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The Isle of Arran

An Odyssey: From Arran to Leicester
50 years of Space Research in Leicester
French Without Tears
Rethinking the Life of Milton
Life and the Earth: Interlocking Histories.
Chemical Biology Approaches to TB Therapeutics and Gene Therapy
The Heart Divided: Muted Narratives and the Partition of the Punjab

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AN ODYSSEY: FROM ARRAN TO LEICESTER

Presidential Address by Mrs Jean Humphreys

Delivered on 5th October 2009

My compatriots will know the story of the old Highland minister who went to the General Assembly of the Church of Scotland with his senior elder. Edinburgh being crowded, as it always is in Assembly week, they had to share a bedroom and a bed. The bed was a four-poster with a canopy. The elder said ‘Weel, minister, you being the mair important will ha’e the honour of going up above’. But before long the minister called down ‘Och, Sandy, if it wasn’t for the honour of it I’d rather be down beside you’.

That is my state of mind tonight. I am very sensible of the honour of being asked to be President of this great Society, which has been part of my life for over 60 years, but I fear that I cannot do it justice. It has given me much pleasure and enlightenment, and some enduring friendships. I look forward to reading Patrick Boylan’s history of the Society, which will be a companion piece to Jack Simmons’s 1958 volume New University, which shows how the University owes its existence to the Lit. and Phil., and to the generosity of the people of Leicester. Several presidential addresses had aired the idea of a university system for Leicester, the last being that of Astley Clarke in 1912. The War intervened, but on the day after the armistice was declared, he wrote to the Leicester Daily Post to announce that gifts of £100 and £500 had been given as thank-offerings for peace, to be devoted to establishing the university system as a war memorial to the men and women who had taken part in the Great War. The citizens of Leicester responded generously, and the University College, taking London degrees, was begun in 1921, taking nine students. I would enjoy the friendship of three of the original students, so in a sense I go back to the very beginning of the University. I did not know Dr Astley Clarke, who died in 1945, but his sister was very kind to me.

I was born and brought up on Drumadoon Farm, on the Isle of Arran in south-west Scotland, on the Firth of Clyde, sheltered from the Atlantic by the long arm of the Kintyre Peninsula. It is called ‘Scotland in miniature’ with good reason: the Highland line goes through it, making the north end dramatically mountainous and the south end largely moorland. In between there is a large and fertile valley, the Valley of Shiskine, which is my ancestral territory. The science of geology began on Arran with the eighteenth-century polymath and geologist James Hutton, who observed the igneous origin of Arran’s rocks and minerals and formulated the principle of uniformitarianism, which is the basis of modern geology. There are several distinguished geologists in the list of members and former presidents of this Society, and the Leicester students do their fieldwork in Arran year after year.

The valley of Shiskine, on the west of the island, is connected to the port of Brodick on the east side by a road that was laid down by Thomas Telford in 1817, part of his great system of roads in the Highlands and Islands that opened them up to commerce and to tourism. Tourism was stimulated by the novels and poems of Walter Scott; his 1815 poem ‘The Lord of the Isles’ brought Arran to the notice of travellers and sight-seers. The early Clyde steamers were named after Walter Scott characters: the Lucy Ashton, the Jeannie Deans and the Waverley, which is still in existence for Clyde cruises in the summer months.

The east-west road, known as the String, climbs high over the pass, and it was traversed every day by my
maternal grandfather, Colin Currie (always known as ‘Cole’), with his horse-drawn vehicles, carrying mail and passengers to and from the ferry. He was the postmaster and was famous for his devotion to duty (they say that he never missed a day) and for his great kindness to friend and stranger. He married my grandmother, who had come to Shiskine as housekeeper to her brother, the domine or schoolteacher. Though Scotland was a small and impoverished nation, it was strong on education. It has its four ancient universities. My alma mater, Glasgow, was established in 1451. In 1696 the Scottish parliament passed the Schools Act, which required every parish to have a ‘commodious house for a school and a salary of not less than 100 marks a year for a teacher’ (approximately £5). Within a generation this had largely come about. My siblings and I would attend the same little two-room school that our parents had attended.

My paternal grandfather, James Currie (no relation of Cole), was known as Tobago, even on his headstone. He had emigrated to the sugar plantations and would marry Caroline Drysdale, daughter of the governor of the island. On her death he returned to his parents at Glen Loig Farm at the head of the valley. He was about to emigrate again when the Duke of Hamilton offered him the tenancy of Drumadoon Farm, at the leeward end of the valley. He married a valley woman and had six children, but he died of blood poisoning from a neglected cut when the youngest was only a few weeks old. Cole Currie advised the widow to keep the farm and advertise for a manager. Thus John MacCallum came to the valley, a good man from a good family whose downfall had been the Demon Drink. He was a good farmer and when he married my grandmother he was a good father to the children, but his life-story turned them all into rabid teetotallers. My father would not have drink in the house (my brother was the same and my sister still is, but I have deviated somewhat!). My father and his brother emigrated to North America, my father to Oregon, which he dearly loved; he always referred to America as ‘God’s own country’. But at the outbreak of the First World War the brothers returned to take part, my father with the Canadian Seaforth Highlanders. He was one of the few survivors of the terrible slaughter of Vimy Ridge, where on 9-10 April 1917 over 11,000 Canadians were killed. I can see that it affected him all his life. There was a sternness and a sadness at times; he was the disciplinarian of the family, by sheer force of personality. My mother would take us children to church, which meant walking over the hill through whins and heather, but my father never came until my brother became a minister in the Church of Scotland, and he attended the ordination service. His absence was noticeable in that church-attending community. His brother went back to America, but in 1919 my father took over the family farm and married my beautiful mother, which was probably the saving of him.

My mother was known as the Belle of Arran for her lovely face and lovely nature. She had been at school with my father, and such was the quality of that primary education that, leaving at 12, they were fully literate, numerate, and well equipped to join the adult world. My mother, aged 14, became housekeeper for her brother Sandy, aged 12, for whom Cole had taken the tenancy of Balmichael Farm, in the middle of the valley. There was a staff of farm workers but these young people were in charge and worked hard to make it one of the best farms. My mother spoke often about these Balmichael days. (Rather fittingly Arthur spent his last night of freedom
at Balmichael with my aunt and uncle). My mother took the tradition of hospitality to Drumadoon. I mean hospitality in the sense of a warm welcome, a place at the table, a seat at the fire, and a bed for the night if it was required.

‘Drumadoon’ is the anglicized form of the Gaelic Draim-an-duin, meaning ‘the ridge of the fort’. The ridge is a great geological feature falling in a sheer cliff on the seaward side and dominating the area. It was fortified by either the ancient Britons or the Romans. A mile beyond the doon at the northern boundary of the Drumadoon land are the King’s Caves, so called because Robert Bruce took shelter there on his return from exile on Rathlin Island. He saw the spider and was given the courage to continue the journey to the mainline to drive the English out of Scotland. (I have had resort to that spider many times in my long life, but never more so than tonight). Tor Righ (the King’s Hill), above the caves, is where we cut the peats every spring.

Drumadoon is a large farm by Arran standards, over 600 acres, but mainly hill land suitable for the sturdy blackface sheep that could withstand the weather and for the beef cattle. We always had a shepherd and two or three farm-workers for the 100 acres or so of arable land for the growing of the crops: hay, corn, turnips and potatoes. My father did the skilled work with the horses himself – the ploughing, sowing and mowing. It was hard work for small returns in the days of the farming depression between the wars, when refrigerated shipping was bringing produce from the other side of the world in competition with British agriculture. My mother’s contribution to the family finances was vital. Whenever I hear a discussion about working mothers I think of her, as she was a working mother in every sense. Her household was never less than a dozen. There were the men in the bothy and a maid to help her. Granny, Cole’s widow, lived with us, and a man called Tom Smith, to whom the kind-hearted Cole had promised a home for life when he was left alone in the world. My mother honoured that promise, and Tom Smith died at Drumadoon in his eighties. He walked with a stick, but he did the vegetable garden and built the peat stack. There was always a student from the West of Scotland Agricultural College doing the practical year, and there were various itinerant people like Martin Webster of no fixed abode, who went from farm to farm with his bag of ferrets and nets, catching rabbits. The rabbits were both a pest and our main source of nutriment.

I do not know by what alchemy my mother could make our simple food taste so delicious. Her rabbit stew was like chicken, not that we knew much about eating poultry, as the hens, ducks and geese that wandered so happily about the farm were kept for their eggs, and it was only when a hen became too old to lay that we ate it as boiling fowl – and that was a great treat. There was mutton, of course, and a couple of pigs in a pen lived happily enough on the scraps until their day of execution. Nothing was wasted. Our supplies of oatmeal (for the porridge that we had both night and morning), flour, sugar and cooking salt (rock salt, which was the cheapest) came by the hundredweight, our tea by the stone. As well as cooking three square meals a day my mother had to send food to the workers in the fields at mid-morning and mid-afternoon. She baked soda scones on a big griddle to supplement the bought bread, which, spread with butter and jam, made up the ‘pieces’ that went with the huge pot of tea to the fields. She must have made hundreds of pounds of jam every year. But as well as all that she was the mainstay of the dairy side of the farm. My father gave up the beef cattle and concentrated on the herd of milking cows. With pedigree bulls he turned the herd into a pedigree herd.

My mother did most of the milking because she was a real expert, and the cows loved her. Whenever she went into the byre with her milking stool and luggie (the metal pail with an upright metal handle) they would greet her by mooing gently. They let down their milk to her more freely than to the other milkers. I would stand in the slip and hold the cow’s tail to keep it from flicking into her face, and I would marvel at how the milk frothed up. Some of the milk went to the nearest neighbours. It was measured into tin cans ranging in size from half a pint to a gallon. We children carried the milk down the front field on our way to school some three miles distant, and we collected the cans on our way home. The rest of the milk was sieved into an apparatus called a separator. We turned a handle and, as if by magic, the cream came out of a spout at the back and the skim went into a bigger vessel at the front. The skim was fed to the calves, who had to be taught how to drink out of a pail. Once a week my mother made butter from the cream, and it was the most delicious butter I have
ever tasted. Year after year it won first prize at the Agricultural Show. The sale of the milk in the village and of the butter represented the cash flow and kept the farm going on a daily basis. There was no money for a Saturday penny for us children, though we were given sixpence each to put in the church plate on Sunday. To this day I find it easier to give money to charity than to spend it.

Another source of income was the summer visitors who came regularly to the village of Blackwaterfoot about a mile from the farm. In the 1890s the Drumadoon fields nearest to the sea were made into a golf course by one of the great Scottish champions. Arran has seven golf courses, but our course was special: there is only one other like it in the world. It has only twelve holes, but they are cunningly laid out and very challenging. Families came on holiday every year, and Blackwaterfoot was adapted to them with hotels and boarding houses and shops. The dwelling houses were built with a front house and a back house into which the natives would retreat, letting the big house for a month at a time to the visiting families, who enjoyed the golf course, the lovely sandy beach and the walks to the King’s Caves and other beauty spots. They were a rather superior lot, mainly teachers, doctors, lawyers, ministers and sportsmen, and they became our friends. Our house, with its lovely position across the golf course and its view across Kilbrannan Sound to the Mull of Kintyre, and with its six bedrooms, was much in demand, and every year from June to September we moved out into the barn to let the visitors have it. The logistics of this annual move, which was called ‘the flitting’, defy belief. The big stone-built barn with the threshing mill and other equipment had to be cleared and cleaned and white-washed. It had a fire-place, as it had been built as a dwelling-house for this annual event. Partitions were put up; the granaries were turned into dormitories for the younger people; and there were smaller rooms at the back for the adults. Beds, bedding and furniture were brought out of stores, and in a single day we moved in. The big house was then cleaned and polished and set up for the visiting families who came year after year, some of them for two months at a time. Drumadoon got a good rent — £25 a month — and that helped to keep us solvent in these dire days of agricultural recession. We loved our summers in the big barn, but by the end of September we were very glad to get back to the comfort of the house. The house was let, right up to the year of my marriage (1947), though the war had made British agriculture viable.

Our tenants were always an interesting lot, the last regulars being the Simmers family of biscuit fame in Scotland. Max Simmers had been an international rugby player, and his wife Gwen had been a Wimbledon player. Her mother, Mrs Sterry, had been five times women’s champion at the turn of the century, as Chattie Cooper. Gwen’s daughter was the victim of a birth injury, but the two little boys, Brian and Graham, grew up to play rugby for Scotland.

Over the years, despite the shortage of money in farming, my father made improvements. He put water bowls into the cows’ stalls, and the milk yield went up. He got the Scottish Milk Marketing Board to take the Arran milk away in ten-gallon cans – no more lovely butter, but the monthly milk cheque was a consolation. His next innovation gave us no great grief. He persuaded his fellow dairy farmers to go in for Tubercular Testing (Arran was the first area of Britain to be completely TT). The grief came when some of our cows failed the test; they were called reactors, and had to be discarded. We had known them from the day of their birth, had named them, fed them, had seen them grow to maturity and join the milking herd. It seemed a terrible betrayal as they went aboard the lorry that took them away to whatever fate awaited them. The hauliers always commented on the docility of the Drumadoon cattle. They had known nothing but kindness. This was as different from factory farming as you will ever know.

My father was a good farmer, and he improved his methods and his crops and his equipment over the years. When he took over the farm in 1919 he compensated his siblings, and the youngest brother went off to further his education, having left school at twelve. He got university entrance qualifications and took degrees in agricultural economy at Glasgow University and at Cornell, where he met the Yorkshire estate owner, Leonard Elmhurst. Leonard married the American heiress Dorothy Whitney Strait, and they bought the Dartington Hall estate, asking Uncle Johnnie to be the agricultural economist. He spent the rest of his life there, pioneering a lot of research, notably into the artificial insemination of animals. His advice and encouragement no doubt enabled my father to improve Drumadoon, but he was a great man in his own right. He was a big man with a big
voice. My cousin Faruig used to quip that when Uncle James called to his sheepdog to SIT, all the dogs in Arran sat down. He sang at the local ceilidhs, he was a freemason, he was a superb golfer, he played Bridge. He wanted the island to have a secondary school, and a school was built before the Second World War, but was immediately occupied by the Navy. Lamlash Bay, one of the finest natural harbours in the world, was a naval base for the escort vessels that tried to protect the Merchant Navy shipping in the Atlantic from the U-boat attacks.

My father was fanatical about education. He said to us ‘I cannot leave you any money, but I will give you something that cannot be taken away from you: I will teach you to work and I will give you a good education’. He was as good as his word. I think that I can safely say that I am the only person here tonight who has traversed acres of ground on hands and knees, thinning and weeding turnips. I did not mind the work bit – work was what people did; the magazine of the Church of Scotland was called Life and Work. But I did not want to be educated if it meant leaving Drumadoon and my parents and all of my animal friends. My father said ‘it is harder for your mother and me to send you away than it is for you to go’, so I went, and got educated in Glasgow, at Secondary School, at University, at Jordanhill Teachers’ Training College. Then I got a job teaching English at the newly-opened Secondary School on Arran which my father had striven so hard to have built.

The Second World War came in the middle of my education, and it changed all our lives. British agriculture came into its own; two Land Girls joined the household and Drumadoon got a little Ford Ferguson tractor through the Lease Land agreement with the Americans — the Ford tractor with the Ferguson hydraulic lift that made ploughing so much easier. Very few of them were made, as the men soon fell out, but of the eight that went to Britain five went to England and three to Scotland, and Drumadoon got one of the three, thanks to our M.P., Sir Charles MacAndrew, who was Deputy Speaker of the House of Commons. He appreciated all that my father had done for the island. We christened our tractor Vera Lynn, and she became the pride and joy of Peggy, the Land Girl the same age as myself, but deprived of university education by the death of her father. My father always said that she was the equal of any man with her expertise with the horses and the tractor. She could plough a straight furrow – the acid test. Peggy would become my beloved sister-in-law, and she was as effective as a minister’s wife as she was as a Land Girl.

In 1939 Arran was flooded with evacuees; my mother added two little boys to her household. There were so many of secondary school age that the Glasgow Education Committee had to start a boarding school for them, and the requisite teachers were sent. My sister Janet and I, in the strange situation of being evacuees in our own home, attended the school but went home to Drumadoon at the weekend. Some of our teachers liked to come too to get away from the boarding school atmosphere, notably Jack Petrie and Donald Brander. Jack would be my headmaster in the new school in 1946, and Donald would bring me my husband.

In 1940 the school packed up and we all went back to Glasgow, where we survived the Clydebank blitz. Donald was called up to the RAF but was seconded to the British Council in Ankara. Turkey was neutral, having backed the wrong side in World War I. At the same time a young Englishman called Arthur Humphreys was seconded from the RAF to the British Council in Istanbul. Arthur, a graduate of Cambridge and Harvard, had been a junior lecturer at Liverpool University, where one of his students was the brilliant Frank Kermode. Frank has addressed this Society twice, in 1960 and 1998, according to my visitors’ book. Donald and Arthur duly met, and they spent holidays climbing in the Taurus Mountains along with a young man from the embassy called Ted Beck. Ted’s obituary was in the papers recently: Sir Edward Beck,
Knight Grand Cross of the Order of St Michael and St George. Donald told the others about the peaks of Arran and invited them to come to Arran after the war, which they duly did. It was at Easter 1946 that Arthur first came to Drumadoon, under the impression that the farm was Donald’s and that my father was the manager. When he discovered his mistake he was greatly abashed, but asked if he could come back in the summer and join the gang. Our school and university friends used to love to come and work in the summer. I crawled those acres with people who achieved high office in later life.

