

## 13 LIFE AS A FIELD GEOLOGIST

The formative reason behind my decision to study geology at university was my determination to go for a career as far as possible in the open air, a determination nurtured by natural history interests during my later school years and reinforced by my army experience of an office lifestyle.

When the war was effectively won and demobilisation on the horizon, I started engaging in correspondence to check on the available options. I ascertained that one was to join my old mentor, Professor King, at Cambridge as a post graduate student, and Prof King went so far as to sponsor my acceptance both by the university and by my brother Richard's college, Peterhouse. However, in parallel with these quite complex negotiations at a distance, the possibility had arisen of entering directly into GSGB (the Geological Survey of Great Britain).

This came about because by coincidence Kingsley Dunham, a petrologist with GSGB, happened to live in Welwyn Garden City and attend the same Free Church as that in which my Mother was an Elder, and in fact I believe he was himself an Elder. Dunham was at that time effectively No 2 out of two in the GSGB Petrology Dept, although he was later to be appointed Chief Petrologist. My Mother put us in touch and I received a letter from him as early as 14 February 1945, outlining the position concerning possible employment in the Survey and the contemporary salary scales. A geologist aged 25 would start at £350 per annum, rising by increments of £25 pa to £650, after which there was a promotion bar to Senior Geologist, rising to £850 pa, although these scales were likely to be increased. Not only would GSGB be recruiting, but with my qualifications I would stand a good chance of an appointment subject to attending an Appointments Board on my return to the UK.

It was necessary to leave both options open until I was back home. The GSGB option was not a certainty, and moreover I was undecided as to which route to take. The Cambridge route was firmly agreed both by the university and by Peterhouse, and attracted me greatly, grants would have been available, my qualifications would have been added to, and I have always been keen on study and a civilised environment. On the other hand the GSGB lifestyle was exactly what I was looking for, and it became clear that possession of a post-graduate qualification would be irrelevant to a Survey career.

On the 7th August 1946 I departed from Addis Ababa en route for the UK. In the family discussions which followed my return I allowed myself to be influenced by the view of my Father that as a married man aged 26 it was about time I started earning an honest living. It was a parting of the ways though, and the decision was close run. However in late October - during my demobilisation leave - I was offered and accepted an appointment as Temporary Geologist in GSGB. As I was not finally discharged from the army until 12th December 1946, for a few weeks I luxuriated in two salaries which together brought my total annual rate of pay to around £1,000, no less. I found this a matter of some satisfaction.

During the war itself there had been a halt both on recruitment to GSGB and on regular field mapping. Pre-war staff who remained in post had been employed on such activities as prospecting for raw materials, but after the end of hostilities field

mapping was recommenced and a start was made on fresh recruitment. GSGB was part of DSIR (the Department of Scientific and Industrial Research) and all staff were at that time civil servants. Initial post-war appointments were classed as temporary because they were made directly by GSGB without the involvement of the normal heavy-weight Civil Service Appointments Board.

The Appointments Board I attended took place on one of the lower levels of the GSGB office - I believe on the ground floor - behind the Geological Museum in South Kensington. I and one or two others awaited our turn for interview seated on chairs in the corridor outside. One of the more articulate members of the Board was Jimmy Phemister, a very Scottish Scot and AD Special Services at the time. I attended in uniform, and another candidate was HE Wilson - Major Wilson - also in uniform. As far as I was concerned it was all very military - 'sir, this' and 'sir, that'. I wonder what the Board made of it? I later found that the word 'sir' was virtually unknown in GSGB professional circles - I was early informed that the correct professional procedure was to use surnames irrespective of status.

Each interviewee was allocated points and about six appointments were made. I later found I was listed as No 2, No 1 on the list being Major Wilson. Major Wilson did not, however, take up the offered post, preferring to accept an academic appointment instead. In 1975, nearly 30 years later, when as Assistant Director Scotland and Northern Ireland I was visiting Harry Wilson, District Geologist of my Northern Ireland Unit, I discovered that Harry Wilson and Major HE Wilson were one and the same person. He had changed his mind and joined GSGB a couple of years after me, but our paths had not crossed because he had been buried far away - first in Edinburgh, then in the Northern Ireland office.

### **Yorkshire and East Midlands Unit**

I joined on 23 October 1946, at about the same time as William Bullerwell. We were both allocated to Room V9, the so-called Cumberland Room, a six-man room in which George Mitchell, JV Stevens and Ian Stephenson were already installed. Bullerwell was a geophysicist, effectively GSGB's first, and soon moved elsewhere in the building, working to Jimmy Phemister, who had already made a modest start in pre-war years with some gravity surveys. As neither of us had any field data to be organised during that first winter, however, Tom Eastwood, Assistant Director England and Wales, gave Bullerwell and myself the task of analysing all available deep borehole records to compile a map of the Palaeozoic platform below south east England. I believe it to have been the first such map.

In early 1947 I was destined to join the field staff of the Yorkshire and East Midlands Unit, under Victor Eyles as District Geologist. I was to remain at the same desk in the Cumberland Room from 1946 to the end of 1959, when I was transferred to Edinburgh.

In the spring of 1947 I was sent into the field to map Permo-Triassic deposits on the East Retford sheet. I was accompanied by Lucette and my initial mode of transport was a bicycle, soon to be replaced by a clapped out army motor cycle belonging to the Survey, which I had to ride around with L-plates because I had consciously not obtained the necessary army certificate which would have exempted me from a test - I

had at times ridden a motorcycle in the army, but had never intended to do so in civilian life.

We obtained digs with Miss Rowley at “The Poplars” in Hayton, a village near Retford. She was a doughty local lady who developed a maternally protective attitude to Lucette, still struggling to come to terms with the English language. Miss Rowley’s method of making herself understood to the non-English was to raise her voice.

