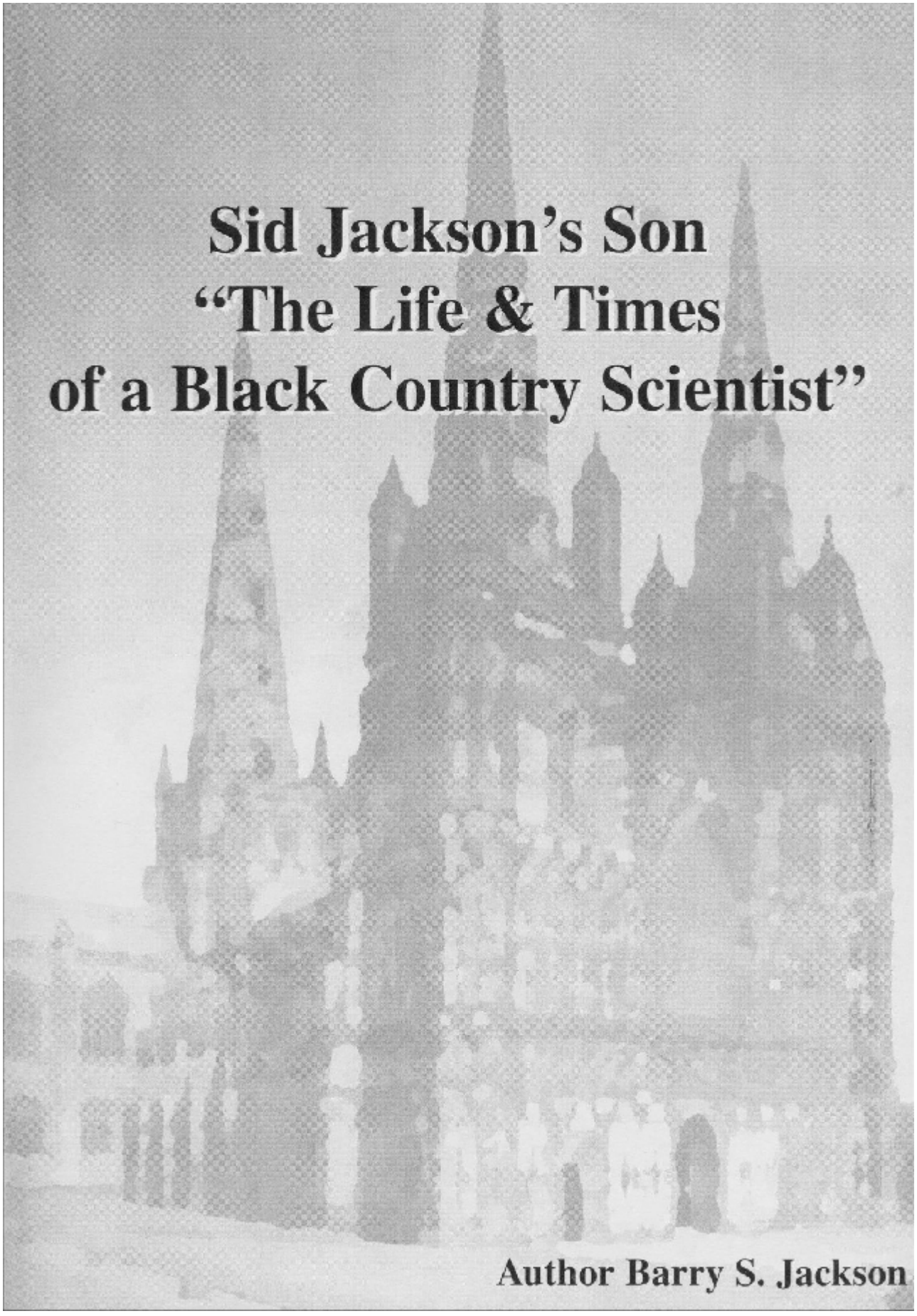

Sid Jackson's Son "The Life & Times of a Black Country Scientist"

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SID JACKSON'S SON

THE LIFE AND TIMES OF A BLACK COUNTRY SCIENTIST

AUTHOR: BARRY S. JACKS0N

DISTANCE BLURS THE EDGE OF MEMORY, SO THE AUTHOR MAKES NO CLAIM FOR THE COMPLETE ACCURACY OF THE RECOLLECTIONS AND IMPRESSIONS REPORTED IN THIS BOOK.

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PREFACE

Sir Lewis Namier was a Polish emigre who by the mid century had become the professor of Modern History at Manchester University and a well known historical writer and assayist. In his essay "The Biography of Ordinary Men" he regrets that it is mainly famous men and women who get 'biographed' and that the tale of ordinary men and women is buried in casual remarks and reminiscences for their lives have not filled the frame of public interest as have those of the famous. The fashion of lives of ordinary folk such as my family lack readily accessible documentation. These pages, which don't pretend to fill the whole record, are the recollections of working life and interests of the twentieth century. As unemployment rose again into the millions in the last quarter, it was commonly held by those few who had enjoyed full employment that they had been fortunate in living through the best part of the century. Sid Jackson's son was one of them.

I was born in March 1928 which although such a short time ago, was literally a different world; there were no cures for diseases which had to run their natural courses to recovery or death and whilst it sounds dramatic there was widespread under-nourishment if not actual malnutrition. These problems began to be addressed when it was found that the medical requirements of the armed services gave a rejection rate of as much as 40% of the young male population. Problems like Ricketts were beginning to recede, although still known, but there were still pestilent infestations of fleas, body lice and bugs with plenty of work for the disinfectant squads. In lodgings you might be advised to pull one's bed away from the wall as a precaution against the bugs - but it was no use- the bugs simply pulled it back again.