Arthur came for that summer of 1946 and we became engaged. He was about to return to Istanbul to become professor of English, at the behest of Halide Edip, the previous professor, a remarkable lady. A scholar and poet, she had helped Atatürk to bring Turkey into the twentieth century almost overnight in 1924. She was about to retire, and she persuaded Arthur to resign from Liverpool and take her place. Nothing loth, he agreed. Then Halide Edip died suddenly, and the university authorities decided that they wanted a Turk to be professor of English, so they cancelled the invitation. Arthur was left without a job and with a fiancée on his hands. The British Council offered him a post at Bratislava, and his Liverpool professor told him that University College Leicester was advertising for a professor of English. Feeling that in Britain one did not jump from junior lecturer to professor, Arthur applied at the eleventh hour and to his great surprise was offered the job. He rang me at Drumadoon to ask which I would prefer, Bratislava or Leicester. I had no hesitation in saying ‘Leicester – it’s nearer to Arran’. Typical of Arthur to leave the decision to me; typical of me to be selfish enough to let him do it! We were married on 8 August 1946 in Shiskine Church with the reception in a marquee in the front field among the hayricks. We had a honeymoon in Norway and returned to set up home in Leicester in September 1947.

It was a bad time to set up home. Arthur had had two terms on his own. He started work in January 1947, on the same day as Harold Martin, the registrar who did so much to get the University established and after whom the Botanic Gardens are named. Arthur managed to buy us a house – a three-story house that the Army had used and rehabilitated with a lick of green paint. It needed some work done on it, but 1947 was a time of severe restriction, and no permission was given. The chimney sweep told us of two German prisoners of war who were allowed out of camp in the evenings to work, and thus we met Max and Ossie, Max a master decorator with good English and Ossie a circus performer with no English but a willing spirit. We were to pay them a shilling an hour and to give them their evening meal since they were out of camp. Rationing was at its most severe – even bread and milk were rationed. Drumadoon sent food parcels, and even the milkman relented and let me have a pint of milk a day instead of one every other day when I told him about the Drumadoon cats getting their bowl filled night and morning. We queued for wallpaper and took what we could get. The cracks in the walls had to be covered up somehow. The stick of bombs that had destroyed the Park Pavilion and several large houses on the edge of Victoria Park had done lesser damage to the houses around.

The kindness of the College community and Leicester friends and neighbours helped to get us made into a going concern. Mr Attenborough was the College principal, and he and his wife made us most welcome. They had just moved into Knighton Hall, and their sons, who were my age, had left home to embark on their remarkable careers. Mrs Attenborough taught me a lot, from how to get the lumps out of gravy (I had never cooked) to the need to bash the stems of cut roses to make them last longer (she was a great gardener, and we at Drumadoon had no flower garden, as every inch of land was needed for the crops).
Arthur inherited a good English department. Dr Arthur Collins had taught English single-handedly for many years and had recently appointed Monica Jones (Philip Larkin’s long-term friend). She was a very lively personality and she appears in several of the university novels of the time, notably Lucky Jim by Kingsley Amis and Eating People is Wrong by Malcolm Bradbury who was one of our students in the 1950s. Philip Larkin was Assistant in the Library from 1946 to 1950, assistant to Miss Rhoda Bennett, daughter of the Dr Bennett who had given the £500 to set up the College fund and after whom the Bennett building is named. She became a very good friend and was endlessly kind to us new people. There was also a Scots lady, Agnes Gallan, teaching English. She married Bernard Willson, who became professor of German.

I have had the greatest difficulty in writing this talk, as Arran would keep taking over. Only a quarter of my life was spent in Arran, but it was the quarter that made me what I am and gave me the values that govern my life. It is very difficult to cram the other three-quarters into the few remaining minutes.

Whatever the rights and wrongs of my decision to come to Leicester, I think that I did the University and the City a good turn in bringing Arthur here. In a very different sphere, he was the counterpart of my parents in his capacity for hard work, his generosity of spirit, his ability to accept people as they are and to bring out the best in them, in his unfailing concern for his staff and students, many of whom keep in touch with me. When we came Arthur said to me ‘I’ll give it five years and then rejoin the British Council’. He gave it 29 years of incredibly long hours, teaching, taking tutorials, examining, sitting on endless committees for the planning of the University, not just the academic side, but the practical as well: the buildings, the student amenities, the silver, the robes and gowns and regalia. The first Senate wanted excellence; they made wise decisions.

That excellence still prevails and the University has climbed high in the university league tables – above my own alma mater, Glasgow. It has chosen its principals and vice-chancellors with great care. The first, Charles Wilson, was called back to head his old university, Glasgow. Fraser Noble was similarly
summoned to Aberdeen and Maurice Shock to Oxford. It was a sign of our growing prestige in university circles that we could keep Ken Edwards and now Bob Burgess. And what distinguished people agreed to become our chancellors: Lord Adrian, Sir Allan Hodgkin, Sir George Porter, Sir Michael Atiyah and now Sir Peter Williams. Many members of the English Department have addressed this Society over the years and continue to do so. Several members of Arthur’s staff were appointed to chairs of English in other universities, and several of his students too. The Leicester network of friendship spreads far and wide. An early student of Arthur’s sent his daughter to read English with Arthur. She married a fellow student and they sent their daughter to read English here, so we are a three-generation university already.

Arthur loved travelling, and would have been an ideal British Council man. He got a fair amount of travelling on British Council lecture tours and summer schools. His last talk to this Society was about our tour of Pakistan and Afghanistan in 1972. He was an external examiner for universities as diverse as Trinity College Dublin, Malta, Hong Kong and Singapore. He had fellowships at the Folger Library in Washington D.C. and at the Huntington Library in California. When he retired, most of these places asked him to go and teach or do research. He chose the places where he had been most happy: America, Singapore and Turkey. We had some wonderful adventures in all three places until he got cancer. When Drumadoon had to be sold, Arthur bought me a little cottage in Pimmill village on Arran: Meadow Cottage, right on the sea, looking across to the hills of Kintyre, with glorious sunsets. The Arran/Leicester connection was continued in a most comforting way. Libby Wilson, whom I had known as a child at Knighton Hall, read medicine at Glasgow University and married a fellow student, Alistair Grassie. They came to Shiskine as G.P.s and fitted in as to the island born. Charles and Jessie Wilson visited them often, and we entertained them at Meadow Cottage. Arthur died in Meadow Cottage and Libby and Alistair were a great comfort and support. He is buried with my parents in the Clachan graveyard in Shiskine, and I shall join them when my time comes.
Space first came to general public awareness with the launch in October 1957 of Sputnik, the world’s first man-made Earth satellite. The potential importance of operating in the space environment was already engaging both the military and some academic scientists. In 1955 in the UK the technological success of the German V2 rocket, and its post-war use by US scientists, had encouraged a joint bid to the Treasury, by the Ministry of Supply and the Royal Society, for £100k to develop a sub-orbital rocket to pursue a common interest in the density and winds in the upper atmosphere. That bid was successful and led to the development of the Skylark rocket at RAE Farnborough and the establishment of research groups at several universities. It was into that environment that I accepted an Admiralty scholarship to study for a PhD in the new Rocket Research Group at UCL in October 1956.

My thesis topic was an experimental study of ‘Solar Ultraviolet and X-radiation’, as the likely importance of the Sun in controlling the upper atmosphere had already been recognised. Skylark, successfully test-fired from Woomera in South Australia in February 1957, was to be the platform for my thesis results, obtained during a later Woomera flight in 1959. The evident scientific potential of X-ray observations above the absorbing atmosphere then led to the decision to establish a new university research group with that main focus. Leicester was an obvious choice, having expertise and equipment for laboratory X-ray studies that I had been able to use during my PhD studies. My appointment to an Assistant Lectureship at Leicester, in January 1960, gave a kick start to the new group, and in July that year we were awarded our first grant (£13,006) for the ‘Study of Solar and Stellar X-ray emissions’.

Our initial target was the Sun, and – joined by Peter Russell, an existing lecturer - with a small but expanding team of young scientists and technicians, we obtained the first solar X-ray images and spectra in a series of Woomera flights of the new, highly competitive, Sun-pointing Skylark. An offer from NASA then took Leicester and other UK groups into orbit on the Ariel 1 satellite, launched in December 1970, yielded a tenfold increase in the number of known Cosmic X-ray sources. Many were strongly variable, while periodic eclipses showed several to be in binary star systems. The rapid X-ray variability pointed to a highly compact neutron star or possibly a stellar black hole in several of the brightest sources.

A breakthrough in understanding the nature of these obviously powerful objects came with the first orbiting X-ray satellites. An all-sky survey with the Uhuru satellite, launched in December 1970, yielded a tenfold increase in the number of known Cosmic X-ray sources. Many were strongly variable, while periodic eclipses showed several to be in binary star systems. The rapid X-ray variability pointed to a highly compact neutron star or possibly a stellar black hole in several of the brightest sources.

A sabbatical at Harvard in 1971 allowed me to share some of the excitement of Uhuru’s discoveries, and increase the anticipation of the launch of our own X-ray Astronomy satellite, Ariel 5, which took place in October 1974. Carrying instruments from Leicester, UCL, Imperial College and the NASA Goddard Space Center, Ariel 5 was to deliver a rich scientific return for the next 6 years. Among many highlights was the discovery of A0620-00, first seen during a scan of the Milky Way on 3rd August 1975, and coinciding with the European Astronomy Society meeting being held at Stamford Hall in Oadby. Remarkably the X-ray signal grew stronger day by day. Astronomers around the world searched – and quickly found – evidence

occasional collaborator, Riccardo Giacconi, leading to the award of the Nobel prize in Physics in 2002). The availability of Skylark allowed us to join in that exciting new field of research and by the end of the 1960s some 20 Cosmic X-ray sources had been discovered, though – intriguingly - most remained unidentified.
for A0620-00 in both radio and optical telescopes. Having been for a few days the brightest X-ray source in the night sky, A0620-00 gradually faded from view over the following months, but not before optical spectroscopy had identified it with a binary star system, wherein a brief expansion of the optical star had dumped a mass of gas onto its black hole companion, leading to the powerful X-ray outburst.

The Ariel 5 all-sky catalogue, published in 1978, contained details of 297 X-ray sources, most – but not all - in our local Galaxy. Identifying many of the remainder with ‘active galaxies’ has probably been Ariel 5’s most enduring legacy. Subsequent observations found the X-ray flux from these galaxies to be remarkably variable, again pointing to an interpretation – now accepted – with gas accreting onto a black hole, the same physical process as in galactic binary stars, but on a million times greater scale.

By the launch of NASA’s Einstein Observatory in 1980, Uhuru and Ariel 5 had laid the foundations of X-ray Astronomy as a major new scientific discipline. The subject then rapidly became global, as Europe (ESA) entered the field with EXOSAT in 1983, Japan followed with GINGA in 1987, Germany with the ROnntgenSATellit in 1990 and Italy and the Netherlands with Beppo-SAX in 1996. We were able to play substantial instrumentation and science roles in EXOSAT, GINGA and ROSAT. Paradoxically, it seems that the severe funding cuts in the 1970s, which led to the termination of both the Skylark and Ariel programmes, gave us the extra incentive to pursue that broader international collaboration.

Each successive X-ray mission had important and unique aspects. EXOSAT (1983-6) was the first to operate from deep space orbit (now the orbit of choice for X-ray missions), allowing long uninterrupted observations. The X-ray detectors on GINGA, also developed here in Leicester, were the largest ever flown and provided unique spectral and timing data from the launch in 1987 until re-entry in 1991. GINGA was also politically important as it was the most high profile UK-Japan science collaboration to that time.

ROSAT was a German/US/UK collaboration, in which NASA provided the 1990 launch, Germany an imaging X-ray telescope and Leicester/RAL an additional telescope optimised for the extreme ultraviolet. Deep sky surveys by both telescopes greatly increased the numbers of known X-ray and EUV source, laying the basis for a wide range of astrophysical research in the following decade.

In 2009 X-ray astronomy is enjoying a golden age of discovery, with 3 powerful X-ray telescopes in orbit. All 3 operate in the highly eccentric orbits pioneered by EXOSAT. Their observing capabilities are complementary, with the NASA Chandra Observatory having arc sec imaging, ESA’s XMM-Newton the highest sensitivity, and Japan’s Suzaku covering the widest energy range.

XMM-Newton, with a mass of 4 tonnes and 10 metres in length, is the largest ever flown and provided unique spectral and timing data from the launch in 1999. It carries three X-ray telescopes each with 58 co-axial grazing incidence mirrors. In the focal plane of two telescopes are CCD cameras designed and built here in Leicester. After 10 years in orbit all systems are working well with observations to date having led to over 1700 scientific publications from astronomers around the world.

Looking back 50 years on from the formation of a small research group at the University to undertake a ‘Study of Solar and Stellar X-ray emissions’, it is clear the space-age science of X-ray Astronomy is now fully mature. The change has been dramatic, with XMM-Newton having a sensitivity 1000 times greater than Ariel 5. Powerful computer software allows astronomers to combine their X-ray data with data from other space- and ground-based telescopes operating across the electromagnetic spectrum, providing new insights on the past 13 billion years in the Universe we see around us.

Space research at the University is now pursued on a much wider front, with current Leicester involvement in the development of an infrared camera for the James Webb Telescope, the eventual successor to Hubble, new instrumentation for forthcoming ESA missions to Mercury and to Mars, and a substantial research programme on the Earth’s Atmosphere, Oceans and Climate.

Let me end my talk with a word on Human Space Flight, something I have taken a greater interest in over recent years. It seems likely the USA is going back to the Moon by 2020, or thereabouts, with the intention of setting up a permanent base. China also
has ambitious plans to go to the Moon, as does India, while Europe and Russia have the capability and resources. Although the timing of a new era of Space Exploration will be affected by the current global financial problems, it is not a question of ‘if’ but rather of ‘when’. For us in the UK, that prospect raises the question, should we take part?

My own view has been coloured by my experience as a founder Trustee at the National Space Centre. Given that the UK’s future is likely to depend on our education and skills it seems vital that we use every means to get children interested in science as early as possible. In that respect the 400,000 schoolchildren who have visited the NSC since 2001 is something of which Leicester can feel proud. I share the view of many of those children. Space is exciting; human spaceflight especially so. A recent independent review for the British National Space Centre concluded that taking an active role in an international programme of Space Exploration will have substantial economic benefits. By the same token, I would fear that being left behind could strengthen a view that the greatest challenge and opportunities for the future generations will lie abroad.

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**FRENCH WITHOUT TEARS**

**Mr Michael Simkins**

Actor and Author

*Delivered on 2nd November 2009*

I made my name as a writer when I wrote a memoir about my main job, which is acting. **What’s My Motivation** attempts to chronicle the depraved carnival that is the life of an actor: a ‘jobbing’ actor that is, not a star – something else entirely.

Stars flounce about between appearances on the Jonathan Ross show and trips by private jets to Vermont to discuss their next project with Stephen Spielberg.

Jobbing actors dress up as chickens to advertise TV dinners, present in-house safety training videos for Sainsbury’s employees on the correct way to use a fire extinguisher, and tour around the Midlands in a rented Vauxhall Astra performing role-play workshops to demonstrate new best working practices for sewage workers. It’s all helps to scrape together a living, and comes with lashings of ritual humiliation and raging disinterest.

I’ve been an actor for 30 years so know what I’m talking about, even if someone else has written my lines. I’ve done hundreds of stage plays and trillions of TV dramas, usually playing experts, policemen or unsuspecting husbands. I’ve also done a lot of adverts, including Sylvanian Families, Lassie meaty chunks, and was one for a clinic in Doncaster specialising in the treatment of leg ulcers.

Woody Allen probably best summed up the world of showbusiness when he wrote that it’s “not so much dog eats dog, as dog doesn’t return other dogs phone calls.” People often ask me what’s the difference between amateur actors and professionals, expecting my answer to include the word ‘talent.’. But in fact ability is not the defining difference – I’ve known some wonderful amateur actors and some rotten professionals (I’m sure you’re coming up with a list of your own, even as you read this, and I bet that bloke dressed like Lord Nelson who does those ones for car insurance is among them…)

No, the only immutable difference is that professional are prepared to put up with the uncertainty, misery, anxiety and humiliation of not knowing where their next meal is coming from. However able amateurs may be as able, they haven’t got the stomach for it (the uncertainty that is, not the meal). Acting is about picking yourself up more times than you’re knocked down and always returning for more, and being prepared to see your wife and children starve while you do it.
A popularly quoted statistic maintains that 90% of actors are out of work at any one time. This figure is of course grossly incorrect. It's more like 95%. But what the statistic doesn't go on to qualify (and here's the rub as the Bard would say) is that the same 5% tend to work most of the time, while the same 95% tend never to work at all.

Naturally the trick is to make sure you're in the 5%, and to have the grace and wisdom to realise if you're not before it's too late to retrain for anything else. The pubs of central London (indeed, most of the south of England) are full of middle-aged actors sitting in balding suede shoes and grubby corduroys, nursing a pint and complaining to anyone who'll listen about 'their bloody agent'. But by then it's already too late.

That's not to say miracles don't happen. Which is what keeps us going. A mate of mine, a talented and beautiful actress and Cambridge graduate, was on the point of giving up aged 26 having not worked for a year when the phone rang one evening at her bedsit in Camden.

The caller, who claimed to be movie star Kevin Costner, said he'd just seen her on an old advert on cable TV over in Los Angeles, and wanted her to send over a DVD of herself to his Hollywood studio as he thought she looked perfect to play the lead in his next film (The Postman, if you're wondering).

So convinced was she it was a hoax call - indeed, so convinced it was a hoax call by me – that she told him (me) to go forth and procreate before putting the phone down. It took a subsequent call from Costner's secretary before she was persuaded of the caller's veracity. Five days later she was in LA having dinner with the star. Next day she screen-tested, and ten weeks after that she was filming in British Columbia.

I'm very glad for her – all jobbing actors are – but that degree of good fortune can stretch one's friendship too far. As someone once said (probably an actor), it's not enough that you succeed; your friends also have to fail....

