is known throughout the oil industry as an exceptional petroleum geologist and to his many university and professional students as an outstanding and inspirational teacher. Few people are as well qualified as Professor Richard Selley to comment on the interplay between the academic world and the oil industry and the dependence they have on each other.

Jane Whaley

Why did I become a Petroleum Geologist? To see the world at someone else's expense, wander around in the outdoors and gamble with other people's money. What more could you ask for?"

So says Dr Richard Selley, Emeritus Professor of Petroleum Geology at Imperial College, London, Consultant, eminent teacher, distinguished public speaker and renowned viticulture enthusiast!

The author of 5 comprehensive and well respected textbooks and more than 70 papers on sedimentology and petroleum geology, this entertaining and multi-faceted geologist has also appeared on the 'Big Breakfast Show' where, magnifying glass in hand, he had the arduous geologically related task of interviewing the all-girl pop group 'The Brownstones.'

But has petroleum geology changed over the years? Professor Selley believes so, and has some fascinating insights into both the positive and negative impacts of the changes in his chosen profession.

Revolutionary Geologist

Prof. Selley obtained his first degree from the University of London and followed this in 1963 with a PhD from Imperial College, London, studying the Torridonian in West Scotland, where his enthusiasm for field work in all weathers was satisfied by spending six months of each year in a tent. On returning to London, he persuaded the Geology Department secretary to type up his thesis for him, but realising "I didn't have any money to pay her, I offered her marriage instead!" She accepted, and many field trips, foreign postings and beautifully typed manuscripts later, they are soon to celebrate their 40th wedding anniversary.

Scottish mists were swapped for rather warmer climes with post-doctoral work in Jordan, the United Arab Emirates and then Libya, where he studied the different depositional environments of Libyan Miocene sediments in the Sirte Basin. This proved to be the beginning of Dr. Selley's involvement in the oil industry. Subsequently this work led to the offer of a posting as a petroleum geologist with Oasis in Libya, where the Selley family, (including by this time two young daughters), were originally due to fly out to Tripoli on the very day the Ghadaffi revolution began. Since most of Dr. Selley's time was spent out in the desert, where he had the enviable reputation of never drilling a dry hole, much of the political and military excitement passed him by - although his wife may well have a different story.

In 1971 Dr. Selley joined Conoco to work in the newly-opening North Sea, where he was part of the team which discovered the Hutton, Lyell and Murchison Fields, although he admits that for a while he was known as 'Dry-hole Dick' – whenever he moved onto the rig, the shows dried up! "This was an exciting time to be a petroleum geologist in the North Sea. You could work up a prospect in the office, sell it to management and then go out to the rig and drill it – even though the poorer quality seismic of the time meant that one could only identify petroleum traps, and not, as today, see if they contained anything.

Academe Beckons

Eventually, Dr. Selley was lured back to the academic life by the freedom it offered, both to undertake research and to explore new places, while he also discovered a flair for teaching. He returned to Imperial College in 1975 to teach the MSc Petroleum Geology course and over the years also became heavily involved in Continuing Professional Development (CPD), teaching short courses on a variety of topics to industry professionals. In order to keep abreast of developments in the sector, he undertook consulting projects around the world. "I took the view that if you were teaching people how to find oil, you'd better be doing it yourself."

In 1988 the experienced geologist was appointed Head of the Geology Department at Imperial College, a job at which he proudly claims to have been "an abject failure!" He says: "On appointment I was told to cut one third of both staff and students and when I finished 5 years later we had exactly the same number of both!" The 'lost' staff had been replaced by new oil-industry funded posts. Not so much of a failure, then!

Industry/Academe Interplay

So, after a lifetime straddling the academic/industry divide, how well does Prof. Selley feel the academic community serves the hydrocarbon industry? This is a topic on which he is somewhat equivocal. He points out that "very few institutions now offer a single honours Geology course, preferring 'mix and match' courses with combinations of Geology, Earth Sciences, Geophysics, Engineering, Environmental Studies, Geography – probably even Ballroom Dancing!" As a result students have more I.T. knowledge than previously, with graduates gaining at least some idea of the basic requirements of a petroleum system and the methods used when looking for hydrocarbons. Unfortunately, the development of these 'pick and mix' courses has two main disadvantages. First, the potential employer when recruiting geoscientist graduates has to try to determine the difference between these multifarious courses and then needs to decide which course suits the position offered.

Secondly, and more importantly, Prof. Selley laments the decline in the single honours Geology degree because he feels strongly that the lack of a traditional geological training leaves young graduates woefully unprepared for identifying rocks in the field. "The graduates of 40 years ago were not very numerate. They had, however, spent hours in the laboratory, working with rocks, thin sections, minerals and fossils, and many weeks in the field, including several weeks of solo field mapping." The latter is an exercise which Prof. Selley considers "a physically and intellectually challenging task that provided ample opportunity for students to acquire the core skill of a geologist: the ability to envisage rocks in three dimensions, and to integrate the fourth dimension, time." Financial pressures and health and safety issues have curtailed fieldwork in general, and solo mapping in particular.