I was told that mine was a difficult birth, certainly it resulted in impaired vision and some disfigurement and much of year one was spent in numerous visits to the nearby Victoria Hospital to get a reduction in these problems to the best of 1928 ability and certainly well enough to leave me with no great disadvantage in later life. I started school at the age of four and a half and as soon as I could read well enough my father introduced me to books of a sort not met with at an infants school. He was born in

Walsall which probably explains why my first book was 'Three Men In A Boat' by his fellow citizen Jerome K. Jerome. As I grew older I found that my taste often followed his, especially in short stories which were his favourite form of reading and so I met G. K. Chesterton, D. L. Sayers, Dornford Yates and P.G. Wodehouse amongst others and I got into the habit of browsing the public library and using its services. When we explored local areas or went on holiday my father was in the habit of researching by getting books from the library and this must have helped to develop my bookish interests. He also had a strong interest in technology and things mechanical. Things like aircraft, radio, motor cars and radioactivity were relatively new at the time and contemporary with my parents' own youth and featured then as now in newspaper and magazine articles, for example, on Radium and the Curies, X-Rays and 'splitting the atom'. Any questions of mine were taken seriously and my parents were able to connect for me discovery and benefit in everyday life, no doubt moving me to an eventual career in something scientific. When at age eleven I went for an interview for a place at Lichfield Grammar School my interest in science must have surfaced for the Headmaster asked me what I knew about Louis Pasteur. I was able to reply that Pasteur had developed the germ theory of disease and vaccines for some diseases like Rabies and I've no doubt that this confidence came not just from school but from conversations with my parents as well.

In 1946 within a few months of my first term at University one of the preparations was to get a new suit, which in those days of austerity and rationing was quite an event. When I went to collect it I offered to pay by cheque. "O.K." said the tailor "but collect the suit in a couple of days when I've cleared the cheque," - which he examined closely before turning to give me an equally close inspection. "Are you Sid Jackson's son?" he asked and when I said yes he waved the cheque and said " This is alright then, take the suit with you." I didn't think much of it at the time because like the man said, I was Sid Jackson's son. A lot later I realised that Sid Jackson was the most honest and reliable man that I ever knew and that I could trust his witness for events before my memories and so between us cover most of the twentieth century.

CHAPTER ONE

BEFORE ME

Sidney Jackson was born in March 1900 in Walsall, then the heart of the leather industry. His father, Joshua, was a typical Black Country 'Gaffer' employing one or two people other than family and running a small factory making the forged metal fittings used in horse harnesses. Although the motor car was only just appearing on the scene it seems that many of those people who could afford to keep a horse or horse drawn transport, soon moved over to the convenience of the petrol engine; no stabling, no grooming at the end of the day, no illness, just drive it into what had been the coach house and switch off.

Joshua's factory had been a prosperous little business during horse power days but by the time that my father left school in 1913 the horse harness business had virtually gone and the factory was switched to other aspects of supply to the leather goods industry, in particular buckles etc. for travel goods and what are called shoe findings, a business subject to the vagaries of fashion.

Dad had two siblings as far as I am aware, a first born elder brother Frank and an older sister, Alice. I knew both Frank and Alice, but never met my paternal grandparents who I believe were both dead before I was born.

Uncle Frank used to work in Joshua's factory but because of one of the common father/son arguments, left home and joined the Army and fought in the Boer War. One of dad's earliest recollections was sitting on Frank's knee while Frank drew a picture of the ship that he came home in from South Africa. Another early memory was going on holiday to the Yorkshire coast with his mother. As they were leaving Joshua reached into his pocket and brought out a small handful of gold coins. He counted out five sovereigns, "Here you are lass, a bit of extra spending money, have a good holiday". This was a sizeable sum to have free to spend.

Dad could only remember that they went to Filey Bay and during the stay went on a boat trip round the bay, when the weather turned suddenly

squally and the effect on the boat of storm at sea was what he remembered most.

Joshua must have become ill with some cardio-vascular problem in the early years of the century because dad remembered that before he left school, if the 'works' were busy he would be pressed into collecting work or delivering orders. In the case, for example, of a 'silver' shoe buckle. Joshua would make the buckles and send them to a plating shop from whence they would be collected and sorted for delivery to the (usually local) customers. All this fetching and carrying would usually be done by one of the workmen (or Dad) using a small handcart. No delivery vans in those days. Then, any thriving town would have warrens of inter-dependent small businesses operating at a level of activity well below that of 'big business', although often supplying a service to the fringe of it.

Nowadays as the big business has faded these warrens of activity have survived. In some cases, especially in the 'Black Country' - Walsall, Dudley, Wolverhampton, Aston - they have continued on the original sites, in others they have moved to an Industrial Estate and on these you will usually find a number of firms who supply a product or service used by the others on the estate. Paper convertors (especially packaging) , painters and metal fabricators fall into this class.

While he was at school Dad spent most of his leisure time near to home as travel over any distance to seek amusement was rare. Travel had to be on the tram route, making a visit to the Arboretum or the local theatre in the 'Gods'. Sometimes you could get into the places where the father or brother of a schoolfriend was working, the local coach builder was a case in point, and the wonders of another craft could be experienced, the care and time needed to build up the deep lustrous finish of a coach panel. There was at one time an intercity tram between Wolverhampton and Kidderminster and in school holidays it was possible to get that far and then on the nearby Severn there were steamer trips for the adventurous. The Severn was a tremendous highway navigable as far up river as the Severn Gorge at Coalbrookdale.