Nonetheless if you can make a go of it it's a great life. Certainly better than working for a living. Stage acting – perfectly described by the actor Patrick Troughton as 'shouting in the evenings', is an infinitely fascinating and mercurial craft. Laurence Olivier ground his teeth in frustration when congratulated on his performance one night by a fellow thesp. When asked the reason for his dismay, he answered 'I know I was good, but I don't know how I did it....'

And when all is said and done, actors are wonderful people to spend ones time with: kind, tolerant, liberal minded, loyal, and sensitive – as long as we're talking about ourselves. 'But enough of me, what did you think of my performance?' is our favourite mantra.

Of course we can also be feckless, irresponsible and disloyal to long suffering partners. But that's only because we're clinging together for warmth. Life can be lonely when you're on the road in some terrible Agatha Christie play, far from family and fireside comforts: and you've got to find something to do with your days apart from visiting National Trust properties and going to the pictures. Tallulah Bankhead once said, 'Darling, if it happens on tour, it ain't adultery.'

In fact legend has it that at a seminar after a performance of Hamlet, one academic once apparently once asked the celebrated director of the piece if he thought the Prince of Denmark ever actually consummated his relationship with Ophelia. 'Yes' he replied, 'I think it was during the second week at the Grand Theatre Wolverhampton....'

So why do we do it? Well, mostly because we can't do much else. For instance, much to my wife's frustration, I can't change a plug, mend a fuse or clean a spark plug (do cars still have spark plugs?) But I can time a laugh, handle a Shakespearean sonnet and say a line so that people a hundred yards away in the gallery can hear it without feeling I'm bellowing at them through a loud hailer. That's enough for one lifetime...

Oh by the way, I've also written about my sporting incompetence, and most recently about my journey through France with only an outstretched thumb and four words of French for company. But that, as they say, is anozzer story....

A final thought. A circus parade is processing through the town. At the very back is an old bloke whose job is merely to shovel the manure from all the circus animals into a big bag slung over his shoulder. A passer by asks him how long he's been doing the job and how much he gets paid, to which he replies 50 years and £50 a week. 'Well why on earth don't you stop doing it and find a better job instead?' asks the passer-by.

'What, and give up showbusiness?
John Milton was a Puritan, and it has long been assumed that he grew up in a puritan household. I believed this myself, until new documents began to emerge in 1998, and these documents show exactly the opposite, which is that Milton came from a non-Puritan family, one keen on ritual and ceremony and stained glass and organ music in the church, and involved in non-Puritan entertainments such as plays; indeed, we have recently discovered that Milton’s father was a churchwarden in a high Anglican chapel in Hammersmith and a trustee of the Blackfriars Playhouse, which was the second theatre of Shakespeare’s company. How did Milton come to repudiate his high church background to become a puritan?

When Milton graduated from Cambridge in 1632, his father rather hoped that he would get a job. Milton announced to his father that he hadn’t learned anything at Cambridge, and in any case wanted to be a poet, so he moved home with his parents, and stayed there for six years. Home was in Horton, a village which was then remote but is now at the end of the runway at Heathrow. It was there, in 1637, that Milton seems to have shifted his religious allegiance. He had been what would now be called a high church Anglican; he became a puritan, the group to which modern evangelicals trace their origins. I should like to adduce two events, one public and one private, that might have contributed to Milton’s radicalisation in 1637.

First the public event. On 14 June 1637 the Court of Star Chamber pronounced sentence on three puritans who had been convicted of sedition: the lawyer William Prynne, the divine Henry Burton and the physician John Bastwick. The corporal punishment that was part of their sentences was carried out on 30 June in the palace yard at Westminster, and it is entirely possible that Milton was present in the profoundly sympathetic crowd who witnessed it; although living some distance from London, he seems to have been there at the time. Prynne, whose ears had been clipped in 1633 after his previous indictment by the Star Chamber, had the stumps completely removed with a hot iron; his nose was slit, and the initials ‘S L’ (‘Seditious Libeller’) were burnt into his cheeks. Prynne was later to remark that the letters stood for Stigmata Laudis, the marks of Archbishop Laud. Like Burton and Bastwick, who also lost their ears, he was also sentenced to be fined £5000 and to suffer perpetual imprisonment. The mutilation of the three radicals by a court that was seen as a vehicle of the Anglican church’s authoritarianism polarised the nation. Milton had been a contented Laudian both in his personal loyalties and in his theology, and he had probably entertained little sympathy hitherto with William Prynne, the apparent ringleader, but their mutilation signalled a church that had become autocratic. Milton began to bid William Laud’s high anglicanism good night.

It is equally possible that an event closer to home had encouraged disillusionment with the Laudian church. Home was the village of Horton, and the event was an archidiaconal visitation which took place on 8 August 1637; again, the report has only recently been discovered. The archdeacon noted approvingly Laudian details such as the kneeling bench by the rails, but was concerned that some of the seats were too high, including that of ‘Mr Millton’. He also noted that ‘the two Tombestones in the Chancel in the pavement are laid the wronge way’; the two tombstones in the floor of the chancel include that of Sara Milton, Milton’s mother, who had been buried a few months earlier. The transgressions seem venial, but may well have touched a nerve exposed by the spectacle in the palace yard. The Laudian church was not only persecuting godly men of professional
standing, but was also interfering with the family pew and declaring the gravestone of Sara Milton to have been improperly orientated. It is difficult to judge the impact of this visitation on the Miltons. Possibly they shrugged it off, but it is also possible that contributed to the erosion of the younger Milton’s allegiance to the Caroline church, evident in his only major vernacular poem of the Horton period, ‘Lycidas’; in that poem the church is portrayed as greedy and corrupt, a characterisation that would have been alien to Milton not long before.

Milton’s ‘Lycidas’ ends with a declaration that it was time to move on to fresh woods and pastures new, and in his case that meant Italy. English travellers to Italy, usually aristocratic, often Roman Catholic and, increasingly, interested in art. Milton was none of those things, but two aspects of Italy attracted him strongly: one was music, and the other was the intellectual life of the academies, which had no counterparts in England. On music we know that he attended a recital by a soprano called Leonora Baroni, who was accompanied by her mother Adriana Basile on the lyre; Milton promptly wrote three Latin epigrams in her honour. He also attended an opera, Chi soffre, speri (Let He Who Suffers Hope) of which the libretto had been written by the future Pope Clement XI and the part of the hero was sung by a castrato. He also bought music books, and when he got to Venice shipped home a case of music books with works by composers such as Monteverdi and Gesualdo. On the academies, we know that he visited several, including one in Florence called the Svogliati (‘men without will’); there he read some of his Latin poetry, which was declared in the Academy’s minute book to be molto erudita. The only other establishment where we can date his presence with precision is the English College in Rome, which trained priests to be missionaries in England (and indeed still trains English priests). His presence is recorded in the Pilgrim Book, together with that of the other English visitors that evening.

On returning to England in 1639 Milton turned to school teaching, running a small school in his home. England drifted into civil war (1642-51); the English civil war divided families, including Milton’s. Milton’s brother, and apparently his father, sided with the royalists. The victory of the Puritans was symbolised by the execution of the king in January 1649. It was the greatest moment of Milton’s political life, and it also gave him his first and only proper job. He became the government’s secretary for foreign tongues, and so was responsible for translating diplomatic correspondence into Latin, which was the language of diplomacy. He also became the official defender of the killing of the king, and wrote tracts on behalf of the English government defending that action. These were enormously time-consuming tasks, and reduced his capacity to write creatively. Soon another difficulty arose, that of blindness. Milton’s blindness was to occasion his best-known sonnet, and Milton was later to link his disability to the poetical ability of Homer and the prophetical ability of Tiresias.

By the time he finished Paradise Lost, in the early 1660s, the godly republic for which Milton had worked had collapsed, and King Charles, possibly the most immoral monarch, at least in terms of heterosexual promiscuity, in England’s history, had returned. On one level the poem is about that defeat and the consequent need to justify the ways of God in allowing it to happen. On another level it is about falling, about apostacy, of which the greatest anxiety in Milton’s England was conversion to Islam, or turning Turk, as Othello calls it. Conversion was supposed to be from another religion, but among the large numbers of English people captured by pirates and taken to North Africa to be sold, many converted to Islam. You can almost feel the shiver in seventeenth-century England, because conversion was supposed to go the other way.

In his final years Milton cleared out his desk and published works that he had written in his youth. In late July 1674, he made an oral (nuncupative) will; it is in places a grumpy document, the best example being the bequest to his two ungrateful daughters of the dowry that he never received. He died quietly in November.

Four centuries later, Milton is still valued. Why? Some of the reasons are obvious. His gifts as a poet are unmatched. In drama we have Shakespeare, in fiction George Eliot and Melville, but Milton is the most gifted exponent of poetry in English. There is also some appeal in Milton’s ideas. He argued that governments have no business meddling with the religious beliefs of their citizens; that how people
worry and whether they worship should not be regulated by the legal machinery of the state. He also denied the right of his rulers to determine what could be printed and read. He claimed that marriage should be founded on mutual affection and intellectual compatibility and that, when those broke down, divorce should end the misery and permit both parties to attempt other relationships. He thought his rulers should be held to account for their actions and that the law was above them. He also contended the best kind of government was republican, an argument that has often prevailed, though not at present in his native land. If we had an absolutist monarchy rather than our present constitutional monarchy, republicanism would be alive and well; indeed, it may grow if the present monarch’s exemplary refusal to meddle in public affairs is not continued by her heir.

But he is not our contemporary, and there are limits to the extent we can claim him as a modern. He was certainly no democrat and nowhere advocates a widened franchise, nor indeed does he evince much enthusiasm for the electoral process. His social assumptions, about the rights of the propertied and the subordination of the servant class and the relative status of men and women, are all rooted in seventeenth-century assumptions rather than modern ones. His intolerance of Roman Catholicism is troubling to a modern reader. He did have Catholic friends, and he wrote admiringly of Catholic figures, but he can sound like an Ulster Protestant inveighing against the pope of Rome. In our own time anti-Catholicism has not quite disappeared, and to our shame, Roman Catholics are still excluded from the British throne, and male children have priority over female children in the order of succession. As Milton knew perfectly well, we do not live in a perfected world, but we do live in one in which those committed to great ideals can make a difference and those who can write great literature can enrich our lives.

I am a zoologist who had the great fortune on my retirement to become associated with and educated by colleagues in the earth sciences. It has certainly given me new insights into my own subject and I believe that understanding the interlocking histories of life and the Earth is a vital part of recognising what our future situation really is.

We have long referred to Earth as the Goldilocks planet – neither too hot nor too cold, but just right. Likewise cosmologists can tell us that if our mother star the Sun were much larger or smaller than it is, life could scarcely have developed because the lifetime of such stars is too short. Our star has burnt for over 4 billion years and is about half way through its life cycle. There is a lot of potential future to work for!

The early history of our planet as the solar system was accreting from cosmic dust must have been violent. Unlike Earth, Mercury and the Moon have no atmosphere or surface water and thus no erosion. They still show almost unchanged the craters of the major bombardment when collisions with meteorites

LIFE AND THE EARTH: INTERLOCKING HISTORIES.
Professor Aubrey Manning OBE, FRSE
University of Edinburgh
Delivered on 30th November 2009
Joint lecture with the Geology Section

It is an honour to be invited to address the Lit & Phil, a venerable institution whose origins may derive from the Scottish Enlightenment which, spreading south came to illuminate 19th Century Britain.
must have been frequent. On Earth some of the most ancient rocks of the crust – approaching 4 billion years old – reveal pebbles and boulders which have been rounded in the beds of rivers. There was liquid water on the surface almost from the beginning. That water must have at least partly boiled off when big meteorites struck to recondense when the energy of such colossal impacts had dissipated. These are not, one would think, conditions conducive to the origin of life. Yet although there is no possibility of fossil structures, there are chemical traces in such early rocks which have the clear hallmarks of living organisms.

We know what they would have been – closely similar to so-called Archaebacteria which are found all through the Earth, living with us today. They thrive in the interstices of rocks down to 2 or 3 km, living in oil wells, living in hot volcanic springs and around the mid ocean vents. They thrive in extremes of temperature, salinity and pressure. Many can live at the temperature of boiling water and cannot grow below 60 degrees. They must have originated in hot sea water and once begun they could have lived through the heat of meteor impacts.

The young earth, only about one ninth of its age today, already supported life and for the next THREE BILLION years or so life developed and diversified but remained at the micro-organism, single celled level. Other types of bacteria – the familiar ones that live alongside us and in us – evolved and some more complex and larger cells resembling the single-celled algae and protozoa of today.

Then, about 8 or 900 million years ago – having now acquired some of the sense of deep time from geological colleagues, I now regard this as relatively recently – a major leap in the story of evolution took place. unicellular organisms began grouping together, cells became specialised for different functions and complex, multicellular and much larger organisms emerged. For the first time in we find fossils of complex life. This is the Ediacaran Assemblage – to use a neutral term – for it is hard to say whether they were plants or animals. If they were animals then they must have had plants to feed on – plants are at the base of every food chain. They are quite diverse and are found in many places but most significantly for us, found in Leicestershire in the form of the beautiful and spectacular fossil, Charnia. (Whose discovery and study is worth a lecture in itself!)

It seems unlikely that the Ediacarans left any descendants. They soon disappeared but by 100 million years later – about 500 million years ago, ancestors of all the major groups of plants and animals were widely distributed in the oceans.

By now Earth is supporting life in abundance. This is one half of James Lovelock's mantra – Earth supports life. Life supports Earth, - I prefer, affects Earth. There is no need here to rehearse the main facts of evolutionary history. Until so recently, about half a century back, biologists just accepted the history and fitted it in with the disposition of the land masses and ocean basins. Where there were awkward facts – some fossils of the same freshwater animals in South Africa and Argentina - we invoked land bridges which, like Atlantis, we made rise up and fallback again! With the wonderful advent of plate tectonics and a full view of Earth's dynamic processes we can now recognise how pervasively they have affected the course of evolution. Marsupials flourish in Australasia and, to a lesser extent, in South America, because they became isolated early on before the evolution of Eutherian mammals when the huge land mass we call Pangea broke up. Many groups of large herbivores which had evolved in South America and flourished until very recent times, became extinct when at last, about 3 million years ago, the Isthmus of Panama closed to link that continent to North America and a range of advanced Eutherian carnivores – notably sabre-tooth cats – crossed to the south. The closing of that gap also had global effects on Earth's climate and all that means for life, because it broke up the circulation of warm waters between Atlantic and Pacific oceans. These are just conspicuous and familiar examples; there are many others from all around the planet.

That is one side of Lovelock's mantra, but correspondingly life has affected the history of Earth and thus, as he has so eloquently illustrated, rendered it unique in the Solar System. The first release of free oxygen into the oceans and finally the atmosphere, the emergence of complex ecosystems which erode rocks leading to soil formation, the recycling of water through plants into rivers leading to further erosion
and the succession of new sedimentary deposits. Then life has formed some of the very rocks themselves - whole gigantic formations of limestone and chalk which dominate the landscape across continents – have their origin in living organisms. So do all the deposits of oil and gas.

Earth is our essential physical home, but it has not always given life an easy ride. The history of complex life over the last 600 million years reveals a number of so-called ‘mass extinctions’ when huge numbers of organisms disappeared leaving biodiversity much depleted. At the boundary between the Permian and Triassic ages, about 280 million years ago, some estimates suggest 95% of all diversity became extinct. The cause of these cataclysmic events is still a source of wonderfully complicated arguments about volcanic eruptions, meteor strikes and stagnant oceans.

Good science is spurred on by just such controversies and these events in life’s history on Earth have much to tell us about our present unique set of problems. For a further mass extinction is in progress at the moment and it is owing to one species – our own – which, in the brief instant of geological time since its emergence has come to dominate and threaten ecosystems across the Earth.

Modern earth science can help us to recognise those natural hazards which Earth will always fling at us. Earthquakes, tsunamis, volcanic eruptions will continue, so will climate continue to change as it has done in the past. Technology and human ingenuity will have to be applied in force but before we can hope to succeed in securing a sustainable future a number of ‘inconvenient truths’ will have to be faced squarely. Again earth science can help to inform us better and avoid in future some of the destructive developments which have led, for example, to the degradation of soils and the misuse of precious fresh water. Science has the enormous advantage that, at its best, it is culture free and a universal language. It can help us to get beyond the awful distractions of political life to address the real problems that face us all if we are to have a good quality of life in the long term. We continue to make profligate and highly unequal demands on resources across the world; too many of us take the Earth for granted. The world in general and the rich western world in particular is grossly overpopulated for the standard of living we aspire to. The re-establishment of some better balance between human beings and the environment that supports us and all other living organisms will not come quickly or easily. I suspect that some things will have to get worse before we acquire the necessary resolve. Climate change is the one factor which seems to have grasped attention and provided us with a ‘tap on the shoulder.’ As the palaeoclimatologist Wally Broeker says, ‘Climate is an ill-tempered beast and we are poking it with sticks!’ Climate has always been changing, but never before in a world holding over 6 billion people and a lot of them living close to the sea.

However there is much to play for and for a rapidly increasing number there is coming a new understanding of Earth’s and life’s history together which can better inform future action. Biologists and earth scientists share a love for the natural world. Such feelings of wonder and perpetual curiosity have been splendidly upheld by groups as the Lit & Phil here. Long may you flourish!
CHEMICAL BIOLOGY APPROACHES TO TB THERAPEUTICS AND GENE THERAPY

Dr Helen C. Hailes

Reader in Chemical Biology, University College London

Lecture delivered on 11th January 2010

Sponsored by The Royal Society of Chemistry

Chemical biology, the use of synthetic chemistry and techniques to probe and manipulate biological systems, holds significant potential to deliver advances across a wide range of related research fields. For example, the use of new synthetic strategies to construct molecules as tools to identify or perturb biological targets, can lead to the identification of novel compounds with improved biological properties. Two areas of interest are tuberculosis therapeutics and approaches to tackle this ancient disease, and a more recent research field, that of gene therapy. In both of these areas chemical biologists can make a significant impact and contribute to strategies that may impact on human health.