As a result, Prof. Selley considers that the petroleum industry is paying a high price for the decline in field work and practical rock and fossil identification. He can cite many cases where poor training has resulted in ridiculous mistakes, such as the well in the West Shetland Basin which continued drilling into granite basement for nearly 100 metres because the geologists on the rig could not tell the difference between granite and sandstone, or the guidebook to Indonesian petroleum geology, written by expatriate geologists, where all the synclines were actually anticlines and the anticlines were synclines.

Industry and Government Input

Prof. Selley believes that underfunding is still a major issue. "In the past, government funds were sufficient to cover staff salaries and the cost of teaching, but now research contracts must be sufficient not only to pay for the research, but are needed to cover even the basic costs of a department, including subsidising the undergraduate courses." He wonders if "oil companies sometimes should remember that they were all originally started by a geologist with a good idea. Now many companies do not have professional petroleum geologists on their permanent staff, preferring to buy in the expertise when it is needed. Oil companies used to run world-class research facilities, but most of these were closed and the universities were asked to take up the research topics, with oil company money."

Recent years have shown a considerable decrease in the financial support coming directly from oil companies for research, he considers, although there has been an increase in funding through petroleum industry consultancy firms. In Prof. Selley's opinion, it is relatively easy to get funding for IT, software and technological research, but there is not enough money for field-based training and research. "Information Technology is very important, but the data fed into it has to be correct, or it is useless. Petroleum exploration can be described as an inverted triangle with geologists at the base. If we don't produce enough good geoscientists who can view the world in 3D and 4D, skills learnt through field mapping, the base will crumble."

10 years ago there were 7 oil industry staff-funded posts at Imperial College – now there are only 3. Only 7.5% of the 40 students on the MSc Petroleum courses in IC are sponsored by the UK industry, with another 20% (8 students) receiving UK government grants, although a further 22.5% receive overseas industry or government funding.

Does he think the government be doing more? Prof Selley laughs, somewhat ruefully. "When you think that the whole economic success and wealth of this country for the past 40 years has been based on what geologists have found under the North Sea, they shouldn't just be funding us better – there should be a solid gold statue of a geologist outside the Houses of Parliament!"

What lies in the future?

Prof. Selley considers "Petroleum exploration is not as exciting, nor as much fun or, well, as romantic as it used to be." On a more optimistic note, however, he points out that the quality of modern seismic techniques has given us the ability to image actual petroleum contacts and migration in 4D, which one would not have even dreamt about 40 years ago.

In the future Prof. Selley thinks that we will have a greater reliance on nuclear energy, but there will also be a developing market for alternative hydrocarbons, such as gas hydrates, oil-shale and shale-gas, and he considers that this is an area where government encouragement could make an impact.

Prof. Selley has a particular interest in shale-gas which, with the introduction of horizontal drilling and the development of artificial fracturing to increase productivity, is cheap to produce and could be viable for small-scale domestic and industrial consumption. Shale-gas resources may occur at several stratigraphic horizons in a number of basins throughout the UK and could form a useful future energy source. Production may develop on a much smaller 'cottage industry' scale than conventional petroleum production and is unlikely to be of interest to the multinational energy companies, so developmental and taxation assistance and concessions could be important. However, the disparity in concepts, methodology, environmental issues, technology and rewards between traditional and alternative hydrocarbon extraction mean that there will be many hurdles ahead, so that, as Prof. Selley puts it, "both geologists and engineers will need a cerebral retread."

Viticulture and collateral conviviality

Having retired from full-time academic life and with his main research area, the application of sedimentology to petroleum exploration, "largely superceded by advances in seismic imaging", Prof. Selley is now free to explore new avenues of research. In recent years this has chiefly concerned the impact of geology and climate change on viticulture, an interest which developed because "while travelling the world at other people's expense I felt obliged to explore the geology of the vineyards of the countries I visited". He frequently lectures on the subject, is much in demand as a consultant to vineyards and viticulturists and has recently published 'The Winelands of Britain: Past, Present and Prospective', an entertaining book written with wit and enthusiasm.

In fact, enthusiasm is a word that springs to mind frequently when talking to Prof. Selley. He has a great passion for all aspects of geology, for the petroleum industry, for the professional development of his industry colleagues and for his many students. His interest in the various professional bodies he has faithfully served over the years is obvious, as is his keenness on viticulture and the "collateral conviviality that such demanding research entails." In fact, he exudes enthusiasm for life in general.

Gambling with other people's money

Prof. Richard Selley describes himself as one of the geologists of the old school 'tweed-suited, bearded, pipe-smoking, whisky-drinking individuals with bodies full of interesting tropical diseases and more knowledge of wilderness-survival than office-survival." So would he advise a young person to study geology now? "That depends what they want from it" is the tactful, if somewhat evasive reply. "If they want to have the outdoor experience, then I'd probably suggest that they try Forestry. If, however, someone is curious about the world we live in, is interested in the future of the planet, imaginative, good at critical evaluation - particularly with inadequate data (an invaluable training for business!) - and likes the idea of gambling with other people's money, then surely they will want to study geology!"