During one summer holiday Dad went to staywith a now long forgotten aunt who lived near Hartlebury in Worcestershire. The Baldwin steel plant was nearby and Dad was amazed at the sight of Old Man Baldwin (the Prime Minister's father) going to the factory sitting in the back of his car top-hatted and frock-coated with gloved hands resting on a silver knobbed cane and while he rode, the walking workers would step to the side of the road and respectfully lift cape, or touch forelocks, as the Great Man went by.

At home Dad went to the Baptist Church and Sunday school to watch, he said, the girls being baptised in their white dresses by full immersion. In those preelectric days he was often roped in to pumping the organ. There was a large lever and a crude gauge showed how full the bellows were. A small weight hung on a string, the other end of which was fixed to the top of the bellows and for best results the weight had to be held opposite a mark on the organ casing. Of course all this took place out of sight of the congregation but the pumper could see the organist and try to judge from his manner of playing, just how much effort was needed to keep pace with the varying air demand.

A long hymn was a strain on a young schoolboy and just occasionally the last verse, with all stops out, would prove too much and the final chords would be dying gasps accompanied by furious looks from the organist. Nevertheless, Dad won a book as a prize from that Baptist Church Sunday school - The Pilgrims Progress - which we still have on our bookshelves.

On the whole my father gave the impression of a childhood that was by no means poor. There were people poorer than him and others a lot better off, but he never went hungry or ill-clothed. He could, with the pocket money earned from his deliveries buy things like cameras and telescopes from junk shops and dabble in the mysteries of photographic chemistry. With the Kodak camera and process coming into vogue, one could buy very cheaply beautifully made plate cameras that were now too bulky and slow for the casual home photographer. There was one neighbourhood friend who had, or rather his father had, a proper model steam locomotive and once a year at the Christmas holiday this would be set up, on Boxing Day usually, and played with. Well, not played with really, the children were

allowed to watch it being operated, and then it was all packed away until the following year - a strange ritual.

And so it came close to school leaving time, at 13 years old in those days. What with Joshua's illness, Frank's absence in the Army and Dad's youth the prospects in the family business did not seem too rosy. Partly with his mother's persuasion, Dad became a bound apprentice in the leather goods trade. Which, while living in Walsall, seemed a sensible career move. In those pre-plastic days it is amazing what an important part leather played in life; travel goods, footwear, handbags, wallets, drive belts for machinery and so on. It was in this apprenticeship that he met my Mother, Gladys May Goudie, who worked in the same firm.

I never met my maternal forebears, my mother , born in 1899 was 'granny' reared, for her father James Goudie died before she was born and her mother needed to work (in a chemists shop I believe) to support them. So Gladys May was left in the day to day care of Grandma Griffiths. Again my mother gave me the impression of a childhood that was by no means deprived but Grandpa Griffiths was a coachbuilder so perhaps this helped the economics.

Then it happened. Into an era of settled Empire overseas and cruel inequality of wealth at home, as well as political inequality, there erupted the Great War. Uncle Frank was still in the army and therefore automatically in the war, Walsall was bombed by a Zeppelin attack with loss of life (there is a memorial to it at the site of a bomb explosion) and the then Mayoress was one of the victims, so there was a background of events to encourage Dad to volunteer before time for the Services. Somewhat under age, by about six months I think, he joined the Navy. This I suppose would be towards the end of 1916 and basic training was at Portsmouth.

The highlights of memory that Dad thought enough of to pass on included the hunger and appetite brought on by the rigours of basic training, this was coupled with the contrast between the Naval messing arrangements and the recently abandoned home comforts. Each member of a section of trainees would have to take it in turns for a time to collect the food from

the galley . where getting anything edible meant being up and out early, and hard enough to hold your place in the fight for the food. Then back to the mess hall, where your section was waiting with all the others, the food was put down on the table and then at a signal from the officer a scramble to compete with your mess mates for the grub. The meat seemed to be derived from some unknown species of cattle, which yielded its flesh in two inch cubes of gristle and hungry as he was, Dad couldn't eat it. The first day he lost it to a neighbour who was desperate enough to eat it, but after that he learned to trade it with someone for extra vegetables. He went in soft from civvy-life and at the end of training weighed nine stone and was as hard as nails, having lost two stones along the way.

During this training the 'Windsor Castle' was brought into dock under tow having been torpedoed with loss of life. The damage was confined to the bow and she had been flooded to settle by the stern and so stayed afloat. There had been some livestock on board and after dry docking the areas of the explosion were heavily dosed with lime and the new recruits put on cleaning up duty, loading all the muck and rubbish onto rail wagons parked alongside and every now and then a piece of mangled flesh could be seen on the shovel and you just had to hope that it wasn't human.

The training was completed afloat and Dad had the experience of being eight hours adrift from shore leave by missing the last boat back to his ship. He had to spend the night at Aggie Westons and was on Captain's Report next morning, suffering some extra fatigues in penalty. The only recounted memory of training afloat was on the bridge as helmsman, officers had given a compass setting and he was steering to it, when a small sailing vessel changed course to veer across his bows. The officers were chatting behind him and he confidently awaited further orders, but none came, and they steamed on ever nearer until an officer glanced ahead and said "Good God man - sound the siren!" Dad reached up and whilst still looking ahead pulled down on the ring that operated the steam valve to the siren. There was a hideous gurgle as the siren cleared its pipes of condensation and then a long blast, which caused the sailing ship to change course. Dad sensed that there was a heavy silence behind him so he risked a quick glance astern. That steam valve had been full of rusty water which had been blown skyward and then rained down on the

officers' summer uniforms. Still, one of them had given the order, so apart from muttered remarks as he was relieved by the next trainee, there was no retribution

Training completed they were paraded on shore and a Petty Officer divided them into two groups, "Left hand group two paces forwards - volunteers for submarine service, Right hand group volunteers for mine sweepers". Dad was in the mine sweeper group and apart from mentioning service in the North Sea he gave no special recollections. He was transferred to a floating barracks at Plymouth in the Winter of 1918/1919 to await demobilisation and while there survived the 'Spanish' influenza that raged at the time. His hammock was slung above decks, under an awning but otherwise exposed to the Wintry blast and his method of survival reflected one of the remedies suggested in some medical quarters based on observation, although Dad was unaware of it at the time.