Victor Eyles himself carried out some mapping on the East Retford sheet, and my field training comprised a few hours during which Lucette and I were taken around by him in his car. I distinguished myself by losing a map which fell out when I opened the car door. The mapping methods of Eyles were basic in the extreme in an area where there is in any case the greatest of difficulty for a competent geologist to distinguish between solid Permo-Triassic sandstone and drift derived from the same. The principal characteristic of Eyles was, however, that he was a perfect gentleman.

After a few weeks of grappling with this situation using the somewhat limited geological knowledge I retained from my university days five years before (which did not include any field mapping), I was moved to the Coal Measures of the Chesterfield sheet. Here there was at least something visibly mappable to map, but this time my field training was simply what I could glean in half a day out with Ron Goossens, another Temporary Geologist who had joined straight from university a few months before myself and was working on the adjoining Sheffield sheet. Eyles made no pretence of knowing anything whatever about the Carboniferous System although he did once accompany me in the field, but Goossens was at least able to demonstrate to me the basic Carboniferous rock types, including pointing out the characteristics of seatearths. Before I started Carboniferous mapping, though, my knowledge of the System comprised half a page of not-very useful university notes. I had only myself to blame for this problem, in that Professor King had warned me that some sort of revision course would be desirable before starting work as a professional geologist after five years in the army – advice which I had elected to ignore.

My saviour in this difficult situation was, however, a geologist called Wedd, who had carried out much of the previous geological survey of my area in pre-World War I days, which survey we were now in process of revision. Wedd had been a meticulous worker, and I had his original field maps with me. It was a matter of revisiting the ground, trying to see what Wedd had recorded, and attempting to improve on it by use of any new data plus a review of his interpretations. Wedd’s District Geologist (later Assistant Director) had been a gentleman called Walcot Gibson, who had also carried out some of the mapping but in his case in a distinctly skimpy fashion. I was thus able to use the observation techniques I learnt from Wedd to prepare presentable maps of the Walcot Gibson areas. I found myself in something akin to a time-warp, daily communing with the spirits of these two gentlemen, particularly Wedd, whom I came to regard as my mentor.

It was a wonderful life and just what I had hoped for when I switched to studying geology in my second year at university. Once allocated an area we had almost complete freedom to tackle it as we wished and at our own pace. We experienced the flowers and seasons and wildlife of spring, summer and autumn, mostly working in

deepest rural Derbyshire in the idyllic days before the appalling disaster which was agrochemicals. The spreads of bluebells and ransoms, and banks of primroses, were an annual delight. I also mapped the urban areas of Chesterfield and most of Sheffield, often making my notes standing astride my motorbike, but in Sheffield making extensive use of the trams still running at that time. Later I extended westwards into the gritstone and limestone country of the High Peak and eastwards to have another go at the really quite difficult Triassic rocks of the East Retford sheet.

In the autumn, about mid-November, when the frosts and fog became too much of a problem, we migrated back to Welwyn Garden City, from where I travelled daily to the Geological Survey office at South Kensington. There the field data was worked up into 'Standards' (abstracts and final interpretations derived from the field maps) and published memoirs. Each field geologist was responsible for neat preparation, colouring and signing of his own standards. In my initial years these were 6-inch County Sheets, but then we started the long and painful process of switching to National Grid 1:10,000 sheets. During some lunch breaks I took the opportunity to swot up on Carboniferous fossils in the collections on the top floor of the Museum.

This, too, was a pleasant life. It involved me in a total of about three hours travelling per day, a bit tiring sometimes, but I used the time for uninterrupted reading and writing - a mixture of official and private papers and books. The journey consisted of a run to the station at Welwyn Garden City (inevitably) to just catch the train, travel to Kings Cross, then by Piccadilly Line from Kings Cross to South Kensington (which at that time cost four old pence). The Sheffield memoir was largely written in the train, and I read several Victor Hugo novels in French. Several of my favourite French quotations date from reading at this period.

Importantly, in the office I was surrounded by people educated to a level with which I was at ease - a real luxury after the army. Life was relaxed. We had extended coffee breaks with the six inhabitants of the Cumberland Room, and for lunch sandwiches with poker in the London Room on Level 4 became the norm. In the early days, though, we were introduced by Mitchell and Stevens to the good cheap lunches which it was then still possible to obtain at local British Restaurants, set up by the government as a wartime measure..

London was on our doorstep and nobody was checking the length of our lunch breaks. I often got to the Victoria and Albert Museum, Harrods, and sometimes to the West End. At one stage when meat was still rationed Ian Stevenson and I had the habit of making periodical forays to Soho for lunches comprising horsemeat steaks with chips, horsemeat not being rationed

It was accepted practice to leave the office early on the Wednesdays when the Geological Society was meeting in Burlington House, and attendance at these sessions greatly extended my geological horizons. One notable occasion was the meeting at which Oakley produced proof that Piltdown Man was a forgery. An elderly and rather pathetic member of the audience, who strongly dissented from his proof, wished to carry out a chemical demonstration to make his point. In the course of a heated altercation he was refused permission by the Geol Soc President, who that year happened to be my old professor - Prof King. I felt a sense of acute embarrassment at

the dissenter's discomfiture, especially as he was clearly in a minority of one in his fervently held views.

For much of my time in the Cumberland Room the fixtures were two experienced geologists - George Mitchell at the eastern desk and JV Stevens at the desk facing him. They had been there during the war, and one of their capabilities was to climb out of the north-eastern window onto the flat roof above - they had practiced this hair raising exercise as part of their fire watching duties, no doubt encouraged by Sir Edward Bailey, GSGB Director during the war and in charge of the local Home Guard. A number of Bailey's recorded actions suggest he was more than something of an oddball - to put it mildly - but fortunately when I joined he had been replaced by McLintock. Bailey was still around in my early days. It was noted that he always used the stairs to climb from the basement to the Drawing Office on the 5<sup>th</sup> level - "When I use the lift", he said, "I will be ready to die."