Tuberculosis Therapeutics

Tuberculosis (TB) is an infectious curable disease caused by the bacterium Mycobacterium tuberculosis. In the early 1990s the World Health Organisation (WHO) highlighted that TB was a global emergency and in the late 1990s they estimated that three billion people, a third of the world’s population, is infected with TB. More recent data from 2006 indicated there were more than 9 million new cases, mostly in developing countries, with 1.5 million deaths during that year of which 0.2 million were infected with HIV. It is clear that TB is still one of the leading infectious diseases and contributing factors such as increasing population, migration and poverty will not go away. In addition, HIV is the greatest risk factor known to cause TB infection to proceed to disease.

Tuberculosis is an ancient disease and in 4000 BC was common in Egypt. In around 2000 BC it became established in Europe and in the 1650s was the cause of death of one in five people in London. Cases increased significantly in the UK until the twentieth century when owing to improved standards of living the number of cases started to decline and in the 1940s there were approximately 50,000 cases per year. Following the introduction of the BCG and antibiotic treatments this has decreased further to 6,000 cases per year in the UK in 2000.

From the 1850s onwards sanatoriums were established in the UK. The good nutrition, rest and a healthy environment, away from the highly populated disease infested slums cured some patients. Early chemotherapeutic treatments included the use of mercury, antimony, gold, and cod-liver oil. In the mid-twentieth century antibiotics became available which had a significant impact on treating the disease. The current treatment recommended by WHO is a combination of 4 antibiotics for 6 to 24 months: rifampicin, isoniazid, ethambutol and pyrazinamide, which can all be synthesised or obtained at low cost. Also introduction of the Directly Observed Treatment Short-course (DOTS) strategy has been effective in ensuring drug compliance to avoid the development of multidrug resistant TB (MDR-TB). Despite this, the death rates are still relatively high, in the UK and USA 1 in 15 patients die but in Africa and the Middle East 2 out of 3 patients die. Use of the BCG vaccine has also been effective, although in some countries has had reduced impact. Treatment non-compliance or spontaneous mutation in the TB genome has led to the development of multidrug resistant TB (MDR-TB). Despite this, the death rates are still relatively high, in the UK and USA 1 in 15 patients die but in Africa and the Middle East 2 out of 3 patients die. Use of the BCG vaccine has also been effective, although in some countries has had reduced impact. Treatment non-compliance or spontaneous mutation in the TB genome has led to the development of multidrug resistant TB (MDR-TB). Despite this, the death rates are still relatively high, in the UK and USA 1 in 15 patients die but in Africa and the Middle East 2 out of 3 patients die. Use of the BCG vaccine has also been effective, although in some countries has had reduced impact. Treatment non-compliance or spontaneous mutation in the TB genome has led to the development of multidrug resistant TB (MDR-TB). Despite this, the death rates are still relatively high, in the UK and USA 1 in 15 patients die but in Africa and the Middle East 2 out of 3 patients die. Use of the BCG vaccine has also been effective, although in some countries has had reduced impact. Treatment non-compliance or spontaneous mutation in the TB genome has led to the development of multidrug resistant TB (MDR-TB). Despite this, the death rates are still relatively high, in the UK and USA 1 in 15 patients die but in Africa and the Middle East 2 out of 3 patients die. Use of the BCG vaccine has also been effective, although in some countries has had reduced impact. Treatment non-compliance or spontaneous mutation in the TB genome has led to the development of multidrug resistant TB (MDR-TB). Despite this, the death rates are still relatively high, in the UK and USA 1 in 15 patients die but in Africa and the Middle East 2 out of 3 patients die. Use of the BCG vaccine has also been effective, although in some countries has had reduced impact. Treatment non-compliance or spontaneous mutation in the TB genome has led to the development of multidrug resistant TB (MDR-TB). Despite this, the death rates are still relatively high, in the UK and USA 1 in 15 patients die but in Africa and the Middle East 2 out of 3 patients die. Use of the BCG vaccine has also been effective, although in some countries has had reduced impact. Treatment non-compliance or spontaneous mutation in the TB genome has led to the development of multidrug resistant TB (MDR-TB).
In the 1950s Sir John Cornforth synthesised Macrocyclon, a mixture of calix[8]arenes with polyethylene glycol (PEG) chains of different length at the lower rim. The name calixarene is derived from the Greek ‘calix’, which means vase. Calixarenes are ringed compounds with alternating methylene and phenolic groups (e.g. Figure 1).

Macrocyclon showed remarkable anti-TB activity in in vivo mouse experiments. More recently, in the Department of Chemistry at UCL, because Macrocyclon is a mixture of compounds, we have been synthesising homogeneous samples of calixarenes with different groups at the upper and lower rim. From this we have been trying to determine the mode of action of these interesting compounds against M. tuberculosis. A range of compounds were identified as having anti-TB properties in vivo and earlier work had established they work via a host mediated mechanism. Current results have indicated that the amino acid L-arginine is required for calixarene anti-bacterial activity, together with the enzyme nitric oxide synthase-2 (NOS-2). Furthermore that nitric oxide (NO) may be implicated in their mode of action. Further experiments are now underway, with calixarenes possessing fluorescent labels to understand how they work in vivo, with a view to designing and synthesising even more effective anti-TB compounds for use in chemotherapy.

**Gene Therapy**

Some diseases can not be cured by conventional medicinal chemistry approaches such as cystic fibrosis where there is a defective protein, resulting in mucus accumulation in the lungs and the poor absorption of food. To correct such defective processes one strategy attracting a lot of interest in recent years is gene therapy involving the delivery of corrective DNA to synthesise the correct protein. However, DNA contains charged phosphate groups which can not pass through the cell wall, and then, even if delivered to the right cell there is the problem of the DNA reaching the nucleus. In addition, DNA is degraded in the body. One approach in gene therapy is the use of viruses to deliver DNA, however immunogenicity problems and other unwanted effects have been encountered. An alternative strategy is to make an ‘artificial virus’, made up of lipids similar to those present in cell membranes. Natural lipids include cholesterol and phospholipids and these form lipid bilayers at the cell membrane. Since cell membranes in general are comprised of neutral lipids and those with an overall negative charge, if a delivery system for DNA is comprised of neutral lipids and cationic lipids, these can interact favourably with negatively charged DNA and cell membranes. When lipids are formulated with DNA, they can form a range of structures including liposomes. These DNA-liposome complexes can deliver DNA to cells (Figure 2): the lipid fuses with the cell membrane and then the DNA is released into the cell, however, merging with the membrane is slow and DNA is not easily transported to the nucleus.
This system would be even more efficient if the DNA could be compacted and this can be achieved using positively charged peptides, which via electrostatic interactions compact the DNA. Further strategies have been explored to enhance the delivery complex further; these include the addition of a targeting group to ensure that the complexes deliver to selected cells, rather than every cell. This can be achieved by using targeting peptides, which recognise features on particular cell surfaces. Further refinements include coating of the particles with polyethylene glycol (PEG), a readily available polymer, to enhance the stability of the complex in biological fluids. This is readily achieved by linking to the lipid component. Complexation of all of these components, PEG-lipids and targeting condensing peptides with DNA then forms a targeted stable complex, often referred to as a nanoparticle, due to its size in the 100 nm scale, that can deliver DNA to selected cells (Figure 3). Such systems have significant potential in medical applications and may help make gene therapy a reality for a range of disease treatments.

Figure 3. Nanoparticle formed by the complexation of designer lipids and peptides with DNA.
THE HEART DIVIDED: MUTED NARRATIVES AND THE PARTITION OF THE PUNJAB

Dr Pippa Virdee
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Lecture delivered on 25th January 2010

I say to Waris Shah today, speak from your grave
And add a new page to your book of love

Once one daughter of Punjab wept, and you wrote your long saga;
Today thousands weep, calling to you Waris Shah:

Arise, o friend of the afflicted; arise and see the state of Punjab,
Corpses strewn on fields, and the Chenab flowing with much blood.

(English translation of Amrita Pritam's Ode to Waris Shah)

The Partition of India in 1947 was a pivotal time in the formation of India and Pakistan. In the province of Punjab it was responsible for one of the most violent upheavals the twentieth century has ever experienced. When the independence celebrations were taking place in August 1947 in New Delhi and Karachi, the regions of Punjab and Bengal were the scenes of massive murder and uprooting. What followed the departure of the British in India was one of the biggest migrations in the twentieth century as ordinary people were forced to abandon ancestral homelands. An estimated 15 million people crossed the borders between India and Pakistan. This was the result of unprecedented levels of communal violence which contained elements both of spontaneity and planned ethnic cleansing. The dislocation was at its peak in the Punjab between August and December 1947. When Europe was busy healing its wounds from the end of the war, India was going through a turbulent beginning: a mass uprooting of people and social dislocation. The death toll associated with the partition violence is still contentious and remains disputed; the figures vary from 200,000 to 2 million.

Over the past 60 years there has been a lot of academic interest in how Partition has impacted upon India and Pakistan; less has been written on understanding the human dimension. The use of oral history and literature in Partition studies has greatly enhanced our understanding of the trauma and turmoil ordinary citizens endured during those chaotic and frenzied days. It has provided an opportunity to document the history of those who often fall outside the remit of “official” history. This article focuses on the experiences of women who have been left out of that “official” history.

Fictional writers were the first to capture the human drama of partition, many writers like Intizar Husain, Bhisham Sahni, Saadat Hasan Manto and Amrita Pritam were writing from their experiences of partition dislocation. They were much more apt at capturing the nuances and sensitive subject matter under the guise of fiction. Historians until more recently have been quite reluctant to use literature as a source of social history. Bapsi Sidhwa, herself a writer, believes that ‘historians only quote the politicians and catalogue prejudices of the period. It is the novelists who try to convey the emotional truths of individual people.’

However, during the past fifteen years feminist writers and social activists like Urvashi Butalia, Ritu Menon and Kamala Bhasin have done much to highlight the darker side of partition and the impact this had on women and the wider silences surrounding the abduction and rape of women during 1947. They have uncovered these ‘hidden histories’ and bought them into the public realm of discussion and debate. These works have challenged the conventional
histories, which marginalized women and other subaltern groups. These studies have been pivotal in unearthing the gender dimension of partition violence, during which an estimated that 75,000 women were raped and abducted during this time on both sides of the border. Fiction, memoirs and autobiographical writing have further enhanced our understanding of this neglected area often filling in the gaps left by official history.

Sixty years on little is still known about Muslim women and their experiences of migration and resettlement during the Partition of the Punjab because most recent work has been confined to understanding the plight of Indian women and comparatively little about women in Pakistan. Most notably Farrukh Khan has done research on Muslim women’s experiences through film and literature. His documentary, *Stories of the Broken Self*, is based on first-hand accounts of Pakistani women and their experiences of the 1947 Partition. Literature and personal accounts provide an opportunity to understand the social predicament that Muslim women were faced with during the rise of the Muslim League. Looking back we can see little change in the position of women.

**Muslim Women and Political Emancipation**

A rare account that documents the plight of Muslim women is *The Heart Divided* by Mumtaz Shah Nawaz. Set in the late 1930s elite Lahore, the fictional account tells the story of two sisters, their family and wider friendships. It unfolds under the challenges of modernity and the impact this has on the Muslim community and politics. The story narrates the division of India and Pakistan which the author believes had already started to take place in the 1930s in the hearts of people. (pvi)

In later years Zohra often wondered when the change in her life began. The change that had led her, a young Muslim girl, born and bred behind the purdah, to a life of independence and adventure. It was not easy to define when it began, for the lives of all the girls of her generation had changed so much and they were woven together in such a manner, like many-coloured threads of an intricate pattern, that it is difficult to decide when the change in her particular life began. (p1)

Though a fictional account, the novel is based on Nawaz’s own life. She was a socialist, poet, women’s advocate and also an idealistic Congress supporter when in the 1940s she began to question this. The novel charts the story of Zohra and how she perceived the rift between the Congress and the Muslim League and how it is mirrored in wider society and life. Nawaz died in 1948 at the age of 35 and the novel was published posthumously; had she survived to see the Pakistan created, she would undoubtedly have been disappointed with the lack of progress in women’s rights that she had envisaged.

**Society, Abduction and Silences**

The theme of abduction is explored in a number of fictional accounts, most notably by Amrita Pritam in *Pinjar* (translated as The Skeleton) and the classic Urdu short story, *Lajwanti*, by Rajinder Singh Bedi. *Pinjar* focuses on Puro/Hamida, who is abducted and forcibly converted to Hinduism. Yet what is also apparent in the novel is the rejection of Puro by her family after she was abducted and therefore deemed as being ‘stained’. Similarly in *Lajwanti*, the heroine is abducted but is ‘recovered’ and returned to her husband, Sundar Lal, the main protagonist. He finds it difficult to revert back to the life he once had. He says, ‘Let’s just forget the past. You were hardly to blame for what happened. Society is at fault for its lack of respect for goddesses like you.’ (p28).

Although Lajwanti was recovered and rehabilitated, ‘she had also been ruined. Sunder Lal on his part had neither the eyes to see her tears nor the ears to hear her painful groans.’ (p29).

Farkanda Lodi is a renowned Punjabi/Urdu fictional writer and can articulate this silenced history in a more open and profound way. She suggests that they are still silences that exist about women and the horrific crimes they were subjected to during the communal violence in 1947. The trauma associated with the upheaval and violence of 1947 has created a collective amnesia about the event. This has led to many people having only selective recall and choosing to forget consciously these harrowing and painful memories. The abduction of young girls was an unspoken reality, something which existed but was hardly ever mentioned because of the importance of women’s honour. The silence also exists within her family:
My bhabi [brother’s wife] who was also my cousin and her family migrated from Kapurthala. When they came here they were wounded and shattered completely. None of them was killed but they were seriously injured… Only one woman from our relatives was abducted. But she never speaks about her abduction. As you see our respectable culture does not allow us to speak about such things. That is why she never discusses this issue. We did hear, in our childhood, that she was abducted and they brought her back, what happened to her during that time I do not know at all.

Lodi then goes on to expose the plight of women generally, blaming society and the cultural milieu for confining and keeping women in a weak and vulnerable position.

In my opinion, it is always a woman who is born to suffer. No one, a stranger nor a close one spares her. It was not only Sikhs who did that to her. Her own people did not spare her. She is weak, helpless and vulnerable. She has been forced to remain weak. It is the training; she gets this from her parents, culture and the social environment that develop in her in a pitiable pathetic soul. Our system and society do not allow her to progress. So she is in pain, for me her life is a constant misery…Even through the ages, the plight of woman never changed, though it is getting better now.³

Bapsi Sidhwa also agrees with this point, highlighting the pitiful position of women and use of the body as a tool to target the ‘other’.

It is the women who bear the brunt of violence that accompanies these disputes. They find their bodies brutalised. Victories are celebrated on the bodies of women. When women are attacked, it is not they per se who are the targets but the men to whom they belong. It is humiliating for a man to see his woman being abused before him.⁴

The abducted woman in Lodi’s family eventually settled down and has children which is another reason why these memories of a traumatic past are rarely discussed. As a mechanism for dealing with this past, families have, where possible, moved on and started a new life. These memories belong to a past that has been locked away and hidden, a secret history that is deemed too sensitive to discuss openly. Through these personal accounts and fictional stories it is possible to gain some understanding of the ways women’s lives were completely changed during those tumultuous few months when the British left and divided the people of Punjab.

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3 Interview with Farkhanda Lodi, Lahore, 2007
4 Sidhwa in Partition Dialogues p 233
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JOURNALISTS WHO TWEET

Professor Sue Thomas
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Lecture delivered on 8th February 2010
Sponsored by Leicester Mercury

First blogs, now Twitter. Today it’s not enough just to write your copy - many journalists also have to blog and tweet it too. How are those changes affecting the profession and its audiences? This talk discusses the impact of social media upon news reporting and the ways in which contemporary readers expect to interact with the media.

Since 2005 my colleagues and I have been developing the concept of transliteracy, which we define as “the ability to read, write and interact across a range of platforms, tools and media from signing and orality through handwriting, print, TV, radio and film, to digital social networks.”

(www.transliteracy.com)

The word ‘transliteracy’ is derived from the verb ‘to transliterate’, meaning to write or print a letter or word using the closest corresponding letters of a different alphabet or language. This of course is nothing new, but our interpretation extends the act of transliteration and applies it to the increasingly wide range of communication platforms and tools at our disposal. From early signing and orality through handwriting, print, TV and film to networked digital media, the concept of transliteracy calls for a change of perspective away from the battles over print versus digital, and a move instead towards a unifying ecology not just of media, but of all literacies relevant to reading, writing, interaction and culture, both past and present. It is, we hope, an opportunity to cross some hitherto quite difficult divides. My talk this evening looks at some examples of journalists who are using the social network tool Twitter in a transliterate way.

In January 2010, Editor of the Guardian Alan Rusbridger gave the annual Hugh Cudlipp lecture in which he related the story of Trafigura. It seems that this began as a piece of conventional reporting which uncovered a shocking story about a company which had hitherto been comfortably anonymous and which wanted to keep it that way. After dumping toxic waste in the Ivory Coast Trafigura was hit with a class action by 30,000 Africans who claimed to have been injured as a result. The company employed Carter-Ruck to chivvy journalists into obedient silence and then, having secured the mother of all super-injunctions, made the mistake of warning journalists that they could not even report mentions of Trafigura in parliament.

But - “One tweet”, says Rusbridger, “and that legal edifice crumbled.”