At the time that the influenza was at its height he remembered that there was a depressingly regular removal of corpses from ship to shore. He felt very ill himself and by dint of persuasion and bribery he managed to collect enough rum rations from ship mates to fill one of the old fashioned Taragona wine bottles. He climbed into his hammock on this cold exposed deck, feeling sure that he would not wake up next morning, and sought comfort by swigs from his Taragona bottle until... but the next thing he knew was that he was awake and feeling a lot better, but soaked with rum when the bottle had slipped from his grasp as he dozed off and emptied itself over his chest. He was convinced that the combination of rum and crisp cold air had saved him.

21,000,000 people died in those few months with no apparent defence so that for a time it really seemed like the end of the human race. But he survived, clearly a necessary prelude to my history, and also surviving Mr. Sid Jackson himself, are his Navy issue Ditty Box and shoe brushes, still in almost daily use. To give a transitional phase to ease the resettlement of ex-servicemen into what was a completely disrupted structure of employment with 'male' Jobs being filled by women who didn't necessarily want to give up new found freedoms and earnings. There was a first in, first out basis for release. Dad was fairly well down the list, but

was anxious to get home and there was a short cut if you could show that you had a Job in a family business that would suffer if you were not allowed to return to it promptly. By this time Joshua had died and my Grandmother had re-married, a fruit grower, in the Vale of Evesham and he put up the case for early release.

However, Dad returned to Walsall, the leather industry and of course Gladys, whereupon he found that his employer insisted on him completing his 'bound apprenticeship', which paid wages that were totally inadequate, particularly for someone with marriage in mind. This apprenticeship was unusual in as much that it did pay a small wage, for most apprentices were still expected to work for nothing (or even pay a fee) in return for learning the skills of the trade. Having become used to standing up for himself in the Navy, Dad entered into an acrimonious discussion with the boss, which resulted in a new agreement; the apprentice wage in return for a weekly 'stint' Ad payment by the piece beyond that. Whilst this was much better, it still wasn't enough and a move was made into the motor tyre industry at Fort Dunlop, near Birmingham. He was certainly there when he married in 1920.

It was not safe work, highly flammable solvents were used in parts of the process and ideas of flame-proof electric motors were almost non existent. A haze of solvent vapour could be seen hanging over the machinery and there were regular flash fires, some with loss of life. Cycling the 10 miles to work from Walsall and back again, was not unusual, but gradually the changing economic state caused worker unrest and near rioting, with tram cars being tipped over on the Chester Road at Erdington and on arriving at work one morning there had been a bad fire on the night shift so that the morning shift had to walk past several sheeted corpses on the way into the still smouldering workshop.

Given these conditions Dad was glad to take the opportunity to be paid off while repairs were being made. He never went back, partly because working in a factory didn't seem to give much purpose to life and whether one liked factory work, or not, the opportunities for employment were steadily diminishing. An alternative to the 'dole' which was hedged around with numerous penny-pinching rules and regulations was to find self-

employment and this he did. So here we are at a turning point which is also a turning point of the Century.

The land fit for heroes was proving to be true only if you were an affluent or aristocratic hero. When Frank Jackson left the Army at the end of hostilities he was unable to find work and stayed for years in the increasing numbers of permanently unemployed. Increasing mechanisation and continuing decline in agriculture at home in the face of cheaper imports from Commonwealth countries, reduced the demand for the services of the labouring classes. We were still Disraeli's two nations, but slowly opinion had turned away from the principle that poverty and starvation were natural and unavoidable.

CHAPTER TWO
MOTORING

One of the greatest Joys of my childhood was to visit a car scrap yard. From 1930 onwards the rate of change in car fashion and technology made quite recent cars obsolete even when still in good working order. While they were in the queue waiting to be demolished it was like walking round a multi-national showroom with the benefit that even a kid could clamber all over them if he wanted to.

In big towns like Birmingham the range of models spread from Vintage 'built to last' monsters to early Austin 'Sevens'. As we drove into 'Bruin' I was always hoping that Dad would have a reason to stop at 'Fletchers', one of the biggest and still on the same spot last time I drove past. I could identify any make or model on the road given just a glimpse of it, so started a love affair with the motor car. I little dreamed that fifteen years later many of these motors would be resurrected to fill a post war boom in demand for private cars of any description.

The people who taught me to drive came from the beginning of motoring, they were my Father and a friend of his called Alf Button. Alf was a character in his ability to get other people to unwillingly carry out work for him. Usually the work was done by an expert in the field, who, after a suitable show of ignorance by Alf, was just 'showing him how to do it'. Such was the case with concreting the area in front of his house where a Civil Engineer of some merit was seen up to his ankles in wet concrete, whilst Alf stood in rapt attention 'seeing how to do it!' Alf shared birthday and age with Adolf Hitler and it was sometimes hinted that this had something to do with his powers of persuasion. Alf was a chauffeur by profession and worked for a 'well to do widow', who he referred to as "The missus".

Chauffeur as an occupation was met more frequently then and if you knew one or two they gave some access to the larger cars of the day, Daimler, the big Austins, Wolseley and Humber. Many of these had special coachwork by the well known builders of the day on the larger 20/25 horse power chassis. One of these gentlemen, Jim Keeley, had a party

piece related to a misfire. Jim would grab hold of each spark plug in turn, with the engine running and pronounce on which one was giving the weak spark. The muscles of his arm leapt all over the place while he was doing this, a feat which I never saw anyone else emulate.