There were three facing pairs of desks in the Cumberland Room, which after our departure was in fact divided into three commodious double rooms. The eastern of the central desks was occupied by Ian Stevenson. I occupied the same position in the western pair. Other desks were used by a succession of post-war geologists, including Donald Duff, Glyn Rhys, Geoffrey Gaunt, Ron Goossens, Bob Hoare, David Greig and Gordon Smith.

Goossens and Stevenson had joined before me and straight from university, like myself as Temporary Geologists. Conscription to the army was still in force, but by joining GSGB these two managed to avoid any military service. When the time came for the Permanent Appointment Board, Stevenson and I were successful but Goossens was not. Goossens was given a second chance, which he also failed. There was nothing geologically wrong with Goossens, as he proved by later becoming Chief Geologist of the National Coal Board. He had, however, a distinct Yorkshire accent. I was taken aside before his second interview and told to suggest to him that he try to do something to improve his image. My ensuing suggestion to him, made slightly diffidently I must admit, apparently did not produce the required improvement.

My second winter with GSGB, that of 1947-48 was notably cold. The temperature remained below freezing day and night for several weeks. The most spectacular manifestation of this was shown by the fountain at the top of Howardsgate in Welwyn Garden City. The dozen or so water jets were kept playing, presumably to avoid the pump freezing up, but they gradually came to issue from orifices in a great and growing block of ice, which I much regret not having photographed.

Simultaneously with the prolonged cold was a fuel shortage. I forget whether it was due to a pit strike or just the inadequacy of supply occasioned by the weather, but at all events it resulted in the heating of the Geological Survey and Museum being cut off completely for several weeks. I took to wearing three pairs of long johns in a not entirely successful effort to keep warm in the office. The problem was compounded by the powers-that-be deciding to do some decorating in the Cumberland Room, so that we had to migrate to desks below the big glass windows of the Reserve and Study level at the top of the Museum.

Glyn Rhys, Gordon Smith and Donald Duff were successive field trainees of mine. This meant that after working with them for a while I gave them parts of my earlier mapping area to re-map, then discussed the results. Donald Duff had been brought up on Scottish structural geology and found it quite difficult to whip up much enthusiasm for English Coal Measures. We got on well, but his eyes lit up only when he stumbled upon a lump of ironstone showing cone-in-cone structure. However, he later became quite an authority on mapping of coalfields.

Gordon Smith was an awkward cuss who argued. He wanted everything shown on a geological field maps to be firmly proved, whereas I was trying to show him that the nature of the evidence is such that they have to contain a large element of reasoned inference.

Ian Stevenson had a serious personality difference with Geoffrey Gaunt, and periodically devoted himself to taking him down a peg or two. On one occasion he filled the hub caps of his car with pebbles. On another he placed a substantial load of rocks in a haversack which Geoffrey took on a walking holiday to the Alps, remarking on its weight as he departed.

Stevenson also applied his innovative talents similarly to Austin Woodland, a pre-war entrant who had not at the time achieved the dignity of District Geologist status, but who was much later to become Director of GSGB. Woodland was not visibly amusable, nor was he a person to forgive and forget. Stevenson, however, caused a letter in fulsome French to be posted in France to Woodland from a non-existent French geological society - La Société Géologique du Nord Est de la France. The letter praised Woodland's geological achievements in the most extravagant French terms, and invited him to give a presentation of his methods to a society meeting in France, all expenses paid. Woodland, completely taken in and greatly pleased, brought the letter to me for translation - a most painful exercise. It was some time before Butler - the Museum Curator at the time - pointed out to him that the language was altogether excessive, even for the French.

David Greig was a solid character who became notable for his habit of sitting for hours quietly examining his field maps, preparatory to interpreting the data in terms of geological boundaries. He called this activity 'field slip watching'. Greig had been one of the many young officers who passed through Karen, Nairobi, when I was adjutant of the EAEME Transit Camp there. I did not remember him, but he remembered me and produced an army driving licence signed by myself. He had not been a geologist at the time, but after demobilisation he took up the offer of a university place, and finally qualified as a geologist several years later.

Both Donald Duff and Bob Hoare were later to leave GSGB. Bob Hoare was offered a NCB post thanks to the intervention of grand-old-man Professor Fearnside of Sheffield University. Donald was inveigled back to Edinburgh University and later became first Professor of Economic Geology at Strathclyde, then Chief Geologist of the Economic Minerals branch of BP. In the latter role he visited Madagascar after it had become independent, and found the country to be more than somewhat lacking in infrastructure organisation.

## Lucette and other people

On 28th November 1946 Lucette arrived in Marseilles aboard the SS Champolion with Suzanne, Raymond and family - a few weeks after I started work in GSGB. This necessitated my applying for special leave without pay, which there were initially some signs of reluctance to grant after so short a period in post. I had to take recourse to reminding the administration that I had warned the Appointments Board I would only start on the date I did on the understanding that I would need to take special leave fairly soon afterwards.

I got to Marseilles on the appointed day, but had no time to obtain passes either into Marseilles Docks or to board the Champolion. With the help of a taxi driver, however, I was taken to a back gate of the docks where the policeman on duty was informed an Englishman wished to present him with some cigarettes. Two, the taxi man said, would be enough, but to be on the safe side I gave him a packet of ten. Much gratitude ensued. The gate was opened.