Twitter (www.twitter.com) is a simple tool which allows users to post messages (tweets) up to 140 characters in length via a mobile phone or website which can then be spread across the network as users ‘re-tweet’ messages to their friends. The length limitation, whilst daunting to many more verbose communicators, provides a highly effective filter and its viral spread makes it very difficult to censor or close down a conversation. A single tweet from Rusbridger implying that he was being prevented from reporting certain information ignited the curiosity of other journalists. He writes: “Some tweeters beavered away trying to find out what it was they were banned from knowing. One erudite tweeter uncovered something called the 1840 Parliamentary Papers Act, which no media lawyers seem to know about. Others pointed to where a suppressed document was available. Others found and published the parliamentary question we were warned not to report. Within hours Trafigura had thrown in the towel on the injunction and dropped...
any pretence that they could enforce a ban on parliamentary reporting. The mass collaboration of strangers had achieved something it would have taken huge amounts of time and money to achieve through conventional journalism or law.

Such mass collaboration, or crowd-sourcing, is a key feature of transliteracy. Multinational companies and other organisations are discovering that, just as in today’s world it can be dangerously limiting to be unable to read and write, there is also real peril in ignoring the opinion of the crowd – not to mention its ability to uncover information.

In some cases, however, Twitter’s ability to circumvent the usual channels of authority can work against journalists and their newspapers, as in the case of Jan Moir’s Daily Mail article on the death of Stephen Gately. In December 2009 the Press Complaints Commission reported: “Jan Moir’s recent article in the Daily Mail generated over 25,000 complaints - more than the PCC had received in total over the last five years. This was at least partly inspired by individuals, including Stephen Fry, highlighting the story via Twitter and encouraging people to express their concerns to the Commission.” It all began on 16th October 2009 when The Daily Mail published a piece by Moir about the recently deceased gay pop singer entitled “A strange, lonely and troubling death”.1

In the article, Moir implied that Gately’s death, already attributed to natural causes, was due to something quite different and that it was somehow a natural consequence of his lifestyle:

“The sugar coating on this fatality is so saccharine-thick that it obscures whatever bitter truth lies beneath. Healthy and fit 33-year-old men do not just climb into their pyjamas and go to sleep on the sofa, never to wake up again. Whatever the cause of death is, it is not, by any yardstick, a natural one. Let us be absolutely clear about this. All that has been established so far is that Stephen Gately was not murdered. And I think if we are going to be honest, we would have to admit that the circumstances surrounding his death are more than a little sleazy.” Actor, comedian and spectacularly popular Twitterer Stephen Fry took exception to Moir’s tone and rapidly tweeted his opinion. This was quickly taken up and was soon a trending topic on Twitter. IT consultant Malcolm Coles tweeted a call to companies including M&S, BT and Visit England whose advertisements appeared next to the article to withdraw their adverts. And they did.

What made this story especially interesting was Jan Moir’s complaint a few days later that she had been the target of “a heavily orchestrated internet campaign”. This demonstrates a core misunderstanding of social media and especially of Twitter. Certainly, Coles’ appeal to the advertisers could be called a campaign, but the larger outcry, or ‘twitterstorm’, which appeared across the Twittersphere was not the same thing at all. For the most part it was the same message being ‘retweeted’ from one user to another – a Chinese whisper between thousands of people. Jan Moir not only misunderstood it, but because her level of transliteracy was low, did not have the knowledge of how to counter it.

There is no doubt that Twitter allows transliterate journalists to widen their reach. Keith Perch, Editor of the Leicester Mercury, is very active on Twitter, where he writes under the name of ‘Tipexxed’. He also blogs (kperch.blogspot.com), and together these outlets provide him with two channels of communication which run parallel to the print paper and the Mercury website and which enable him to sometimes reach the places where other media cannot go.

For example, in autumn 2009 there was something of an uproar in Leicester about the financial situation of De Montfort Hall. During that debate, Keith Perch received a tweet alerting him to the fact that there was a lively discussion happening on a local web forum called Pineapster (pineapster.com) and most of it was a stream of criticism directed at the Mercury for...
what was seen as negative campaigning against DMH. Keith responded by posting to his blog a long and discursive piece about Pineapster’s discussion and giving the Mercury’s view. Pineapster users were impressed. One wrote with some surprise “dare I say he comes across quite well.” And another said “He seems like a reasonable chappy”! Within hours, says Keith, the whole thing changed. “I ended up commenting on the forum and started a constructive discussion with them there which led to us agreeing how they would help the Mercury cover the local music scene. This then led to a couple of face to face meetings and the launch of a new blog where they write bits about local music and we use the best in the paper.” He did much the same with the people on the local Leicester City football forum and they now write in the paper after every game played by the club. These relationships began because Keith was occupying the same media space as the music fans and the football fans. His participation in Twitter and the blogosphere have helped him get to know what people are talking about in the city and made it easier for him to connect with a constituency beyond the readership of the newspaper.

The spread of transliteracy amongst journalists and their readers can only enrich the news environment. This does not mean that the important values of traditional journalism will be lost, but rather that they are likely to permeate new media too. The rise of Twitter has been a surprise, but undoubtedly there is more to come. And whatever happens, we can be sure that transliterate journalists will be ready to embrace it.

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London’s Foundling Museum opened in 2004. The stories it tells go back beyond 1739, the year of the Foundling Hospital’s incorporation under a royal charter. It occupies a building which, since 1937, housed the headquarters of the Hospital’s successor, today’s Thomas Coram Foundation.

At the Foundling Hospital’s heart (literal and metaphorical) is its founder, Captain Thomas Coram (1668-1751). In the early 1700s, after an eventful career in the American Colony of Massachusetts, Captain Coram returned to his native England with his Bostonian bride, Eunice. They settled in London and for the first few years of the 1700s we know little of Thomas’s activities. Contrary to what has been said elsewhere, Thomas was not wealthy. Despite a promising start, he had not made his fortune in Massachusetts where the local puritan community had harried him with vexatious litigation and all but ran him out of town.

Writing in the 1730s, he says that on his return it was the almost everyday sight of abandoned infants, their bodies dumped like rags on the trash heaps of the city’s thoroughfares, which jolted him into starting a campaign to save London’s abandoned babies and those at risk of abandonment. At the same time the planned hospital would also rehabilitate the mothers incapable of supporting their infants.

Coram’s campaign dragged on for a total of seventeen and a half years. It finally bore fruit in 1739 when George II affixed his seal to the Royal Charter, granting Coram and his subscribers leave to set up “a
Hospital for the Maintenance and Education of Exposed and Deserted Young Children.” In other words, an institution which would take in babies up to two months old from first-time mothers. These were the parameters initially in place. They were altered over the next two centuries as economic and social conditions at the hospital and in society at large changed, thus preserving one life while offering a new beginning to the other.

Foundling and orphan institutions had long been established in Catholic Italy, Spain, Portugal, Austria and France as well as in Protestant Germany. Why had England been so tardy? No single reason can explain it: the lack of a controlling, paternalistic ruler (Louis XIV had personally set up Paris’s Hôpital des Enfants trouvés); the turmoil and aftermath of the religious and parliamentary wars of the 16th and 17th centuries; the prevailing Protestant dogma of Free Will (a bastard child was God’s punishment for wilful fornication –who was Man to interfere with the ways of God?); the notion that by providing for illegitimacy it would be encouraged. Many respectable women—those from whom compassion might have been expected—feared that such an institution would allow their menfolk to stray.

Nevertheless, it was twenty-one women “of quality” led by the Duchess of Somerset who, in 1722, eventually got Coram’s campaign under way. Soon men followed their wives and support for Captain Coram’s Petition grew.

One notable ally was the artist William Hogarth (1697-1764). A whole generation younger than Coram, Hogarth was in his mid-to-late 30s when the men first met. We don’t know the circumstances. However, Hogarth amply showed his humanitarian tendencies through his involvement with St Bartholomew’s Hospital for which he painted two great canvases for the Grand Staircase; and then there were his print narratives, his “Modern Moral Subjects” (works such as the Harlot’s and the Rake’s Progresses) where the cruelty and other consequences of a society in headlong pursuit of Wealth are held up for public scrutiny. Keen to be associated with a good cause, Hogarth cannot have ignored the personal benefits of becoming involved with a fashionable charity and one where his works and those of his brother artists would come to the full view of society at large—and of potential clients too.

Hogarth’s first contribution to the Hospital project was to design the header of the subscription/appeal form; later he devised the Hospital coat-of-arms as well as the children’s brown and scarlet livery. Along with his wife, Jane, he also became one of the governor-inspectors of the wet-nurses at Chiswick. However his main achievement was bringing Art to the Hospital: his exceptional portrait of Coram, executed in 1740 set a very high standard for his brother artists and was significantly inscribed by him “Painted and Given by Wm. Hogarth 1740”.

Portraite of Thomas Coram by William Hogarth

As, wing by wing, the new building took shape, he was almost certainly responsible for the decorative scheme of the Hospital’s Court Room, a space into which potential donors could be led, bringing to their attention that everything therein: the paintings, the furniture, the chandelier, the mantelpiece and, crowning it all, even the exceptionally elaborate plasterwork of the Rococo ceiling—everything had been donated… “And how much shall we put You down for…?”

This very room, whose ceiling was dismantled in blocks, stored for a dozen years and then painstakingly reassembled, today forms the jewel at the heart of the Foundling Museum’s historic interiors. It is one of London’s gems: an extraordinary fusion of Art and Social History.

Today’s museum seeks to preserve this unique association, combining in the later 1740s with a further strand, Music, through the involvement of London’s most celebrated living composer, George Frideric Handel.
But beating gently at the heart of today’s Museum are our Tokens—those poignantly modest trinkets which mothers left on parting from their babies, hoping for some magical link with the child they would almost certainly never see again, a talisman to be given by the Hospital in later life or on leaving its precincts. They never were.

The mothers’ tokens remained sealed within their original billets and only came to light a hundred years later when, in the mid 19th century, John Brownlow, the Hospital Secretary (himself a foundling), rediscovered the hitherto sealed billets. While the museum currently displays the “hard” tokens—keys, padlocks, embroidered hearts, cheap rings, enamel wine labels, modified coins, mother-o’-pearl and ivory counters—the majority of tokens were of woven fabric, pieces of cloth cut from a mother or child’s garment, then cut in half, one half given to the mother, the other half pinned into the document along with a record of the clothing brought. The Foundling Hospital archives has over six thousand such fabric “swatches”, by far the biggest sample of such materials in England, and most probably Europe.

From October 2010, for the very first time ever, the story of the Foundling Fabrics will be told in an exhibition running for six months into 2011. Under the curatorship of Professor John Styles we bring together a fraction of these Material Witnesses. And heading the exhibition, for the first time displayed in public, will be a needlework sampler worked by the 10 year-old Sarah Anne Quartermain in 1825. She portrays in the sampler which measured approximately 20 inches square (with the help of a print and an adult) the Foundling Hospital as it appeared in 1765, albeit in the naïve perspective typical of this needlework genre. It is the Foundling Hospital’s latest acquisition, bought at auction earlier in 2010 with the generous support of the Art Fund, the Victoria and Albert Museum Purchase Fund and a grant from my very own livery company (London’s oldest recorded guild), The Worshipful Company of Weavers.

Fittingly, Sarah Anne’s sampler joins the sophisticated works of Hogarth, Ramsay, Hudson, Hayman, Highmore, Gainsborough and Reynolds. After a history spanning over 270 years, during which over 27,000 children were admitted, it is the only recorded image of the Foundling Hospital to be done by a child.

“Threads of Feeling” opens at the Foundling Museum on 14th October and runs into May 2011. The Foundling Museum is a brisk 10 minute walk from St Pancras Station, crossing the Euston Road, down Judd Street until you reach the corner of Brunswick Square where you turn immediately left, finding the museum (and the bronze statue of Coram) at the very end.

Throughout its history its governors have, from time to time, debated whether or not to rename the Hospital since a “foundling” is defined as a found child of unknown parentage when in truth all the babies admitted were brought to the hospital by the mother. For this reason the term “orphanage” was deemed even more inappropriate. The uncertainty or shame of the foundlings’ parentage meant that, until only very recently, the term was considered shameful by those so designated. Shame, akin to “bastard”

Reference
1. These were the parameters initially in place. They were altered over the next two centuries as economic and social conditions at the hospital and in society at large changed
THE HISTORY OF SCIENCE: ECHOES OF THE PAST, OR A GLIMPSE OF THE FUTURE?

Sir Peter Williams CBE, FRS
Chairman of the National Physical Laboratory, and
Chancellor of the University of the University of Leicester

Summary of Lecture given on 8 March 2010

By a happy coincidence, 2010 marks both the 175th anniversary of Leicester Literary and Philosophical Society and, at precisely twice its age, the 350th anniversary of the founding of the Royal Society of London. In planning for 2010 at the latter, the focus, however, has not been on celebrating past successes, but on the importance of science in the modern world. The talk explored how we have benefited from scientific achievement, particularly in the second half of the 20th century, on the role of science in our lives today and on its relevance as we face the challenges of the future, such as energy and food security and climate change.
He gave a brief description of the rise of the conservation movement from a general interest in wildlife to concern for threatened species protections and then to the idea of conserving habitats with their ecosystems intact.

The idea of conserving our cultural heritage of wildlife was initiated by Richard Mabey’s landmark “Flora Britannica”. The scope of a similar volume dealing with animals must of necessity be very large. “Fauna Britannica” was inevitably selective; several invertebrate groups, such as sponges and amoeobae have little associated folklore. Information flooded in, promoted and publicised by the Daily Telegraph, and the job of collation and research began, taking as the arbitrary starting point the time of the Roman occupation as the arbitrary starting point.

An examination of place names proved very productive. He gave examples and showed and large number of place names with otter in them suggests it was a much more common animal than at present. There are many place names associated with species now extinct in Britain, for example, the wolf, the wild boar and the beaver. In place names the elk and the brown bear are absent because these animals seem to have died out earlier. The bears used for entertainment for example dancing and bear baiting would have been introduced from the continent.

Animals which were eaten commonly feature in place names – badgers, swans, and rabbits or conies. These were introduced by the Normans, domesticated in warrens and known as ‘underground mutton’. Miners, particularly on the Isle of Portland, disliked their burrowing activities as these rendered the ground unstable. ‘Rabbits, rabbits’ was the warning cry when the tunnels showed signs of caving in. We were reminded that the Easter bunny is, in fact, the brown hare, sacred to the pagan goddess of the dawn, Eostre (Easter); bunny being the old name for the red squirrel.

The names of animals themselves show some interesting changes. An eft/ewt becomes a newt, a naidre becomes an adder. The first British occurrence of the Camberwell Beauty was at Camberwell but some names are purely descriptive, for example, the Red Admiral and Brimstone butterflies. It is thought that the scoter, a black sea-going duck was originally called sooter, gained its modern name due to the bad handwriting of a 17th Century zoologist! The woodlouse has more alternative names of any British animal – over 200, many of which are still in use.

Inn signs proved another useful source of information. The large number of Stag’s/Hind’s Heads again underlines how much more common red deer were in days gone by. The name ‘Dog and Duck’ refers not to water fowling but to a cruel sport which involved tethering a duck on a pond and releasing dogs to chase it with bets being placed on the outcome. Early ‘Black Swan’ pub signs are a puzzle because these may predate the discovery of the black swan in Australia in 1770. The inn sign the ‘Swan with Two Necks’ which is a corruption of The Swan with Two Nicks arose from the marking by nicking of...
swans’ beaks. This took place when the birds were rounded up at annual swan- uppings on the River Thames.

Folklore about animals abounds for example badgers which conduct funerals and others which have their legs longer on one side than those on the other for ease of traversing hillsides! We get the word barricade from the French who, in the wars of 1429, waylaid barrels of pickled herrings being sent to the English besieging Orleans and used the barrels as protective shields.

Rather surprisingly herons, known as ‘earnshaws’ were hawked which helps explain Hamlet’s curious quote ‘I know a hawk from a handsaw’. Cuckoos are said to capture the Eternal Spring and crows were stoned to prevent them stealing seed corn. A robin in a house foretold death and frogs were considered a cure for whooping cough. In Country Life magazine there are recipes for cooking frogs and frog soup, as late as 1904.

Observations from the audience concerned rook parliaments, the seal/men or silkes in the folk songs of the Northern Isles and the question of whether the life of today is likely to give rise to similar traditions. Professor Buczacki observed that a cricketer can be ‘out for a duck’ and a golfer can win by an ‘eagle’ and many sports teams are named after animals.

Professor Buczacki had stated in his introduction how endlessly fascinating this area is for research and concluded by saying that ‘Fauna Britannica’ was the only book he had written that he had never wanted to finish.
How does one judge environmental impact?

Making such judgements is surprisingly difficult because there are so many issues that have to be considered. Take the slightly trivial example of drinking a cup of coffee. You could use cups made from china, polystyrene, or paper. When asked which is best for the environment, most people choose china or paper; almost no one even considers the possibility that polystyrene could be best. However, they ignore the fact that a china cup requires far more energy to make it, and needs both hot water and detergent for washing it each time it is used. So, from an energy point of view, one needs to reuse a china cup 1000 times before it becomes environmentally more friendly than a polystyrene one. The issue is further complicated by questions of disposal, which shifts the judgement slightly towards china, but you still need to use it more than 100 times before it is better than polystyrene. Such a discussion is an example of so-called ‘Life Cycle Assessment’ which considers the environmental problems associated with the use of an object or chemical from cradle to grave.

What are the main problems with current chemical manufacture and usage?

There are two problems which are interlinked. Firstly, there are dwindling stocks of many of the raw materials for manufacturing chemicals, including metals for catalysts and the petroleum feedstock itself. Secondly, many of the manufacturing processes are relatively wasteful. They produce a considerably greater weight of chemical waste than of the desired product itself. Roger Sheldon, a chemist working in Delft, has used his ‘E-factor’ to quantify the problem. He defines the E-factor as the (kg of waste)/ (kg of product). For some pharmaceutical products, the E-factor can approach 500! It is not that manufacturers are deliberately profligate, merely that current methods are surprisingly inefficient. Thus, our wasteful use of raw materials is exacerbating the falling reserves of feedstocks, making it more and more difficult to meet the chemical needs of the world’s ever increasing population.