'The Missus' used to run what was a pretty respectable motor for those days, usually an Austin 16 or the equivalent Rover. She was also amongst the earlier caravanners and for the sake of propriety amongst other things, Alf's wife was included in these Jaunts as 'Ladies Maid'! The 'Missus' seems to have been quite adventurous, like the time she instructed Alf to take the car and caravan down to a sandy beach for lunch. Alf was doubtful of the car's ability to pull the van back off the beach and up a fairly steep slope, so guess who ended up walking alongside carrying a rock to bung behind one of the road wheels in the event of misadventure, to stop the outfit rolling back- the Missus of course

Alf learned to drive on a single cylinder De Dion Bouton, probably the 1904 8HP. His lasting memory of that was the slow rate of firing of the cylinder when in top gear ' once every telegraph pole' was the way he put it. Alf was thus the person in my life who could reach furthest back into motoring memories, but it was my father who was my real teacher. He learned to drive on a three ton 'star' lorry and his teacher was its owner, a carter.

The moment of truth came one day when they were driving up Shire Oaks on the road to Walsall. This was a long drag in those days, and for a long time after. The Star began to overhaul a steam wagon, (petrol was faster than steam) and the star's owner turned to Dad behind the wheel and said "This steamer is driven by a mate of mine, draw alongside". Then "can you take this back to the yard on your own and pick me up in the morning?" Given an affirmative answer he casually stepped across from the cab of the Star to the cab of the steamer as they passed and waved cheerio as the Star drew ahead. The next day Dad got the Star started without too much struggle and set off to collect the owner. Such was motoring and learning to drive in the post war years of 1918/1920.

The first motive power he owned was a motor cycle, one with a leather belt as the final drive and a variable diameter pulley to change the gear ratio. This was worked by the rider operating a lever as the road conditions needed it. It was sluggish at the best and fitted with acetylene lamps. Dad was stopped one night by a policeman who pointed out that the rear light wasn't working. "can't understand it officer, it was lit when I started a few miles back!" A yelp of pain as the 'officer' grabbed the sooty red hot extension of the lamp proved the point. "Alright" muttered the policeman, "but another time call me 'Constable' not 'officer'." It was a good job that he wasn't around when dad got his next bike, which was much more powerful. Comimg back after buying it, its power took Dad totally by surprise when he opened the throttle to climb over a hump backed canal bridge, the response was so much beyond expectations that the bike took off at the peak and was airborne for a few yards, the startled rider managed to hang on when it landed.

My mother started her experience of motoring on this machine as a passenger, insisting that riding astride was unladylike, she always rode side-saddle. An accident made more serious by this habit then led them to look for something which didn't fall over so easily and the choice fell on a Morgan of early 1920's vintage. This sported a v-twin JAP engine, which needed no attention at all during the years that they had it.

The Morgan had two gears and brakes acting on the rear wheel only, which made the descent of a steep hill with sharp bends a job to be approached with extreme caution. It caused problems in icy weather also. There was a time when AA Scouts used to carry out control at important road junctions, especially those away from towns. Going one day from Walsall to Lichfield and descending "Shire Oaks" on a somewhat icy road, Dad was just easing down the slope in first gear. An AA man was on point duty at the crossroads, standing with his back towards the approaching Morgan. When it was about 10 yards from him, the AA man suddenly made a gesture which could have meant 'stop', could have meant 'come on', or could have meant nothing. To be on the safe side Dad applied the single brake sharply, whereupon the rear end swung round and the car described a full circle around the startled AA man, with car and driver so positioned that they were facing him at all points of the circuit. When he

came round to the place where he was once again pointing downhill towards Lichfield, my father released the brake and continued his journey.

When I was a few years old the Morgan was replaced with an Austin 7 tourer, again, of somewhere in the twenties vintage. The Morgan was swapped for a piano on which eventually I attempted unsuccessfully to learn to play. This was at the time when 'Talkies' were taking over and the pianos of the silent cinema days became redundant. So having bought the Austin without finding a buyer for the Morgan motivated the swap. This was the first car which I have an actual memory of riding in, but that's all, who with? where to? is a mystery. The other activities of childhood must have crowded out memories of events for which I then had no special passion. Also we seemed to change cars fairly frequently, so as a child I developed no familiar affection for any of them as chariots. Our next car was again an Austin 7, this time a saloon. It was fabric bodied, a timber coachwork frame, covered with fabric that was painted, something after the fashion of early aircraft. No doubt it was cheap, lightweight and not subject to corrosion. However many could be seen with patch repairs collected during use.

The Austin caused a mild panic in Wales when some goats wondered onto a driveway where it was parked. Someone asked whether goats ate car body fabric and there was a sudden exodus to shoo the goats, who, of course, were only interested in the grazing. This is my second certain memory of motoring.

We never bought a new car, those we had were about four years old when we obtained them. If they showed some intractable problem they were swapped for another, until such time as Dad had built up enough expertise to carry out his own repairs. In his situation, which was that of self employment in a small way of business, we were lucky to have a car, one of the lucky few. New cars were a rarity and we school kids would gather round one enviously. It took a long time for motoring to become everymans, probably as late as the mid 1960's. When driving back to Lichfield from Birmingham one night in 1950, as I slowed down to take the sharp uphill turn at the North end of the Parade in Sutton some youths slapped the roof and shouted "All right, we can see you've got a motor

car", as though the act of driving past them slowly was a provocative flaunting of the still rare possession of a car.