When the boat arrived, one narrow gangway was erected to accommodate both those wishing to struggle ashore and those wishing to struggle aboard. I could see Lucette and Suzanne looking over the railings high above, but in the scrum there was no way of getting to them, as a burley seaman was inspecting passes at the foot of the gangway. Although I tried, he proved to be cigarette-proof, possibly because of his exposed position. I had to wait patiently, and then, when the pressure was slightly reduced and the burley seaman started chatting to a pal, I just walked up the gangway and disappeared aboard.

Our church wedding was in Bressols next day, the 29th November 1946. I illegally wore my army dress uniform for the ceremony. Although I was still formally in the army British troops were at this time supposed to be in uniform in France only when on duty. There was, however, nobody available to concern himself. This was the occasion when, to avoid there being 13 people at table in the house of Lulu and Alice, Lucette's brother and sister in law, a place was laid for a non-existent cat. The following day we travelled to Paris along the same route I had followed not long before en route to the UK and demobilisation, then as on this occasion the train moving at an alarming rate on recently re-laid rails, shaking and swaying and showering sparks in all directions.

We had our honeymoon in Paris, then on 6th December 1946 it was back to my parents' house at 17 The Valley Green, Welwyn Garden City. We were allocated a bedroom plus a sitting room, which was their dining room. We generally ate separately from my parents, but the kitchen was shared. We regarded ourselves as being comfortably off financially and insisted on paying a rental. My parents took kindly to Lucette and she to them, and the task of teaching her English was commenced. This domestic arrangement lasted for the best part of five years, although only during the winter periods when, because of my long daily travel time to the Geological Museum, Lucette found herself more or less with my parents for 12 hours every working day.

Field work started soon after Easter 1947. Here are a few dates from the field geology period of my career:

1946	28 <sup>th</sup> November	Met Leclerts and Lucette off liner “Champolion” on its arrival in Toulon.
	29 <sup>th</sup> November	Church wedding in Bressols, near Montauban . Honeymoon in Paris
	6 <sup>th</sup> December	Arrived back in England with Lucette and introduced her to my parents.
1947	Easter	The Leclert family visited England.
	Field season	<i>As a field geologist I was posted first to the Retford area of Nottinghamshire, where we had lodgings with Miss Rowley, at The Poplars, Hayton, near Retford. After about eight weeks we moved to a rented house at 567 Newbold Road, Chesterfield. I started my field work on a clapped out ex-army motor cycle, but later had a GSGB utility type vehicle.</i>
	Summer	Marcelle and Colette (niece of Raymond) visited England and stayed with us in our house in Newbold Road.
	Autumn	Suzanne again visited England, prior to return of Leclerts to Madagascar, in order to bring Monette to boarding school in London – she was to spend most of her holidays with us for the next three years.
1948	14 <sup>th</sup> January	Arthur Richard Eden was born in Applecroft Nursing Home, WGC.
	Field Season	We rented a house at 786 Newbold Road, Chesterfield.
	Summer	The International Geological Congress was held in the UK, and I was Secretary of the Pennines Field Excursion. There was also a practice run over the ground some weeks beforehand, mainly in the company of JV Stevens and GH Mitchell. For the excursion itself it rained almost continuously.
1949	Field season	We purchased a Berkley Ambassador 22ft caravan and parked it semi-permanently at Mr Wilson’s Sudbrook Farm, Barlow, near Chesterfield, leaving it there during our winter absences.
	October	Richard and Elsie were married.
1950	Summer	Field season using caravan at Sudbrook Farm as base. During the summer Monette visited, also Raymond. This was, however, Monette’s last year in her London school, after which she rejoined the Leclert family. We visited the Leclerts, on holiday from Madagascar, at Rue de l’Est, Paris, during the summer.
1951	11 <sup>th</sup> April	Robert David Eden arrived on the scene, born in Peartree Maternity Home, Welwyn Garden City.
	Spring	Suzanne,, Monette and Jackie visited Welwyn Garden City.
	Possibly 1951	Acquired Jowitt van and converted it to estate wagon by inserting two windows



	Summer	For some reason which I have forgotten we moved the caravan into the large garden of the Wrights, the local butchers, next door to Sudbrook Farm. This involved pulling it through the hedge with the tractor of Mr Wilson.
	Autumn	Construction of our new architect designed (Mr Pinford) house at 51 Sherrardspark Road was commenced. Cost was £3500, and the mortgage was with WGC Urban District Council at a fixed interest rate of 3.75%
1952	Field season	Based on caravan in its new location chez Wright.
	Summer	Lucette brought up a piglet called Fifi in our caravan. As the smallest of its litter it had been losing out.
	Autumn	Construction of new WGC house was completed and we moved there from 17 The Valley Green. At this stage the new house had no garage.
	Christmas	Marcelle and Bernard visited us in Welwyn Garden City.
1953	Autumn	We moved the caravan back again through the hedge into the field of Mr Wilson.  Raymond Leclert and Rodger Piat, his brother in law, visited us at 51 Sherrardspark Road.
	Winter 53/54	In a protracted exceptionally cold spell the fountain at the top of Howardsgate, WGC, was converted into a large block of ice, with the water jets emerging from orifices in the ice.
1954	30 <sup>th</sup> March	Christopher Philip Eden arrived. He was born at 51 Sherrardspark Road.
	Summer	We visited 34 Rue du Plessis Trevisé, new Leclert family home in Paris, for the first time, and went to the wedding of Monette with Maurice Malatre. The lavish reception was held at a tree-top restaurant called 'Robinson'.  1954 was an exceptionally wet summer.
1955	Spring	I visited the German Geological Survey in Krefeld officially, in company with Mike Calver, Carboniferous palaeontologist of GSGB.
	Summer	A notably dry sunny summer sandwiched between two notably wet ones.  For our holiday we loaded ourselves aboard our Jowett Bradford van (GKY 766) and camped in Cornwall, on a sloping field at Tregonna Farm, Portloe – good job the weather was so good.