Do we really need to make chemicals?

Many members of the public have an adverse reaction to the word ‘chemical’, but we cannot really manage without chemicals. Take the example of polyester which is used to make the ubiquitous plastic water bottles and, more importantly, artificial fibres for clothing. The main component of polyester is Terephthalic Acid, known in the trade as TA, which is manufactured worldwide on a scale of 40 million tonnes per year. Each TA plant produces more than 500,000 tonnes per year. Why not replace the polyester fibres with wool from sheep? A rough calculation suggests that one would need 100 million sheep to produce the same amount of fibre as one TA plant, and this number of sheep would require an area of pasture equivalent to the total area of the Netherlands. By contrast, a TA plant only occupies about 25 acres, and TA is just one of literally thousands of chemicals that are used in the UK each year.
year. So we do not have the land available to produce all the chemicals we need, even if there were suitable agricultural routes to obtain them.

What is Green Chemistry?

Green Chemistry was devised in the early 1990s by the US Environmental Protection Agency. It aims to carry out all aspects of chemical usage, from cradle to grave, without the generation or need for substances hazardous to health or to the environment. The logic behind this approach is that risk of any chemical enterprise is judged by the equation:

\[
\text{Risk} = \text{Hazard} \times \text{Exposure}
\]

Currently, Risk is minimised by minimising Exposure to hazardous chemicals. In green chemistry, the object is to reduce Hazard to zero, which will automatically also reduce the Risk to zero. Green chemistry is based on a set of Twelve Principles which provide a simple set of metrics for evaluating the ‘greenness’ of a proposed process or chemical activity. Even if something does not satisfy all the principles, it may well be greener than what it replaces.

Which are the main areas of green chemistry research?

There are four main areas: (i) new more efficient chemical reactions, which produce less waste, (ii) new catalysts, which direct reactions to produce a specific desired product, (iii) renewable feedstocks, deriving chemicals where possible from biomass (plant material) rather than petroleum, and (iv) safer solvents, the area of our particular interest.

Why do you need solvents?

Solvents are essential for a number of different reasons. They are used to move materials from one place to another; for example, in the spraying of paint, applying hair lacquer, or degreasing and cleaning. More chemically, solvents are needed: to help mix chemicals; to promote reaction or modify the reactivity of chemicals; to add or remove heat, to accelerate or slow down reactions, which becomes increasingly important as the size of the reaction vessel gets bigger – larger vessels very easily overheat; finally, to separate and purify chemicals, processes which consume very large amounts of solvents. When Viagra was first discovered on the laboratory scale, 1300 litres of solvent were needed to produce each kg of drug. By applying the principles of green chemistry the volume of solvent has been reduced to only 6.3 litres per kg and the solvents themselves have been exchanged for ones that are environmentally much less harmful.

Are there greener alternative solvents?

The greenest possibility is to eliminate the solvent altogether. This is practicable where one or more of the reactants is a liquid but reactions of solids without any solvent can often run away explosively or even fizzle out, because it is difficult to control the flow of heat. Another possibility is to use water, which is obviously environmentally acceptable. Unfortunately, many of the currently widely used reactions do not work in water and many of the chemicals involved do not dissolve in it. A promising new class of solvents are the ‘ionic liquids’, carbon-containing salts which melt close to room temperature; their applications were described to the Society on Jan. 9th, 2006 by Professor A. P. Abbott. The fourth class of solvents are gases, such as carbon dioxide or high-temperature steam (\(\text{H}_2\text{O}\)), compressed until they are nearly as dense as liquids. These so-called ‘supercritical fluids’ are beginning to be applied to both chemical reactions and other processes.

Have supercritical fluids been used in industry?

Supercritical \(\text{CO}_2\) is widely used for the decaffeination of green coffee beans; the caffeine is extracted by \(\text{CO}_2\) while the other components (e.g. flavours) are largely insoluble. The process is run on a large scale, typically 15-30 tonnes of beans per hour. Research at Nottingham has lead to a number of applications including two spin out companies, Critical Pharmaceuticals and Promethean Particles, as well as the construction of a 1000 tonnes per year chemical manufacturing plant in the North East of England. Quite amusingly the Nottingham research has also led to a new process in supercritical \(\text{H}_2\text{O}\) which could provide a much cleaner route to TA for manufacturing polyester.
Why is green chemistry relevant to Africa?

The consumption of chemicals is closely related to standard of living and quality of life. Currently, most people in Africa have lower standards of living than those in economically more developed countries in Europe and North America. If, as is to be hoped, their standards of living are to rise, they will have to be supplied with increasing amounts of chemicals. The present methods for manufacturing chemicals in the world could not cope with an increase on such a scale. Therefore, we need greener and more sustainable methods of chemical manufacture to satisfy the needs and aspirations of the peoples of Africa.

How can African chemists start working in this area?

Chemists at Nottingham have been working with their colleagues in Addis Ababa to introduce green chemistry to Ethiopia. Over a period of 5 years we have progressed from the first green chemistry talk in a high school\textsuperscript{15} to annual workshops attended by representatives of the majority of universities in Ethiopia.\textsuperscript{16} The exchange is two-way; Ethiopian chemists are learning about the principles of green chemistry while the Nottingham chemists are discovering new and more sustainable methods of making chemicals, for example the manufacture of starch using the heat of the sun to dry the product. We believe that our collaboration is a model for other chemists in the West to adopt and expand. African chemists need the help and support of green chemists in the West to address the enormous challenges that are facing their continent in the 21\textsuperscript{st} century: feeding a rapidly increasing population, supplying clean water to everyone, and linking as many people as possible to the global electronic network.

Where is green chemistry going in the future?

Green chemistry is now nearly 17 years old. More and more chemists are adopting its ideas and principles. New processes are being taken up by the chemical industry but they can only succeed if they produce better products or give the companies economic advantage.\textsuperscript{17} Chemists all over the world are beginning to realise that the problems presented by green chemistry are even more challenging than those associated with more traditional areas of
chemistry. It is gratifying that so many chemists want to rise to these challenges. At the same time, green chemistry has a great appeal to young people and, for almost the first time, they are beginning to see how important chemistry is to the future of humanity and their peaceful coexistence with the environment.

Samantha Tang is Public Awareness Scientist in the School of Chemistry, and Chair of the East Midlands Local Section of the Royal Society of Chemistry. Martyn Poliakoff is Research Professor in Chemistry; you can see him talking about chemistry on www.periodicvideos.com.

The authors will be happy to answer questions by email to samantha.tang@nottingham.ac.uk or martyn.poliakoff@nottingham.ac.uk.

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4. N. Winterton, Clean Technologies & Environmental Policy, 2003, 5, 8.
TELLING TALES: THE NARRATIVE PARADOX OF JEANETTE WINTERSON’S 21ST CENTURY NOVELS

In her 21st century novels (The Powerbook, Lighthousekeeping, The Stone Gods), Jeanette Winterson continues to extend her themes of boundaries and desire, playing them out in homage to story telling and in fittingly unorthodox ways for someone who has always used her writing to tell tales on the conventional. Her tales are indeed telling. Fiction is functional according to Winterson: “My aim in writing is never just to give pleasure. Art isn’t a luxury product. It’s always about trying to change people’s lives.”

Even this year, Winterson confirmed her personal ambition to evade classification: “I don’t for instance consider myself to be a lesbian. I want to be beyond those descriptive constraints.”

Her mission is to free other people of boundaries too and free them into a world where love is eminent, liberating them through writing which is itself freed from imprisonment, and from restrictions of convention. It is then inevitable that her most recent novels, which take her and her readers into the 21st century, themselves resist categorisation. As well as personal labels, Winterson also dislikes literary ones. She dismisses literary criticism, especially critical theory, asserting: “I think you have to leave people alone to work out their own interpretations.” Instead she believes that art has a life of its own, and that individual imagination can bring red emption: “It’s redundant for a writer to say, ‘That’s not what I meant’ or, ‘I meant something else.’ The text lives outside of that very simplistic space.”

In addition to the elevation of art, but consistent with her denial of classification of any kind, Winterson’s novels ironically preserve the art of story telling while refusing to let the story end. The paradox of her narratives is that the conclusions are also beginnings, each insisting to the reader who has been shown time after time that everything is connected in stories, that stories are endlessly retold but with differences, and that “everything is imprinted for ever with what it was once”, that the end of any story is not a real end. The novels all tell stories already told as they tell new stories, and point to yet more stories still to be told. It seems appropriate then that Winterson’s own and very individual literary style, so interwoven with threads from classic literature and narratives of every kind but gloriously unpredictable, is also an imprinted but unfinished story. While Winterson herself classes her book of the new millennia, The Powerbook, as the “end of a cycle”, she follows it up with Lighthousekeeping which continues the same themes of story telling, love, and the play on Woolf and other writers’ work. Lighthousekeeping focuses more on beginnings and The Stone Gods more on endings but the common denominator of the three is the breaking-free of boundaries to find a home which is love itself. All the novels create new stories and dismantle old stories at the same time. They defy boundaries and create a new space in which people are brought together through love. Even in the latest novel, in which Winterson embraces the literally alien genre of science fiction, she moves readers into a world which repeats the motif of the love quest. Taking us into the future and quite literally out of this world into an existence where artificial life forms interact and socialise with humans but inevitably destroy it and themselves, Winterson is still valorizing love, and proposing it as the means of survival for humanity despite all its mistakes.

1 Jeanette Winterson: ‘I thought of suicide’, Guardian books, Feb 2010
2 ibid
Advertising, unlike linguistics, does not seek to steady the ground beneath our feet, but to make it sway.


Having grown up within an obsessively commercial society, I take a great interest in the ways in which products are presented by advertisers. Although it is a particularly difficult area to analyse linguistically, due to the varying uses and combinations of language, I find the creativity and innovation of language devices within advertising fascinating. Within my Words and the World module, I chose to carry out a qualitative study of the types of persuasive language devices used within hair and beauty advertisements in various issues of the women’s magazine, Woman’s Own. I wanted to explore how persuasive language has evolved over time, so I studied advertisements from issues of the magazine dating from 1939, 1948, 1949, 1962, 1979, 1982, 1998 and 2009.

I found the advertisements which focused upon hair products particularly interesting because most of them used descriptive words that relate semantically to light. For example, a 1949 Bandbox shampoo advert promised that ‘...her hair will always look lovely, always soft and sweet and radiant, twinkling back at the sun.’ These descriptive words which root semantically from descriptions of light seem to be used consistently throughout time, with further examples in later advertisements, such as the 1962 Bandbox advert which reads, “…see your hair glow with new light and colour’.

Furthermore, the lustre of hair is accentuated when it is placed in direct opposition to the description of dull, mousy hair. For instance, the 1939 Sta-blond advert uses the lines: ‘Clever the girl who knows how to keep the glamour of naturally light, sparkling fair hair! She is much prettier than the “mousy” girl.’ The term ‘mousy’ assigns the image of the darker haired girl with qualities that are suggestive of the appearance of a mouse, particularly the dullness of the light brown colour. This binary opposition of the words ‘dull’ and ‘bright’ also suggest connotations of ‘boring’ versus ‘exciting’. For instance, the 1962 Bandbox advert reads, ’24 Hours Ago...she was just another mouse!’ Within this example, the advert ‘just’ adds emphasis to the quality “of likeness, sameness, identity” (Oxford English Dictionary online) of mousy hair, whilst implying that the product will make ‘her’ more interesting.

A chronological focus of the hair product advertisements also highlighted how connotations of a single word alter over time, depending on the attitudes of the society it is aimed at. For example, I found that the earlier adverts use the term ‘natural’ to emphasise the ordinariness of “a quality, attribute, emotion, etc. that belongs intrinsically to a person or thing.”(OED online) For instance, the 1948 Tonrinz hair rinse advert indicates that, not a dye, TONRINZ accentuates your colouring naturally and delightfully’, implying the subtlety of effects of the product’s usage, whilst the 1949 Gloria shampoo advert promotes ‘naturally light, sparkling fair hair...without dyes, special rinses or injurious bleaches.’ However, the later advertisements use the same term in order to refer to the property of “involving no artificial or man-made ingredients, chemicals, etc.”(OED online) According to the OED, there is evidence of the latter meaning from 1888 to the present day, indicating an increasingly conscious regard on the part of society, for products which are ‘pure’ from artificial additives. A more recent development is seen in the 2009 L’oreal Paris advert, which describes Pro-Keratin as an organic substance.

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THE PRESIDENT’S ANNUAL REPORT

Presented at the Annual General meeting 26th April 2010

All my life I’ve been defined in terms of others. I was Jessie Ann’s daughter, then James Currie’s sister, then Arthur Humphreys’ wife (then widow, alas). I was grateful for the personal anonymity but at the start of the new century it changed and I became ME. The University of Leicester gave me an honorary MA and then an Honorary Distinguished Fellowship.

The presidency of the Lit and Phil is another thing altogether. My association with the Society goes back over 60 years and I am honoured to hold the office of president during the Society’s 175th anniversary year.

The programme secretaries, Geoffrey and Hilary Lewis, had arranged a distinguished list of speakers, several of whom were already known to me, Ken Pounds, Gordon Campbell, Lars Tharp and Sir Peter Williams. I had carried on a correspondence with Michael Simkins and Aubrey Manning and had long been an admirer of Stefan Buczacki. The three speakers unknown to me previously, Helen Hailes, Pippa Virdee and Sue Thomas proved to be equally charming and congenial. So I was able to make all introductions with sincere gratitude to every speaker for coming to address the Society.

My presidential report gives me an opportunity to record my thanks to the hard working Council of the Society. Without exception they have worked as a team with enthusiasm and commitment.

My disabling deafness has made me a very inadequate president and I am grateful to Council for carrying me through. Richard Gill has been an enormous help both in chairing Council meetings on my behalf and in conducting the post lecture question sessions. Our secretary, Mary Hamill, has been unfailingly kind and efficient. Michael Kirk, the treasurer has shepherded our finances meticulously and we value his sound professional advice. Membership secretaries Joan and David Beeson have been both welcoming and business like and Joan has once again been responsible for taking our refreshments to new heights. Geoffrey Lewis must be thanked for his editorship of Transactions.

I am indebted to Aftab Khan not only for his superb editorship of the website but also for his help and encouragement to me as I prepared for my presidential address.

Alwyne Dean has spearheaded the arrangements for the celebratory year including the mounting of the magnificent exhibition and I thank her and her hard working team.

Patrick Boylan has edited the new history of the Society and I must congratulate him and his co-writers for this great achievement.

It is my pleasure to thank those who sponsor lectures for their continued interest and support. They are De Montfort University, The University of Leicester Bookshop, British Association for the Advancement of Science, Leicester Mercury and The Royal Society of Chemistry.

We continue to value our close association with our Geology and Natural History Sections and to enjoy our joint lectures.

To mark our 175th anniversary the Society has established prizes to be awarded to a final year student of English Literature at both De Montfort and Leicester Universities. For personal reasons this has given me great satisfaction.

Finally I am delighted to have the opportunity to thank the staff at New Walk Museum for their help and unfailing courtesy to the Lit and Phil. We are always welcomed warmly and nothing is ever too much trouble. It is appreciated. We are proud of our close association with the Museum.

Thank you for honouring me with the presidency of this wonderful Leicester institution. It has been a year I will never forget.

Jean Humphreys April 2010
Programme for the 2009-2010 Season

5 October 2009
AN ODYSSEY: FROM ARRAN TO LEICESTER
President’s Address
Open Meeting followed by a social gathering. The Lord Mayor will attend

19 October 2009
SPACE RESEARCH AT LEICESTER 1960-2010: A PERSONAL ACCOUNT
Professor Ken Pounds
Emeritus Professor of space Physics University of Leicester
Sponsored by The British Science Association

2 November 2009
FRENCH WITHOUT TEARS
Mr Michael Simpkins
Actor and Author

16 November 2009
RETHINKING THE LIFE OF MILTON
Professor Gordon Campbell
Professor of Renaissance Studies University of Leicester
Sponsored by University of Leicester Bookshop

30 November 2009
EARTH HISTORIES AND LIFE INTERACTIONS
Professor Aubrey Manning OBE
University of Edinburgh
Joint Lecture with the Geology Section

11 January 2010
CHEMICAL BIOLOGY APPROACHES TO TB THERAPEUTICS AND GENE THERAPY
Dr Helen Hailes
Reader in Chemical Biology University College London
Sponsored by The Royal Society of Chemistry

25 January 2010
THE HEART DIVIDED: MUTED NARRATIVES AND THE PARTITION OF THE PUNJAB
Dr Pippa Virdee
Senior lecturer Faculty of Humanities De Montfort University

8 February 2010
JOURNALISTS WHO TWEET
Professor Sue Thomas
Professor of New Media at the Institute of Creative Technologies and Faculty of Humanities De Montfort University
Sponsored by Leicester Mercury

22 February 2010
ART AND GRUEL
Mr Lars Tharp Director Foundling Hospital London
Sponsored by De Montfort University

8 March 2010
THE HISTORY OF SCIENCE: ECHOES OF THE PAST OR A GLIMPSE OF THE FUTURE?
Sir Peter Williams, Physicist and Chancellor of the University of Leicester

22 March 2010
FAUNA BRITANNICA: ITS PLACE IN OUR CULTURE
Professor Stefan Buczacki Biologist author and broadcaster
Joint Lecture with The Natural History Section

26 April 2010 (start 6.45 pm)
ANNUAL GENERAL MEETING
Launch of History of the Society edited by Professor Patrick Boylan
Soiree to mark 175th anniversary
Miss Jiyoung Lee Harpist
Chairman’s Report, AGM, March 24th 2010

Dr Joanne Norris, Geology Section Chairman 2009-10

As I come to the end of my third year at the helm of the Section, I have mixed emotions about standing down as Chairman, but with the pressures of my day job I feel it is the right time to hand over the Chair to Mark Evans, who I’m sure will successfully lead the Geology Section into the second decade of the 21st century. I’m looking forward to my new role on the committee as Publicity Officer, and will continue to work hard on behalf of the Section.