Back to the Austin 7. At this time we used to go on holiday to a tiny Cardiganshire coastal village called Llanon, which my Mother and Father had discovered whilst on honeymoon by motor-bike then of course. A tough journey from the Midlands, especially over the Plymlumon range, where the road was largely single track with a poor level of paving. Then Cardigan was said to have the worst roads in the country, a statement hotly contested by those of us who lived in Staffordshire; from whatever direction you could always tell when you'd entered our county because the pot holes began, mind you it's still the same today.

At Llanon there lived an English emigrant called Mr. Cattell. He owned a Jowett 7 HP Long Two tourer model. The Jowett had a reputation for durability and economical performance, as well as unbeatable hill climbing for its class. It also had an engine of flat twin layout compared to then almost universal four cylinder layout of other light cars. Mr. Cattell was an enthusiast who took every chance to point out the superiority of the Jowett over pulling power, economy, etc. and having left us standing on one of the long hills between Llanon and Aberystwyth Dad was converted and sought out a Jowett of his own.

This was a 1929 four-door saloon of the model known as the 'Black Prince'. This again demonstrated the vogue for fabric bodies and I remember that it carried a patch on the rear off-side door where the handle of the driver's door had punctured it when flung right back on a windy day after the device to limit door movement had broken. The Black Prince was, for its day, fully equipped with self starter, electric lights, electric windscreen wiper and wind-down windows on each door. It had very luxurious looking red plush upholstery and a red steering wheel to match. This red wheel is another distinct early motoring memory, as other cars either had a black, or a wooden wheel.

We converted Alf Button to Jowetts as well and he acquired a Black Prince. At this time, because of their friendship, Dad had picked up some of Alf's car mechanic knowledge gained from the beginning of motoring,

when every chauffeur had to be his own mechanic. As cars became more reliable and the upper classes realised that the chauffeur, a mere servant, was having all the fun of driving, vehicles aimed at the well-to do owner driver were produced. It was still usual to retain a chauffeur on the staff as someone had to clean them and fery the old fogeys and dowagers about. Anyway the Black Prince was the first time that I began to see the inner mysteries and workings of engines and transmission systems, for when I came home from school on a Summer evening Dad would often be tinkering with the car.

The most frequent operation was that known as a 'de-coke' where, following loss of power, or pinking as the two principal systems the engine would be partially dismantled by removing the cylinder head and scraping from it and the top of the pistons the encrusted layer of carbon. This had accumulated from the partial combustion of the heavy high boiling fractions in the petroleum spirit of the day, plus engine oil, that leaked past the pistons into the combustion chamber.

Even when new, most cars 'burned some oil', so de-coking was something that afflicted all makes and ages of vehicle. Due to the poor fuels of the time the valve seals, particularly on the exhaust valve, became pitted and scored so that the engine lacked 'compression', so losing pulling power. This meant that a de-coke was accompanied by a 'valve grind' to restore the mating surfaces of a valve and its seating. This could be done by hand by the amateur mechanic.

With most engines there was a need for a de-coke about every 5,000 miles, say once a year, so even brief ownership of a vehicle might call for this operation. Nowadays a de-coke is never heard of. Since the introduction of modern fuels and alloys for engine construction, it has not been needed for any of our cars, even for some of high mileage 100,000 plus. One of the things lost along with 'de-cokes' is the characteristic odour of the home mechanics garage, a magical blend of petrol, tyre rubber and grease, which like other rare perfumes heightened the interest in the bodywork.

We carried on faithful to the Jowett marque, our next model being a 1932 'Blackbird' bought in 1935. Prices of used cars were very low in those days especially the high powered cars which hardly anyone but the original purchaser could afford to run. The 'Blackbird' would have cost £162.50 when new and I doubt if we would have paid more than £60 for it. It was the cost of running a car, compared to the general wage level that was the problem. Plus, of course, the presence of 3,000,000 unemployed as a constant feature of the 1930's who were in no position to indulge in motoring. Road tax was 15 shillings (75p) per Treasury Horse Power so a 7 HP car, like the Jowett or Austin, cost 5 guineas £5.25 a year. The Treasury formula to calculate horse power included some engine dimensions which tended to favour old fashioned and inefficient ideas of engine design, a situation which was not altered until post World war 2, when horse power was dropped as a tax indicator in favour of a flat rate per vehicle £l0.00 originally). Insurance at third party would be about ,£7.00. So even for a small car this is already 24 pence a week before running costs, out of a wage that would have hovered around the £2 a week mark, with rent (50p), and a wife plus two or three kids to support. So even with petrol at 6 and a quarter pence per gallon, running a car was out of the question for a working man. On top of petrol, tyres were about a fiver and a new battery about £7.

A feature of the ordinary man's car in the 30's was that the self starter never worked, because nobody could afford to buy a new battery. Cars were invariably started by cranking, but at least it encouraged owners to keep them in good 'tune' so that they started 'first pull up'. One often saw tyres with the canvas showing, with a couple of plies worn through as well! A tyre was never replaced until the canvas was showing.

To sum up the cost aspects, when we moved to Stafford in 1953, we built a house close to a Council Housing Estate built after 1945. It was noticeable that there was no provision for parking cars off the road by the house, or any land provided for garages. When working on some road plans referring to our house, I mentioned this to a young Borough Executive (we got on well, he owned a Jowett Javelin) and asked the reason why. "When we were drafting the plans for this post-war estate we originally allowed for wider roads and the provision of parking areas to

each house. When the Borough Architect, who was getting on in years, saw them he vetoed the parking spaces. When asked why, his response was "Its ridiculous, the working man will NEVER be able to afford a motor car". So this was the 'official' attitude even at that late date of anyone who had experienced pre-1939 motoring patterns.

The 'Blackbird' took us all over England and wales with only one major breakdown which was the failure of a half-shaft. This meant a journey home by bus from somewhere in Birmingham. During ownership of this car we moved to a new house about a mile from my school. Dad used to take me to school in the morning, but I would walk home at the end of classes, unless the weather was bad when he collected me.