10 <sup>th</sup> December	Nicole Ginette Eden born at 51 Sherrardspark Road.
1956 Field season	Started work on Peak District Carboniferous Limestone. Moved caravan first to Woodthorpe Mill Farm, then to Carahols, Two Dales, then back to Woodthorpe Mill Farm. Poor summer. I think this was the start of the period during which Lucette plus kids came to the caravan only during the school holidays. The rest of the time I lived in it on my own, travelling to WGC for the weekends.
Autumn	Built a garage onto 51 Sherrardspark Road.
Winter 56/57	Sold Jowett van and acquired a Bedford Utilibrake (TKP 740).
1957 Field season	Moved caravan to Blythe Hall.
Summer	Visits to Gog Magog Hills near Cambridge, and to Oxford with Françoise (protégée of Suzanne from Tananarive). Visit of Otto Jessen and Mike Calver children to 51 Sherrardspark Road.
Summer holiday	South Wales (Pembroke area) in a hired caravan. Wet.
1958 Summer holiday	Circular tour of France in Bedford, accompanied by Leclerts, mainly camping at Peyrefite, also Collioure, and visiting Montauban. Day visit to Spain (Costa Brava).
During year	Jurgen Jessen visited from German Geological Survey.
? Autumn	I took a party from GSGB to Aachen, for a meeting of the International Carboniferous Congress. This was done privately, travelling in the Bedford and staying in cheap hotels. Those in the group included Austin Woodland, Mike Calver, Alan Archer.
1959 Holiday	Camping again at Tregenna Farm, Cornwall, where I had a near crippling attack of lower back pain.
During year	GSGB Leeds Office opened in Halton Cow Sheds. Jacqueline Brun visited WGC. Lucette and I went to France on our own for wedding of Bernard Leclert and Lilian. Sold our Barclay Ambassador caravan in either 1958 or 1959.
5-7 <sup>th</sup> Oct	Went to Edinburgh with Lucette on special pre-posting leave to look for house.
Winter	Sold 51 Sherrardspark Road (for £4,950) and moved to

		Edinburgh, initially to rented house - 38 Spylaw Bank Road.
1960	Early	Quite a lot of snow and tobogganing in winter 1959/60. Moved into our newly completed house at 3 Bonaly Crescent
	Summer	The Leclerts, Malatres and Jackie travelled to Scotland by road with a caravan. We met them at a campsite in Northumberland, and when they departed we went with them as far as the Lake District.
	Autumn	Nicole started at Bonaly primary school.
	Christmas	Memere and Grandpa came to Scotland for several weeks.
1961	Summer	Travelled to Paris, then to camp site in Collioure area, with Leclerts and Marcelle. Day visit to Spain. Returned via home of B��b�� Lauret and Marie T in east France, and Switzerland.
	Autumn	Memere and Grandpa visited.
	Christmas	Marcelle and Henri came to Edinburgh for their honeymoon, travelling by train. When I met them at the station the temperature was minus 10 degrees C..
1962	Spring	Lucette and I had a brief holiday on our own in the Highlands, whilst Memere and Grandpa looked after the kids.
	Summer	Another camping holiday in Cornwall, this time on a site in a sloping field above Carne Beach. Again, it was a good job the weather was good.
	Winter 1962/3	Exceptionally cold. Waterfalls frozen into icicles. About now swapped Bedford caravanette for Ford Zephyr Estate (Cassius) 2232SC.
1963	Summer	Flew with Cassius to France. Camping on Costa Brava and met Dutch children. Were also joined by Leclerts and Marcelle + Henri.
	Autumn	RAE/LKE attended International Carboniferous Conference at Paris staying, together with Jean and Donald Duff, with the Leclerts. RAE also went on a Conference excursion to examine Coal Measures deposits in south and Central France, where it was exceptionally wet. Notably, the vats placed outdoors ready for the grape harvest were overflowing with water.
1964	Winter 1963/4	I joined the Edinburgh branch of the British Sub-Aqua Club and on 13 <sup>th</sup> July became a 3 <sup>rd</sup> Class Diver.

	Early 1964	Visited Inchkeith Island in the Firth of Forth with six miscellaneous staff members from the Survey. We travelled in the "Hesperus" a Northern Lights boat relieving the lighthouse keepers. This was my first official offshore exercise
	Summer	We again went to our camp site on the Costa Brava, with Leclerts and Leroy's, and on the strength of my diving qualification I booked onto a series of six boat dives from a converted fishing boat called "Esperanza", during which Lucette and some of the kids came along as passengers.
	6 <sup>th</sup> December	On 27 <sup>th</sup> September 1964 I graduated to 2 <sup>nd</sup> Class Diver First dive at Burnmouth in pursuit of the project of Terry Smith and myself to check on offshore Carboniferous strata
1965	Sometime	This was the year I caused the South Lowland Unit to acquire a Proline drill, able to be transported by our unit Landrover and able to auger down several metres. Although invaluable for some aspects of field mapping, its use was hard work, and the only field geologist to take kindly to it was Malcolm Howells. After a year or two it was loaned to the Hydrogeology Unit in London, where to the best of my knowledge it saw out the remainder of its days.
	8 <sup>th</sup> May	An inch of snow fell on our brilliant yellow wallflower display
	Summer	Holiday in Cornwall, camping on sloping site above Carne beach. Visits included to Veryan and Stonehenge, where it was still possible for kids to clamber over the stones.
	August	Also went with a group from Edinburgh BSAC on camping holiday in Mull, alongside the Sound of Iona. For this trip we hired a caravan. Several dives on the coralline algae ridge in the middle of the Sound, but limited to short slack water periods by the fierce tides. Visited Iona.
1966	Sometime	I became Chairman of the Edinburgh branch of BSAC. My diving activities continued apace, including many dives from fishing boats, visits to most of the islands of the Forth, a night dive at Dunbar, attendance at a series of marine biology lectures arranged for the Club, and attendance at meetings in London to organise a diving expedition to Chios (Greek island). This was ostensibly to locate offshore fresh water springs, but seemed to be turning into some sort of free hydrogeological survey of the island. It eventually fell through.