The winter programme was, I believe, one of interest and variety to both members and our many visitors, as we ranged far and wide into the world of geology, touching on many of the more esoteric aspects of our boundless science. This was reflected in our attendance numbers, which averaged 42 over the year. We had many highlights in the programme, but I feel I must mention the Parent Body Lecture, when Professor Aubrey Manning captivated the audience with his talk ‘Life and the Earth: interlocking histories’, and once again we filled the Victorian Gallery at New Walk Museum. The recent Annual Saturday Seminar on ‘The Earth’s Crazy Paving: a 21st century perspective on Plate Tectonics’ was also a great success. The day consisted of seven talks by leading experts, followed by an extended discussion session, when probing and fundamental questions on the nature of plate tectonics were examined and debated by the speakers and the very well informed audience. A total of 104 people attended the event, testifying to the enduring appeal of this, our flagship meeting.

This year’s Christmas and Member’s Evenings proved to be entertaining events. Our thanks go to Andrew Swift for his photographic review of the Geology Section in 2009 which was presented at both meetings and to Dennis Gamble for bringing along fine examples from his extensive fossil collections. At the Member’s Evening, Trevor Ford (Professor William Whitehead Watts), John Dickinson (What is a man-engine?), Ron Johnson (Australian Landscapes) and Bruce Smith (Two wrinklies in New Zealand) delivered well-received presentations.

We had a very busy, active and occasionally wet summer field programme in 2009. The programme started in early April with a visit to Bardon Quarry to view the proposals for a new quarry. In May, we visited Clipsham and Castle Bytham quarries in Rutland, where we viewed the Lincolnshire Limestone and the overlying glacial deposits, and the fine church at Exton. This was followed by our weekend field excursion to a very wet Llangollen at the beginning of June. The first of two July outings took us on a tour of Oxfordshire’s disused quarries as well as visiting Buckland’s grave and residence at Islip, and William Smith’s memorial at Churchill. The second trip was to Tilton railway cutting which, sadly, was a washout. Only the Chairman, Field Secretary
and leader (Andrew Swift) braved the torrential rain to view the familiar Jurassic sequence. Peter Long also joined us but made the wise decision to stay in the car! In total contrast our trip to Bradley Fen at Whittlesey in August took place under clear skies and scorching sun. The party hoped to find some of the vertebrate fossils for which the quarry is famous, but most of us came away empty handed. The same could be said for our visit to Whitman’s Hill quarry in the Malverns in early September. Here, the once abundant trilobites had been picked clean by preceding parties, with the only two finds of the day going to Alan Dearden and John Webster. Our thanks go to Margaret Rodway, a volunteer for the Abberley and Malvern Hills Geopark for leading this excursion and for taking the time to show us Gullet quarry in the afternoon. Our now annual joint trip with the Warwickshire Geological Conservation Group took us to Boon’s and Jee’s quarries at Hartshill near Nuneaton in late September. Both quarries are now disused, but are conserved as first class geological and wildlife reserves. In October we visited the National Coal Mining Museum for England near Wakefield and descended into the bowels of a preserved coal mine, thereby getting some insight into the tough life of a coal miner.

Encouragingly, we continue to see membership numbers increasing year by year, and this last one was no exception. (Membership consists of 2 life, 58 single, 25 joint/family, 5 student and 10 Parent Body members). We are proud that the committee’s efficient management of the Section continues to allow us to hold subscriptions at the present low rates, and also that we have not gone down the road of charging visitors to attend our meetings.

We had three bumper Charnia newsletters during the year, edited and produced by Andrew Swift, and our website, maintained by Dennis McVey, is still one of the best local geological society sites in the country.

As most of you know, the Parent Body is celebrating their 175th anniversary in 2010. As part of their celebrations they have put together an exhibition about the Lit and Phil which, after initial display in New Walk Museum from late March, will be touring the museums in the county over the forthcoming year. The Geology Section has had an input into this exhibition, and for this we are extremely grateful to Andrew Swift for undertaking to produce the Geology Section panel and liaising with the Parent Body and designers.

Finally, I would like to thank the Saturday Seminar organising committee (Joanne Norris, Andrew Swift, Mark Evans and Kay Hawkins, supported by Professor Andy Saunders from the Leicester University Geology Department) and reception committee (Fiona Barnaby, Margaret East and Dennis Gamble) for their hard work in organising this year’s event. My thanks also go to this year’s officers and committee for efficiently running the Section and overseeing its activities. Our Student Representative, Steven Briggs, founded a student Facebook group of Geology Section supporters, which we should ideally expand to the rest of the membership.

We have a few changes to the committee this year as Kay Hawkins is standing down as Publicity Officer, and Margaret East and Roy Clements, stalwarts of the committee for many years, are also standing down. Our special thanks go to Roy for his excellent work in running the Section over a number of years and to Margaret for organising refreshments at meetings over the past couple of years. We now welcome Gillian Graham into this role. I’d also like to welcome the new committee members, Prof Mike Petterson, Julie Harrald and Roger Latham.

Summer Programme 2009

Saturday 4th April.
Bardon Quarry Public Exhibition/Consultation Day.
Leader: Member of Bardon Quarry’s Project Team.

Saturday 9th May.
Clipsam Quarry.
Leaders: Andrew Swift (Digitimage, Leicester) and Professor Jim Rose (Royal Holloway, University of London).

Friday 5th - Sunday 7th June.
Weekend field excursion to Llangollen and the Cheshire Basin.
Leaders: Dr Hilary Davies (NW RIGS), Dr Jacqui Malpas (Denbighshire County Council) and Professor Cynthia Burek (University of Chester).
Saturday 11th July.
Kirtlington Quarry, Churchill, Headington Quarry and Magdalen Quarry, Oxfordshire.
Leader: Owen Green (University of Oxford).

Wednesday 29th July.
An evening visit to Tilton on the Hill Railway Cutting.
Leader: Andrew Swift (Digitimage, Leicester).

Saturday 8th August.
Bradley Fen, Peterborough.
Leader: Cliff Nicklin (Stamford Geological Society).

Saturday 5th September.
Whitman’s Hill Quarry, Storridge and Gullet Quarry, Malvern.
Leader: Margaret Rodway (volunteer for the Abberley and Malvern Hills Geopark).

Saturday 26th September.
Boon’s and Jee’s Quarries, Hartshill, Warwickshire.
Leaders: Martyn Bradley and Jon Crossling (Warwickshire Geological Conservation Group).

Winter Programme 2009-10
All talks were held at 7.30pm in Lecture Theatre 3, Ken Edwards Building, on the main University of Leicester campus, except where stated. Refreshments served from 7.00pm.

2009

Wednesday October 7th
Dr Lynden Cooper (Dept. of Archaeology, University of Leicester): Glimpses of the Palaeolithic in the Midlands.

Wednesday October 21st
Dr Liz Harper (Dept. of Earth Sciences, University of Cambridge): What can living brachiopods tell a palaeontologist?

Wednesday November 4th
Professor Mike Petterson (Dept. of Geology, University of Leicester): Rebuilding Afghanistan through Geoscience.

Wednesday November 18th
Professor Paul Wignall (School of Earth and Environment, University of Leeds): Permian extinctions.

Monday November 30th
Parent Body Lecture.
Professor Aubrey Manning (School of Biological Sciences, University of Edinburgh): Life and the Earth: interlocking histories. (New Walk Museum, Leicester).

Wednesday December 2nd
Professor Brian Windley (Dept of Geology, Leicester): West Greenland: Arches and crustal growth in the early Earth.

Wednesday December 16th
Christmas Meeting. (New Walk Museum, Leicester).

2010

Wednesday January 13th
Dr Jan Zalasiewicz (Dept. of Geology, University of Leicester): The Earth after us.

Wednesday January 27th
Professor Andrew Shepherd (School of Earth and Environment, Leeds University): Observing Earth’s ice sheets from space.

Wednesday February 10th
Dr Noel Worley (British Gypsum, East Leake): The genesis and evolution of sulphate evaporites in the Midlands. (LT2, Ken Edwards Building).

Wednesday February 24th
Members Evening. (New Walk Museum, Leicester).

Wednesday March 10th

Saturday March 13th
Annual Saturday Seminar.
The Earth’s crazy paving: a 21st century perspective on Plate Tectonics. (LT1, Ken Edwards Building, University of Leicester).

Wednesday March 24th
Annual General Meeting and Chairman’s Address.
Dr Joanne Norris (Halcrow Group Ltd., Peterborough): Managing our flood defences for the future.
Living through the plate tectonic revolution: how the Earth suddenly started to move.

Professor Joe Cann, School of Earth & Environment, University of Leeds

In one way or other we all know about plate tectonics – “a seismic shift in the tectonic plates of politics”. A simple version of plate tectonics is taught to ten year olds. The idea is used again and again in natural history programmes on television. News reports of earthquakes, tsunamis and volcanic eruptions refer to plate movements without hesitation. But that was not the case before 1960. Then the standard view of the Earth was that continents and oceans had been fixed in place since the earliest times. Sea had flooded the land and land had emerged from the sea repeatedly during hundreds of millions of years, but the size and shape of the deep oceans and the position of the continents relative to one another had not changed. So the transition from this earlier picture to the new one represented a radical shift in our understanding of the Earth – the “plate tectonic revolution” – and that transition not only provided a framework that unified many existing observations and concepts, but also had a great impact on the practical application of earth science to resources, hazards and the environment.

I will explore how the transition from older ideas to plate tectonics took place, from its beginnings in the work of Alfred Wegener in 1915 to its virtual completion in about 1976. How did the new ideas evolve? Why was the acceptance of them so slow? Why, even as late as 1967, was the earth science world divided into two opposing camps that apparently could not communicate with each other? I was a young scientist then and happened to be close to the action during that period of change, and could watch with interest (and often amazement) as the rest of the world struggled to come to terms with the new ideas. During that time all earth scientists had access to the same information all of the time, and yet some realised the implications early, while others, equally distinguished as scientists, took decades to understand the implications of this momentous change in the way that we see the Earth. It is a very intriguing story.

‘When did Plate Tectonics begin?’

Professor Hugh Rollinson, Geographical, Earth and Environmental Sciences, University of Derby

The Plate Tectonic Paradigm has been the principal model for understanding the solid Earth for over forty years. However, although the model is hugely successful there is still great uncertainty as to when the plate tectonic process began. Recent studies have highlighted this difficulty by proposing two very different start times for plate tectonics. One model argues that plate tectonic processes took over from an earlier (unspecified) tectonic regime in a hotter, younger Earth at 1.0 Ga, whereas the other proposes a much earlier start at 4.4-4.5 Ga, and within a 100
Ma of planetary accretion. This talk will review the evidence for the early and late start hypotheses and will argue for a middle position in which plate tectonic processes began during the Archaean before 2.5 Ga. Central to the argument is evidence for the origin and evolution of the Continental crust and how and when the continental crust formed.

Reference.

Rollinson HR (2007) When did plate tectonics begin?. Geology Today, 23, 186-191

Figure Captions: 3.7-3.8 Ga pillow lavas and banded iron formation from Isua in west Greenland.

The secret life of faults: new observations across the spectrum of fault phenomena

Dr Isabelle Ryder, Department of Earth and Ocean Sciences, University of Liverpool

In recent years, a variety of geophysical data from tectonically active areas have brought to light many different, but related, fault phenomena which were previously not recognised. Besides the familiar earthquakes which give rise to seismic waves and ground shaking, there are for example “slow” or “silent” earthquakes, continuous/transient/episodic creep, and non-volcanic tremor. The latter has been shown to be extremely sensitive to stress changes from both distant earthquakes and earth tides, and also to correlate in space and time with episodes of aseismic slip. Collectively, the processes which make up this spectrum of fault activity are of interest not only for the insights they give into the fundamental mechanics of individual fault zones, but also because they offer tantalising glimpses of how faults interact, sometimes over very large distances. The drilling operations currently being carried out/planned in several faults zones around the world are fast becoming iconic, summing up scientists’ refusal to be defeated by the fact that faults essentially exist beneath the surface. While a detailed understanding of fault dynamics is likely still some way off, recent advances are certainly providing many more pieces of a jigsaw which may, ultimately, result in another (smaller) revolution in tectonics.

Mountain building in continental interiors: lessons from Central Asia

Dr Dickson Cunningham, Department of Geology, University of Leicester

The Indo-Eurasia collisional deformation field provides Earth’s best modern example of how a continental interior region deforms in response to a distant continental collision – a topic relevant to understanding the tectonic history of all continents. Active faulting and mountain building occurs within a vast intraplate region in central Asia that is larger than all of Europe. Although the immediate effects of the collision including the development of the Himalayas and uplift of Tibet are well studied and widely publicised, the more distant effects including the uplift of remote ranges in north-western China, and Mongolia are less well known to the earth science community. These intraplate and intracontinental orogens are also poorly explained by classical plate tectonic theory that suggests that significant mountain building is a plate margin process. In this presentation, I will review what we have learned about the active deformation north of
Tibet specifically focusing on fault systems, crustal preconditions and mountain building processes that have led to construction and ongoing deformation in the Gobi Altai, eastern Tien Shan and Beishan mountains.

The modern Gobi Altai, easternmost Tien Shan and Beishan can be classified as intracontinental transpressional orogens - a unique class of orogen characterised by oblique deformation in an intraplate setting. These belts occur along the perimeter of the Indo-Eurasia deformation field and between rigid cratonic blocks within central Asia. Late Cenozoic mountain building is fundamentally controlled by the location and orientation of craton boundaries, prevailing structural grain, inherited fault architecture, direction of maximum horizontal stress (SHmax), fault kinematics and slip rates, and erosion rates. Because the ranges form in a continental interior setting, they lack the typical architecture of a telescoped continental margin (e.g. Himalayas), contracted arc and/or back arc (e.g. Andes) shortened accretionary wedge (e.g. Makran), or inverted rift (e.g. Pyrenees). Instead, an intracontinental transpressional orogen is characterised by a basin and range topography containing a diffuse network of linked thrusts and strike-slip faults that generate pure thrust ridges, restraining bends, and other transpressional ridges, many of which are flower structures in cross-section. As the shortening component of deformation increases, parallel flower structures may grow, overlap and coalesce, thus obscuring their individual origins as uplifts that nucleated along a strike-slip fault bend or stepover. In addition, intermontane basins may close by inversion and/or overthrusting from one side or both sides (half-ramp and full-ramp basins). Isolated high massifs may nucleate along major strike-slip systems anywhere within the orogen, thus there is no simple topographic gradient from a low foreland to a higher orogenic hinterland as is typical in purely contractional orogens. Intracontinental transpressional orogens typically lack consistent structural vergence and bilateral thrusting within individual ranges is common. Because range bounding thrusts are observed to link with strike-slip faults that enter the range along strike, it is likely that the root structures for many thrusts are steep-vertical strike-slip faults and not shallow-dipping basal decollements; i.e. there is no regional thrust wedge architecture. Intracontinental transpressional orogens contain similar orogenic and basinal elements to transpressional continental transform boundaries except that they lack a single major fault system (e.g., San Andreas, N. Anatolian Fault) and instead of transferring interplate motion to another plate boundary, they are dead-end zones where intraplate strain is terminally accommodated. It is likely that more ancient Palaeozoic and Precambrian continental collisions also produced oblique deformation belts in rheologically weak regions within or around the perimeter of the deformation field of the indented continent. However, because intracontinental oblique deformation belts generally contain lower mountains, shallower clastic basins, and very little magmatism or metamorphism compared to frontal collision belts, their geological expression is less likely to be preserved in the rock record.

Mountains and shields on the continents

Professor James Jackson, Department of Earth Sciences, Bullard Laboratories, University of Cambridge

The great debates on Continental Drift which dominated the first half of the 20th century were, in the end, resolved by looking at the oceans. The behaviour we now know as Plate Tectonics is the dominant characteristic of the Earth, and describes the motions and evolution of the ocean basins with great simplicity and elegance. But it has never been much help in describing the deformation on continents, where mountains and rift valleys spread out over vast areas, and the whole notion of a plate boundary is meaningless in many places. We need, and now have, other ways of observing and describing what happens where continents collide or rift apart, in which the language of continuum mechanics (or, crudely, ‘flow’) is often more appropriate than that of rigid plates.

But even within the continents, contrasts between the ancient Precambrian shields and the young mountain belts are responsible for some of the most obvious variations in the land surface and geological history. The interiors of many continents are flat, relatively featureless areas (‘shields’) that have remained stable for billions of years. Yet when one of these shields, such as India, collides with another younger
continent, such as Asia, it is the younger area that is damaged while the older shield that is relatively unaffected. After the India-Asia collision, India is substantially intact, while earthquakes and mountains extend at least 3,000 km north of its borders, into Tibet, China and Mongolia.

What is responsible for such obvious contrasts in strength on the continents? Over the past few years we have made considerable progress in answering this question. The principal new insights are:

1) Strength in continents resides mostly in the crust, rather than in the mantle. Earthquakes in younger continental areas are usually confined to the top half of the crust, where temperatures are less than about 350°C. But in the shields earthquakes can occur throughout the crust, to temperatures of up to 600°C, and the probable reason for this is that the lower crust in such shields is anhydrous. The lack of earthquakes in the continental mantle is because it is generally hotter than 600°C, which is the temperature at which they cease to occur in the oceans.

2) This strength contrast is seen also in the way continents bend to support mountains. Just as a thick plank bends on a broader curve than a thin plank, India bends to form the broad Ganges basin in front of the Himalayas, compared to the narrower, more localized bending of the Persian Gulf to support the mountains of SW Iran.