No school buses in those days, in fact I cannot recall that the school was on a bus route at all. One evening it was pouring with rain and I, with a gang of other miserable looking kids, was trying to find some shelter by the hedgerow. The blackbird rolled up and as I got in Dad said "Anyone else want a lift into town?" There was a stampede which left the pavement clear of children and the car full to bursting point. When we reached town we counted off the passengers and found that we had eleven children on board, in addition to Dad and myself. Regulations would forbid it today, but it showed the capacity of the car compared to some other 7's, which really were baby 7's.

Cars in those days had removable floor panels to allow access from above the gear box and rear axle and other bits of the running gear. To ease removal of these panels and access to the components so exposed, it was usual for other interior fitting to be easily removable, particularly the front and rear seats, it could be done in a matter of minutes. If one went on camping holidays the car so stripped out made a very cosy sleeping annexe to the tent, with better protection from rain, particularly flooding of the ground in a prolonged downpour.

Well equipped service centres were rare in those days and the need to permit even extensive maintenance anywhere in the country without access to a pit, or a lift, gave rise to the need for removable floor panels up to the end of the 1930's. This must have inhibited development of unitary

body construction without a separate chassis, because the loose floor panels added nothing to the rigidity of the car body. They could often be seen to shimmy about a bit on a rough road.

During 1936 Dad had a small windfall of about 60 pounds and after buying a few household necessities decided to get a 'better' car. By this he meant a bigger horse power and a 4 cylinder engine so that the running was smoother and more in line with the general motoring scene. Because of the low used car prices all this was possible on 60 pounds. In the late 1930's there was a lot of private trading of cars from some of the houses on the main roads leading into Birmingham and cars such as a 12 month old Ford V8 would be marked up at 40 pounds; I've seen it myself.

This time at the departure of the Blackbird the choice fell on a 10 HP B. S.A saloon of 1934 year. B.S.A. were, and are better known, for the motor bike they made, but they made cars as well. This one had a Wilson pre-selector gear box, which added to the novelty and it certainly was a smooth ride compared to the Jowett. But on our first serious Journey in it to the Welsh coast, on the long downward slope of the A5 between Wellington and Atcham a loud and expensive noise came from the engine. We had been cruising along nicely at about 55 when it happened. One of the main bearings, a 'big end' had melted out. We telephoned Alf Button, who came out and towed us in, maybe with his Jowett but I'm not sure because he had a 10 HP Lanchester at about that time. If it was the Jowett then it was again a great credit to its pulling power.

With the B.S.A. repaired, a few days later, we set out again and had uneventful motoring during the holiday. On the homeward Journey, at exactly the same place, clatter, clatter, clatter, a main bearing 'went' again. This time Alf didn't seem too keen on pulling us back again, his advice was 'overfill it with oil and keep the engine pulling so that it's quiet and you'll get home'. Sure enough this worked, provided the engine was kept under load, it ran almost as quietly as normal and we did get home. Naturally the first thought was to get back to a Jowett and Dad bought a 1935 'Kestrel' four door saloon, with green coachwork and a greenish moquette interior in 1938 for, I think, 55 pounds. This was the first car that I was allowed to 'drive' in a suitable off road situation, otherwise I

cannot recall any unusual happenings with it, it was just always there when we wanted it.

Then came 1939, the Second World War and the end of private motoring for the duration, although unfortunately for many it was the end of motoring for ever. Most cars were therefore 'laid up' with the ignition system immobilised to prevent easy use by the expected German invaders. The newer and better cars were requisitioned by the armed forces.

Motor car manufacturers converted to 'war effort' initially most vehicles, cars and lorries were civilian models in khaki. Some manufacturers turned their skills to true armaments, guns, tanks and other armoured vehicles. As hostilities drew to a close a limited civilian ration of petrol became available and cars came down off the chocks they had been laid up on and out into daylight again. The civilian ration was very small but there was a much freer supply of 'commercial' petrol, which was dyed red to prevent its misuse by the ordinary motorist. Of course by now the separate brand names of patrols had vanished as the production and distribution had been run co-operatively or 'pooled' by the companies concerned.

It was a long time before the distinctively branded pumps returned to the garage forecourt. I think that they started to make a comeback in 1951/52. The red petrol being so freely available led to many attempts to remove the dye, some of which such as filtration through active charcoal, gave a colourless fluid, but no-one was sure that there wasn't something else in it as well as the dye to act as a trace. The police made roadside checks and the penalties for misuse were quite severe, so I never heard of anyone in our circle using the 'doctored' red petrol.

The return of the war veterans brought into the motoring scene thousands of men and women who had got accustomed to motorised transport during the war. Hundreds of them had learned to drive as well. Most of them came from that 'working class' that would 'never be able to afford a car', but now they were more determined to have one. Not enough cars had survived the war to satisfy the immediate demand and it was amazing what was dragged out of barns and sheds and put up for sale, some were

so old as to be laughed off the road in normal times and a good many were rescued off the scrap heap.

Post war car manufacture was initially a continuation of the 1939/1940 model range and as far as possible, everything was for export. Prices were a lot higher as well. I can only recall one person who was able to get a new car before 1946 and he was Bishop. Anything made from 1934 onwards was regarded as desirable and a car made in 1939 was regarded almost as new, particularly if it had been laid up.

Gradually a lot of ex-service vehicles came up for auction and the saloon versions of the Hillman Minx, Austin and Morris entered the market after a respray. Because of the changes in road taxation big cars enjoyed increased popularity and an average for used cars prices were about 3 to 4 times the pre-war levels. If you had a car the temptation to cash in on it was well nigh irresistible.