July-August	Went to Jackie Leclert wedding in Paris, then to camp on the newly acquired Leclert land at Jard sur Mer.
November	First Geological Survey offshore exercise – a mainly geophysical survey from mv Rosherville working out of Lossiemouth. A short sampling period was included, for which we were provided with a Shipek Grab and a primitive gravity corer. This experience provided the basis for our later developments in sea bed sampling equipment.
December	Memere and Grandpa visited 3 Bonaly Crescent for Christmas.
1967 17 <sup>th</sup> July	<p>Went with others to have a look at a boat called the Relco” at Newcastle. Following this visit the boat was purchased by Wimpey Marine, renamed ‘Whitethorn’, and adapted to use as a sampling and shallow drilling ship mainly for the Geological Survey.</p> <p>Pending the start of offshore survey I was encouraged to convert my private diving project at Burnmouth into an official exercise. A fair number of dives at Burnmouth ensued, and ultimately several short papers were published.</p>
30 <sup>th</sup> August	<p>I joined a boat called the “Olna Firth” drilling in the Irish Sea. This was the first major sampling and drilling cruise run by the Geological Survey, and set the pattern from which later work developed. Based on material obtained, we (Glyn Rhys, John Hull and I) compiled the first primitive offshore geological map produced by the Geological Survey.</p>
November	I was formally appointed District Geologist of the “South Lowland and Continental Shelf 2 Unit”. On 1 <sup>st</sup> November Garry Gauss joined and was the first recruit specifically allocated for offshore work. He was soon followed by Bob Kirby, Paul Binns and Dennis Ardu.
16 <sup>th</sup> November	Lucette was in hospital for a few days for an entirely successful varicose vein operation.
1968 2 <sup>th</sup> May	I was in Bangour Hospital for a week for an equally successful gallstone operation organised by our friend and neighbour Henry Turner, who was the Hospital anaesthetist.
2 <sup>th</sup> June	Diving again. BSAC boat dive off the May Island.
24 <sup>th</sup> July	First dive from a newly acquired Geological Survey Zodiac. We tried it out by diving off the Bass Rock.

31 Aug/13 Sept	Camping visit to Leclert land at Jard.
19 Sept/3 Nov	Worked with “John Murray” out of Oban, including dives on excavation at stern of the wreck of the “Breda” (19 <sup>th</sup> Sept) and on Maxwell Bank with Garry Gauss (24 <sup>th</sup> Oct). Cruise ended at Plymouth.
16-19 <sup>th</sup> December	Sediment sampling cruise in Firth of Forth and Approaches with “Clupea”.
Late 1968/early 1969	Acquired separate offices for offshore survey work at Granton, Edinburgh.
1969	Offshore cruises with “Strathclyde”, “Moray Firth”, “Heathergate” and “Olna Firth”. First cruise with “Vickers Venturer” and submersible “Pisces” in November.
Summer	Another visit to Leclerts, Jard. Their garage/bungalow had been newly constructed.
November	Appointed District Geologist “Continental Shelf Unit 2.”

### **Later years in the Yorkshire and East Midlands Unit**

It was not long after my joining that Eyles retired and was replaced as District Geologist by Jim Edwards, an able, enthusiastic and innovative worker who made a considerable contribution to the understanding of East Pennines Coal Measures stratigraphy. One of his characteristics was that for simplicity he commonly addressed every member of his staff as “George”.

I did not see much of Jim Edwards in the field, though, and soon found myself carrying the flag for GSGB not only in my mapping area but throughout the East Midlands Division of the NCB, probably the most cost effective of the UK coalfields in those days, when coal was as vital to the national economy as oil and gas became in the late 20th Century. I was required to examine all borehole cores and periodically visit all opencast coal workings throughout the Division. I also visited any new cross-strata underground roadways in the many deep mines in the Division.

GSGB geologists had a formal right of access to anywhere it was necessary to visit for survey purposes, including to all private land and to NCB operations. As far as the NCB was concerned we were always made very welcome, since we were expected to classify the borehole strata and comment on the nomenclature of the coal seams. The Opencast Coal Executive had an office in Chesterfield, which became a sort of home from home, and the staff there were keen to have our up to date assessments of probable coal outcrop positions. Collection of this type of data at the critical times when it was available enabled our re-survey to be a great deal more accurate than the one which it was superseding.

Opencasting coal involved requisitioning farmland, and although some compensation was paid most farmers were understandably very unhappy about the major disruption caused. It was therefore convenient that Survey geologists were able truthfully to disassociate themselves from any formal link with the Opencast Executive when talking to farmers. Early in my Carboniferous field work Eyles accompanied me on

one field visit and informed a local farmer in his best yokel accent (broad Scottish) that we were just a couple of geological oddballs who wanted to have a look at some fossil shells believed to be visible in a stream crossing his land. Not long after this visit the farm was requisitioned for opencast working.