3) The mantle does not need to be strong to support mountains. Mountains are held up by the strong crust beneath their adjacent forelands, and the only way they could collapse is by flowing over the forelands, as honey flows over a glass plate. This type of flow, known as a gravity current, is responsible for the shape of mountain fronts such as the Himalaya that are adjacent to strong shields.

4) Recent advances in seismology have allowed us to see that under many of the ancient continental shields the lithosphere (or ‘plate’) reaches extreme thicknesses of 250 km or more (compared to about 105 km in the oceans). For the first time, we can make maps of these thickness variations, which give many insights into the geological history of the continents.

Figure: India-Asia earthquakes
5) The thick mantle lithosphere of many shields must be buoyant to prevent it delaminating and falling back into the Earth’s interior. The reduction in density was caused by melting during its early history, and occurred prior to its subsequent thickening during continental collision.

6) But the thickening of the lithosphere during collision also thickened the crust, to such an extent that the internal heat generated by radioactivity can cause it to melt. During such melting, granites form and separate into the upper crust, leaving behind a completely dry residue (‘granulite’) that is extremely strong when it cools. This process is, we think, happening today in Tibet.

7) Once the buoyant mantle lithosphere and the strong lower crust are formed, they cannot easily be changed: they are responsible for the stability and survival of the ancient shields over geological time.

The link between mantle convection, plate motion and oceanic circulation in the North Atlantic and the onset of the Northern Hemisphere Glaciation

Dr Stephen Jones, Department of Geography, Earth & Environmental Sciences, University of Birmingham

Opening and closing of oceanic gateways between continents can influence global climate. For example, when the Antarctic circum-polar current became established following separation of Antarctica from South America and Australia, the Antarctic ice sheet grew rapidly because the continent was isolated from the influence of warm tropical waters. This talk will look at how a gateway in the North Atlantic ocean near Iceland has affected oceanic circulation. Evolution of the Icelandic gateway influenced the onset of the Northern Hemisphere Glaciation and possibly other periods of global climate change.

At the head of the North Atlantic, between Norway and Greenland, lies an important hub in the global oceanic circulation system. Here, warm Gulf Stream water that has flowed north near the ocean surface cools, sinks and returns southward along the seabed. This Atlantic circulation system carries warmth from the tropics to the Arctic, and changes in the circulation system can change the temperature gradient between the equator and the North Pole. The position of the circulation hub near Iceland and the strength of the circulation are both affected by the Greenland-Scotland Ridge, a shallow sill straddling Iceland where the sea floor rises to a depth of only several hundred metres.

The elevation of the Greenland-Scotland Ridge has fluctuated over the past 60 million years in response to three controls. First, the ridge is a hotspot track, built from the large volumes of magma formed when unusually hot mantle within the Iceland Mantle Plume rises up beneath the Mid Atlantic Ridge plate spreading axis. Secondly, like all young oceanic plates, the Greenland-Scotland Ridge subsides gradually as it spreads away from the mid-ocean ridge. Finally, the temperature of the Iceland Mantle Plume has fluctuated over time. The consequent waxing and waning of mantle convective support of the Greenland-Scotland Ridge has, from time to time, restricted or even cut off the connection between the main Atlantic and the ocean basin to the north. Oceanic crust south of Iceland preserves an excellent record of these mantle temperature fluctuations in the form of topographic features known as V-Shaped Ridges. Recent research cruises have clarified the long-held notion that V-Shaped Ridges are generated as pulses of hotter and cooler mantle flow outward from Iceland beneath the plates.

The Northern Hemisphere Glaciation began during the Pliocene (c. 3 million years ago). The preceding period was the most recent period in Earth’s history in which global average temperatures were similar to those projected for the end of this century; however, state-of-the-art global climate models have great difficulty in reproducing the Pliocene warm period. The new data from the North Atlantic V-Shaped Ridges indicate that the most recent patch of cool mantle within the head of the Iceland Mantle Plume was positioned beneath the Greenland-Scotland Ridge lock-gate during the Pliocene. With cooler mantle beneath, the lock-gate would have been relatively low and allowed the strong Atlantic oceanic circulation that kept the high latitudes warm. As the cool mantle moved towards its present...
position, the lock-gate rose, oceanic circulation was inhibited and the Arctic ice expanded. It seems likely that the global climate models cannot reproduce pre-Northern Hemisphere Glaciation conditions because they do not yet correctly represent the Icelandic oceanic gateway.

**Plate tectonics and the changing patterns of life in the marine realm**

**Dr Alan Owen, Department of Geographical & Earth Sciences, University of Glasgow**

Plate tectonics has had a profound influence on the distribution and diversity of life on Earth. The changing positions of the continents and the opening and closing histories of oceans variously provide habitats for organisms, routes for their dispersal, barriers to their migration and influences on the climate in which they live. A wide range of techniques has been developed for the analysis of the palaeogeographical distribution of organisms and how they have changed through geological time. In recent years, these include the increasing use of Geographical Information Systems, which also provide a link into computerized palaeogeographical packages.

In the marine realm, the biogeographical differentiation of organisms can be recognised back at least to the Cambrian and in conjunction with palaeomagnetism and other techniques, it has become a powerful tool in palaeogeographical reconstruction. There is also a strong correlation between biodiversity and the supercontinent cycle. Thus the two major radiations of marine life during the Phanerozoic can be correlated to the break-up of the supercontinents of Rodinia during the latest Proterozoic and early Palaeozoic, and of Pangaea in the Mesozoic leading to the creation of more numerous and increasingly widely separated continents and other crustal blocks, new oceans and more opportunities for speciation in isolated populations.

Many other aspects of plate tectonics have an influence on marine life, from the production of inorganic nutrients to changes in oceanic circulation patterns that affect both climate and the distribution pathways of organisms. Islands generated by a variety of plate tectonic processes have been described as acting as: stepping stones (for migration), cradles (where new animal or plant taxa originate), museums (refugia for taxa extinct elsewhere), Noah’s Arcs (carrying taxa away from the part of the world where they originated) and Viking Burial Ships (bearing fossil taxa of very different origins from those where the island may eventually collide). Islands that are not lost through subduction eventually become accreted to continental margins and incorporated in orogenic belts. Fossil faunas and floras can play an important role in unravelling the complex origins and histories of such terranes.

The evolution and distribution patterns of Phanerozoic marine life are strongly linked to the plate tectonic history of our planet. The details of those links are emerging and continue to form an important focus of investigation of the Earth System.
CLIMATE CHANGE LESSONS FROM A WARM WORLD: 51st Bennett Lecture, University of Leicester

Dr Harry J. Dowsett

US Geological Survey, Eastern Geology and Paleoclimate Science Center, Reston, Virginia, USA

The 51st Annual Bennett Lecture
Delivered in the Bennett Lecture Theatre 1 on 1st March 2010

In the early 1970’s to early 1980’s Soviet climatologists were making comparisons to past intervals of warmth in the geologic record and suggesting that these intervals could be possible analogs for 21st century “greenhouse” conditions. Some saw regional warming as a benefit to the Soviet Union and made comments along the lines of “Set fire to the coal mines!” These sentiments were alarming to some, and the United States Geological Survey (USGS) leadership thought they could provide a more quantitative analysis of the data the Soviets were using for the most recent of these warm intervals, the Early Pliocene.

Because National Aeronautics and Space Administration (NASA) researchers at the Goddard Institute for Space Studies (GISS) had experience modelling last glacial maximum conditions based upon the classic Climate Long Range Investigation and Mapping (CLIMAP) work, NASA and USGS began an informal collaboration, which by 1988 was named the USGS Plioocene Research, Interpretation and Synoptic Mapping (PRISM) Project.

For two decades PRISM has focused international research on a relatively narrow stratigraphic interval within the mid-Piacenzian Age of the Pliocene Epoch (Figure 1) and has created a comprehensive reconstruction of the palaeoenvironment from that time. PRISM researchers from the United States, United Kingdom, Canada, Germany, Japan and many other nations, have applied established methods and developed new techniques to quantitatively reconstruct sea surface temperature, land surface cover, sea ice extent, global ice volume, sea level and topography from the Pliocene (Figure 2). Recently PRISM extended the latest reconstruction to the deep ocean in a first attempt at understanding deep ocean circulation and three-dimensional ocean temperature (Figure 2). What started with one model group advising USGS on what was needed by the numerical modelling community has grown into an international consortium of modelling groups (Pliocene Model Intercomparison Project; PlioMIP) from 15 countries running parallel experiments based upon the PRISM reconstruction (see Chandler et al., 2008; Haywood et al., 2010). The shared goal of PRISM and PlioMIP is to better understand the dynamics of the closest, albeit imperfect, analogue we have for future climate conditions and to improve numerical model performance, thereby improving future climate projections.

Why the Pliocene?

The mid-Piacenzian warm period (MPWP) of the Pliocene Epoch, approximately 3.3 to 3.0 Ma, is the most recent period in Earth’s history exhibiting sustained global warming analogous to that projected for the end of this century (Dowsett, 2007). Certainly, there are significantly warmer intervals further back in geologic time, but our ability to accurately reconstruct these environments is diminished. During the MPWP continents and ocean basins were in the same positions as they are now. The Isthmus of Panama was effectively above sea level by this time. Fauna and flora were for the most part the same as today. These similarities to the present make the MPWP a good target for numerical modelling experiments. So why is the MPWP an “imperfect” analogue? First, the present day Earth has a strong postglacial overprint. Features like the Great Lakes in North America were not present in the Pliocene. Also, some taxa have evolved since the MPWP, and
others have become extinct. This complicates analogue-type reconstructions. In addition, sea level was 25m higher during the MPWP than today. Back of the envelope calculations quickly reveal that sea levels of that magnitude must have required removal of significant amounts of global ice volume. Our latest estimates show that the Greenland ice sheet was possibly half the size it is today (Hill et al., 2007). Even if all other northern hemisphere ice and the entire West Antarctic Ice Sheet were removed, it is clear that a significant reduction in the size and volume of the East Antarctic Ice Sheet must have occurred. Thus, these features of a past interval of global warming which enhance our conceptual understanding make boundary conditions somewhat different than those of today and complicate numerical modeling.

What was the MPWP like?

Ocean temperature and circulation. Multi-proxy analysis of sea surface temperature (SST) from more than 100 MPWP marine time series reveals a surface ocean similar to present day at low latitudes yet increasingly warmer than today toward the poles. In parts of the North Atlantic and Arctic Ocean, SST was 18°C warmer than present day (Robinson, 2009). Upwelling zones delivered warmer nutrient-rich water to the surface during the mid-Piacenzian. Surface circulation features were basically the same as today but more effectively transported heat from the equator toward the poles.

Deep water formation in the North Atlantic was shifted further north, and warmer and higher salinity surface conditions created warmer northern component deep water (NCW). NCW made its way further south than present day North Atlantic Deep Water, and the production of Antarctic Bottom Water appears to have been reduced, resulting in diminished penetration into the Northern Hemisphere (Dowsett et al., 2009b).

Sea Ice. We know that the aerial distribution of MPWP southern hemisphere sea ice was more restricted than it is today. We also know that the Antarctic circumpolar front was closer to the continent and that zonal warming was seen throughout the Southern Ocean (Barron, 1996; Dowsett et al., 1996).

Sea ice is more difficult to constrain in the Northern Hemisphere, yet the latest PRISM multi-proxy (faunal, Mg/Ca and biomarker) temperature estimates from within the Arctic circle suggest conditions too warm to support sea ice (Robinson, 2009; Dowsett et al., 2009a,b). The Arctic, like the Antarctic, was at least seasonally ice-free. Palaeobotanical evidence (Ballantyne et al., 2010) is now available that supports the extreme warmth seen in the deep-sea cores near Svalbard, Norway (Robinson, 2009).

Vegetation and Land Cover. Plants, like marine organisms, were in many ways similar to present day. Modern distributions were shifted toward the poles (Thompson and Fleming, 1996; Dowsett et al., 1994; Salzmann et al., 2008). There were forests growing on the shores of the Arctic Ocean. The tundra biome was almost non-existent during the MPWP. Aerial distribution of major present-day desert regions was greatly reduced during the MPWP. Some locations in the Arctic have been estimated to have been almost 18°C warmer during the MPWP than today (Ballantyne et al., 2010). This is surprisingly close to the pulses of warm water entering the Arctic from the North Atlantic that have been independently estimated to be 18°C warmer than today (Robinson, 2009).

Sea Level. Sea level is a critical component of any palaeoclimate reconstruction because it is closely tied to global ice volume and the distribution of land and sea. Sea level estimates for the MPWP range from 15m to 60m above present day (e.g., Haq et al., 1987; Dowsett and Cronin, 1990; Wardlaw and Quinn, 1991; Brigham-Grette and Carter, 1992; Naish and Wilson, 2009; Dwyer and Chandler, 2009). As an example, the Orangeburg Scarp from the southeastern US Coastal Plain provides a tangible shoreline that is 35±17m above present day sea level (Dowsett and Cronin, 1990). The large error bars stem from averaging mean and maximum uplift rates for this portion of the coast. The presently accepted sea level for the mid-Piacenzian, based on the rough agreement of stratigraphic and geochemical evidence from the above cited studies, is 25m above present day. MPWP ice sheets developed using the British Antarctic Survey Ice Sheet Model (BASISM) are tuned to a 25m sea level rise (Hill et al., 2007).
How are these data used?

PRISM reconstructions are used by numerical climate modellers to gain a better understanding of the climate system, in both the past and the future (Chandler et al., 1994; Sloan et al., 1996; Haywood and Valdes, 2004; Dowsett et al., 2009b; Haywood et al., 2009). The significance of the MPWP to future climate is that it gives us an analogue to future conditions, albeit imperfect that can be used in numerical model experiments to hind-cast palaeoclimate conditions. The thinking is that if a model accurately retrodicts climates of the past, we can place greater confidence in the ability of that same model to predict the future.

Future warming projected by the Intergovernmental Panel on Climate Change (IPCC) (Jansen et al., 2007) poses large socioeconomic impacts to the world community. The ability to plan for future climate change is a global priority. The PRISM Project has the ultimate goal of improving our understanding of past potential analogs to future climate and reducing uncertainties associated with model projections. While the present is a key to the past, the past is our key to the future.

Figure 1. Pliocene magnetobiostratigraphic framework after Berggren et al. (1995). Gray band approximates the PRISM time slab. Benthic $\delta^{18}O$ record from Lisiecki and Raymo (2005). Position of PRISM time slab relative to geomagnetic polarity, planktic foraminiferal zones, calcareous nannofossil zones and orbital geometry (Berggren 1973, 1977; Berggren et al., 1995; Martini, 1971). Note low-amplitude obliquity cycles throughout the mid-Piacenzian with precessional cycles that build in amplitude from the earlier to later part of the PRISM time slab. Eccentricity is shown by dashed line tracing upper limit of precession (Dowsett et al., 2005). Epoch column represents recent potential changes to the placement of the Pliocene-Pleistocene boundary at the bottom rather than top of the Gelasian. Figure modified from Dowsett et al. (2005) and Dowsett and Robinson (2006).
References cited:


This year’s two committee meetings have been reasonably well attended, though there are vacancies for new committee members. The summer programme was devised by a sub-committee of Doreen Thompson and Sue Walton. Despite a good variety of venues, attendance was down on previous years with only an average of nine members attending. As of the AGM when Sue Walton stands down as secretary and also from the summer programme committee, there will only be Doreen Thompson to plan the meetings for summer visits, so help is urgently needed if the summer programme is to continue! Thanks are due to Jan Dawson for her programme of winter lectures, all given by very interesting speakers and all well attended. Thanks also to Doreen for her work as Minutes Secretary, and to Ann Pinnock and Sue Walton for providing the coffee at indoor meetings. We also thank Peter Thompson for his work as treasurer and Parent Body representative.

Members should soon receive a list of books available to borrow from the Library which will be run by Ann Pinnock. It is hoped they will support this new venture for the group.

There is still a vacancy for someone to provide weather reports for the newsletter and any member interested in undertaking this was asked to let Maggie Frankum know. Any member knowing of interesting articles or pictures was asked to send them to Maggie Frankum for the newsletter. Alan Bevington was thanked for his work on the web site and Jean Cooper for providing the splendid buffet following the AGM. Indoor Meetings continue to be held in the Lord Mayor’s Room which suits the needs of most members and speakers.
Winter meetings were held at fortnightly intervals to hear the following speakers. The average attendance was 36.

January 7th
Travelling for Wildlife: a year in photographs
John Tinning

January 21st
The Mustelids
Val Williams

February 4th
The Status of Crickets and Grasshoppers
In Leicestershire and Rutland
Phil Rudkin

February 18th
From Cameroon to Kew
Marion Vincent

March 4th
Animal Camouflag
Michael Webster

March 18th
Butterflies of South Leicestershire
Geoff Adams

March 23rd
Joint meeting with the Parent Body
Alfred Russell Wallace and the Birds of Paradise.
Sir David Attenborough

March 19th
A.G.M. Quiz and Social Evening

The Summer Programme of outdoor field meetings was as follows:

April 25th
Kelham Bridge
Bas Forgham

May 9th
Cromford Canal
John Tinning

May 30th
Cloud Wood
Ivan Pedley

June 13th
Brown’s Hill Quarry
Ralph Johnson

June 27th
Willesley Wood
Ian Retson

July 11th
Wicken Fen

July 29th
Beacon Hill
Ivan Pedley

August 15th
Brentingby Meadows Farm
Julia Hawsley

September 9th
Welford Road Cemetery
Adrian Russell
Jan Dawson

October 11th
Sheepy Wood fungus foray
Joint Meeting with the L.L.S.G.
Richard Iliffe

Winter Meetings began again on October 14th with a Members’ Slide and Exhibition Evening, followed by

October 28th
The Return of the Red Kite
Dr Chris Andre

November 11th
Sowter Memorial Lecture
The Naturalist and History
Dr Tony Fletcher

November 25th
Wildlife of the Eye Brook Valley
Dr Chris Stoate

December 9th
Bats of the World
Jenny Harris
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