Two years passed, and I had again to go on the same land, which happened to be on a sheet margin. I explained that I was making a geological map. The farmer did not recognise me, but he informed me that he did not believe what geologists said - two years before a couple of them had told him they wanted to toddle round to look at some fossil shells, and the following week his land was requisitioned. In this case the inference the farmer made was incorrect, but it illustrated the sensitivity of the position.

Amongst the services provided by GSGB, and which in Carboniferous areas fell to the field geologists, was a free public advisory service. Most queries concerned water supply, but in 1950, following a disastrous inrush of waterlogged peat into shallow mine workings elsewhere, there was an urgent call from the NCB to identify all shallow mine workings where superficial deposits or water lay at less than 200ft above coal workings. It turned out that there was one such location in my area.

I went underground with the mine manager, and was able to point out that the situation was a great deal worse than it appeared on his plans. These plans showed OD levels on the floor of the workings, but what mattered in the context of possible fluid incursions from above was not the OD level of the floor but that of the roof of the workings. This not very profound observation had escaped the attention of the local mine directorate. In this case numerous roof falls had extended the roof so far upwards that one sector of completed workings gave the impression of a huge cathedral vault, its top invisible in the blackness above by the light of the standard miners' lamps we carried, also (a) the workings underlay a river, and (b) judging by recently fallen material the roof was still working its way upwards. I wrote a report recommending that this sector of the mine be immediately abandoned and sealed off from deeper workings.

This was done, and soon afterwards the collapsing roof broke through to the surface quite close to the river. My part in this incident caused the local NCB director to write a grateful letter of thanks to the director of GSGB, by now Professor Pugh, and I was called to the presence to be shown the letter. As this episode made the powers that-were aware of my presence, it did my career no harm whatever, especially as Pugh could not tell the difference between myself and a fellow Carboniferous field geologist called Bob Hoare. Pugh thought both of us were Robert Eden, hence effectively I had a double presence in the office during his directorship.

In the early 1950s I found myself to be the oldest-but-one of the geologists working under Edwards in the Yorkshire and East Midlands Unit. The oldest was a gentleman with strong Italian connections called Craven, and it became apparent that Craven was something of a dilettante with an undue opinion of his own scientific abilities. I realised this only after he had addressed the Geological Society in such convincing terms that, despite not following his line of thought, I became fully persuaded that (a) he must know what he was talking about, and (b) he had all the allure of a future

Director of the Survey. It was not until next day that I worked out there had been serious non-sequiturs in his argument, which was in fact nonsense.

Edwards never discussed it with me, but in retrospect must clearly have been concerned that Craven was positioned to become his No 2 by default. The result was that in late 1953, at the young age of 33, I was unexpectedly promoted to Principal Geologist grade, whilst Craven was passed over. Craven never recovered from this slight. It was a reversal of status I had no hand in engineering, but for some six months Craven refused to acknowledge my presence whenever we happened to meet, a task requiring some steadiness of purpose. Not long afterwards mercifully he disappeared for good - I believe to Italy.

In my last few years in Derbyshire I started mapping Carboniferous Limestone strata around Matlock and in Monsaldale. It was easy enough to map the lava flows and the surface outcrops of the many metalliferous veins, but there was a difficulty as to subdivision of some of the massive limestone strata. There were lithological variations which should have been mappable, but in the time available I was not able to do much more than skirt round the problem. This is a research field which has since been much developed by others.

In my area there were a number of large working quarries and a few lead mines, including a largish one at Matlock. The miners were usually at their wits' ends as to what to do next, and in several mines I became involved in the fairly hopeless task of helping them work out the best directions in which to seek continuations of their mineral veins. Metalliferous mining in Derbyshire is very much a matter of treading in the footsteps of earlier generations, and mine assessments are therefore apt to involve exploration of old workings. On one occasion, when I took a rock collector from the Geological Museum - Dave Thomas - into an up-and-down maze of old galleries, he told me he had been a professional mountaineer and had joined GSGB because he hoped to do some climbing. So far he had been disappointed, but now here he was, climbing all right, but as a 'bloody troglodyte'.

## **Scotland**

In the late 1950's a new field division was formed covering the North of England, with Edwards in charge as Assistant Director and its base in some old prefabricated buildings at Halton in eastern Leeds. They became known as 'The Halton Cowsheds'. The whole of the Yorkshire and East Midlands Unit was moved to the Halton Cowsheds in the summer of 1959 - except for me. Only the vaguest of hints was given about what was expected of me, but it was semi-obvious and all became clear in the long run.

Archie MacGregor, AD Scotland, was due to reach the end of his 65th year in late 1959 and, although being forcibly retired, was fighting against it. Once retired he was expected to be succeeded by George Mitchell, by now District Geologist of the South Lowland Unit, who was in turn expected to be succeeded by me. There were too many uncertainties in this chain to make firm plans, but it was desired to avoid moving me twice. Anyhow, the chain was eventually activated, and the first social event I attended in GSGB Scotland was the retirement party of Archie MacGregor in his flat. At age 40 I was an unusually young DG, but could claim no special merit. It



was a matter of Buggin's turn, and following the recruitment gap during the war I was lucky to be the oldest of the post-war intake into the field staff..

My first few years in the Survey office at Southpark, 19 Grange Terrace, were relaxed and amongst the least demanding of my career. In a sense this was, until my retirement, the only lengthy period when I was not in the front line, and I found myself effectively free to do as much or as little as I thought appropriate in the total absence of any pressures. It was positively a lifestyle appropriate to an Edwardian gentleman. Pleasant in some ways, but not precisely what I have been used to before or since, and not really too satisfying in view of my general workaholic approach to life.

The South Lowland Unit comprised half a dozen geologists, some engaged in coalfield mapping and others in mapping Lower Palaeozoic strata of the Southern Uplands. Both of these activities could be described as routine. The Scottish coalfields were nearer to being clapped out than those of the East Midlands, moreover the extant maps were of distinctly better standard than the English ones. Most Scottish field mapping at this time was neat and detailed to a praiseworthy degree, but correspondingly often carried out so slowly that its cost effectiveness could reasonably be called in question. At the time it was not easy to significantly modify this deeply ingrained work ethic, which had evolved over a period of years, was producing some excellent maps and accounts, and was a function of the professional pride of the people involved. It took the funding upheavals of the Thatcher years to wrench the field mapping effort in Scotland into more economically directed channels.

One of the saving graces of this period was that Mitchell was a civilised person I had known for a long time and with whom it was very easy to work. He was also something of a philosopher with whose approach I had a good deal of sympathy. We had lengthy discussions of this and that. He went out of his way to be pleasant to staff and encouraged me to develop my own geological interests. These initially tended in the direction of underground water supplies, to which increasing importance was being attached in civil engineering circles and where the role of the South Lowland Unit had become quite well known when I stepped out of it in 1969.

As a matter of academic interest I also undertook some limited field mapping of the Carboniferous of the Southern Uplands, where the facies is odd, to put it mildly. The area was relatively positive in Carboniferous times when deep sedimentary basins were forming to north and south, with the result that the succession is thin, confined to a few north-south depressions, and devoid of coals. Because of a paucity of exposures a good deal of imagination had been used in compiling earlier maps, and in the event it proved a rather unrewarding exercise to attempt to improve on them, even although earlier workers had used their imaginations in fundamentally different ways.

On the look-out for new techniques I also caused the office to acquire a Proline Drill, a powered means of making shallow auger holes at critical points. Use of this machine was, however, rather hard work physically and it proved to be popular only with more energetic members of staff. Later, of course, my interests moved on to scuba and offshore work.

Probably the main theme of Mitchell's period of office (1959-1967) was a search for new accommodation to allow for growth of GSGB in Scotland. He, assisted by the DGs (initially Laurie, Earp and myself), looked at several possibilities. One was to take on old buildings being vacated by botanical staff at the Royal Horticultural Gardens. These were essentially long wide corridors, and the site was altogether too circumscribed to be viable. Another was a virgin site in Livingston New Town, which aroused the implacable opposition of activists in the Staff Association, unwilling to exchange the multiple urban facilities of Edinburgh for the faceless muddiness of Livingston as it was at that time. The matter was resolved when Dunham negotiated the use of the present Murchison House site with the University of Edinburgh.

Mitchell was conscious of being an English head of a Scottish office, and when the annual geologist staff dinner came round he was apt to feel it appropriate to untunefully sing 'D'y ken John Peel', expecting the support of as many English colleagues as happened to be present, just John Earp and myself to start with and later only myself. Embarrassing. The Edinburgh geologist staff dinner reminded me slightly of Christmas dinners in army sergeants' messes, when licence was given for lower ranks to express themselves a good deal more freely than in everyday life. The geologist staff dinners in all offices other than Exeter were abandoned in the early 1970s, when restructuring of the scientific civil service removed the previously firm distinction between geologists and Experimental Officers. This was a caste matter – many - most - of the geologists were simply not prepared to subject themselves to the traditional annual unbuttoning if in the company of the members of a lower caste, and when pressed were willing to name names.

In those days Assistant Directors Scotland were expected to organise and fund office bashes on special occasions such as Christmas and New Year. Mitchell was a teetotaller, so his bashes usually consisted of tea and cakes in the office. On one memorable occasion he took the entire staff plus spouses to the theatre, where he had reserved a block in the auditorium. We saw a memorable performance of 'Antigone'.

Mitchell was one of those people who are proud of their physical prowess. In the field he set a cracking pace, and I suspect was secretly pleased that others often found it difficult to keep up with him. All his original geological mapping was done in England, including a large area mapped in the Lake District in his own time, but I fear the quality of his maps – or at least such of his coalfield maps as I have seen - somewhat reflected the speed with which he covered the ground.

Pride in physical prowess is, though, an attribute which it is wise to exercise with a degree of circumspection. I had confidently anticipated that Mitchell would last to a ripe old age like his father, who was still going strong in his 90's, but sadly he went to seed much younger. It was probably this factor which caused him to retire in 1967, when about 62. He was replaced by Jim Robbie, District Geologist in the Belfast office.

Jim Robbie had a problem in knowing how to cope with me, since during his period as Assistant Director Scotland he found me drifting farther and farther offshore, into an area about which he was conspicuously ignorant. He bore it, however, manfully, and I like to think we remained on civilised terms. The offshore work became official

in the autumn of 1967, and at about the same time the directorate-level control of all Geological Survey work was transferred to a Continental Shelf Committee meeting twice yearly under the chairmanship of the Director, now Kingsley Dunham. This further removed my activities from the purview of Jim Robbie, but he still went through the motions of trying to exercise some financial control, which I circumvented by doubling my annual estimates, knowing that he would then be able to harmlessly derive psychological benefit from halving them.

Offshore geological survey is immensely more expensive than land survey, but was also at the time immensely more valuable in terms of its output. This was a truism which the geological community grasped slowly, resulting in what can only honestly be termed jealousy in the breasts of many land geologists. Jim Robbie shared these feelings, although he managed to keep them under reasonable control. I like to suspect that this was partly because he was slightly scared of me – at all events he was always very polite.

In late 1968/early 1969 my offshore unit had grown to the extent that additional space became imperative, and we moved to an outstation – an ex-Ferranti laboratory at Granton. This had the benefit of removing us from the physical proximity of Jim Robbie, and we saw little of him thereafter. We grew to about 15-20 strong at Granton and became a more or less autonomous and close knit entity. It was good.