Anyone with mechanical aptitude could turn a few pounds by buying a carefully selected car in need of attention and selling it on, after making it work. The problem was that in order to hang on to the profit, it was necessary to find a succession of cheap motors, which wasn't easy. A whole new range of car auctions sprang up as there was no other organisation for trading in used cars only. Garage sales had been led by new cars and used cars were the products of trade-ins, but a five-year gap in new car production left a demand that could only be filled by used cars and there was no real organisation to administer this. So car auctions arose such as at Measham, where used cars of any make were collected and sold on to individuals or to the trade

From 1946 onwards I was old enough to have a licence and drive, but before then Dad had sold the Jowett, having had an offer of three times what he had paid for it. The replacement for it was a 10 HP Crossley of 1932 manufacture. These were a sturdily built, roomy car, but ours was cheap because there was something seriously amiss with the steering. When you turned to the right the steering wheel gradually tightened up and then Jammed. Turned to the left, the wheel gradually unscrewed out of the steering box and just about got you round a left hand bend before

becoming unscrewed altogether. Also it was a non runner, so it had to be towed home, a car high on problems, but low on price.

The Crossley Company had gone bust in 1933, but nevertheless when we wrote to the address on the dash and described the symptoms we got, almost by return, a new thrust race for the steering box and instructions for fitting it. Once this was done plus a new petrol pump, the car proved to be a good runner. It had the somewhat unusual engine layout of overhead inlet valves and side exhaust valves and the four speed gear box had cast in to the casing the words' The Crossley Silent Third'. Presumably somewhere in their sales pitch they had made the point that the driver could come down a cog to tackle an incline without raising the noise level in the car. The problem with the Crossley compared to the Jowett was the petrol consumption. With the air filter removed the view down the carburettor intake showed a veritable cascade of petrol pouring into the engine and the cost implications of this frightened us. Still the old Crossley was up and running now and could be sold at a profit.

It was replaced by a 1938 Hilman Minx Coupe that again was cheap because of corrosion and perforation on the body work at the bottom of the doors and the body panels around the rear mudguards. There was also something adrift with number 4 cylinder which had no compression and was the presumed cause of blue smoke issuing from the crankcase ventilation pipe. However it ran quietly and was a nice little motor. The corrosion problem was dealt with by body filler and paint but we baulked at dismantling the engine. Although the hood was in good condition it was draughty and damp in bad weather as well as being a bit of a struggle to raise or lower single handed. So the car went to auction. Basically it was a smart looking car and fetched a good price and Dad and I were just tip - toeing away hoping that no-one spotted the body filler, when there came a call over the tannoy "Will the vendors of vehicle number so and so please return to the sales rostrum?" We thought that the purchasers had taken exception to the body filler and wanted to withdraw from the sale but no, they had spotted the blue smoke. A little horse trading arrived at a reduction of 10 pounds off the selling price, as a contribution towards any repairs, and that was that. Leaving us with this perennial problem of finding a cheap motor to restore. By now all the complete cars in this

category had been dragged out of their hiding places and for the next effort, we had literally to go back as far as the scrap yard, having found a 1936 Hillman Minx Saloon in a farmyard, without seats or engine, in the same yard a 1940 Minx Coupe with the body smashed up, but a good engine, and in our local breakers yard a Minx Saloon that was more or less bare of everything except it had a good set of seats. So we bought the lot. Although a mongrel the car proved to be very reliable and was our chariot for the next three years. We even towed a caravan with it to the Welsh coast.

One weakness that this old 'Minx' developed was a blockage in the radiator and she boiled from time to time, but a spare was not easy to find. On one of the visits to the caravan at Llanon we stopped at Berriew for refreshment and took a walk on the canal towpath which went past the 'dump' of the local garage and there lying in the grass was a radiator 'off a 'Minx' that looked perfect. Where it came from is a mystery for there were no signs of a 'Minx' or remains of one anywhere near; I did find the sad ruin of a veteran Cadillac, bodyless with rims collapsed off wooden spokes. It had exposed overhead valve gear and a plate on the block proclaiming that it was fitted with the Cadillac patented self starter system so it must have dated from around 1912 when Cadillac were the first in the world to fit them as standard. I wonder who was running a Cadillac at Berriew before World War One? Anyway, the radiator. A quick dip in the handy canal showed that there were no massive leaks in it and we did a deal with the garage owner for a few shillings, fitted it later that day at Llanon and it solved our radiator problem.

On one occasion Dad had paid me a visit at University and I decided to go home with him for the weekend. Soon after starting out the lever that depressed the thrust race to operate the clutch mechanism snapped and we drove the 50 miles home without a clutch. When he had to stop, which fortunately wasn't often, I got out and pushed to get the car rolling. Dad then jammed it into first gear and I ran round and Jumped into the passenger seat, whereupon by judicious judging of speeds, we crunched across to second gear and then up to third and fourth, all these changes based mainly on the excellence of the synchromesh gears of the Minx gearbox.

This was the last car that we had where another motorist stopped to ask if we needed assistance, because we were parked with the bonnet open and I was making some minor adjustment. There was a time when you NEVER passed another car which appeared broken down without asking if assistance was needed. Telephones were few and far between and a rural breakdown left you, either walking, or relying on a passing fellow motorist, so amongst the old hands there was this kind of freemasonry. The last time this happened to us was in 1949 and since then, unless there is clear evidence of distress, no-one stops, there is now of course the distinct possibility of being mugged if you do.

Apart from the clutch I can't recall any serious problems with that old Minx, in spite of the fact that it was such a hotchpotch of different cars. It came in for its annual decoke, but that was all, and it was, as they say, in daily use plus our several holidays in Wales. Of course at that time with most cars an the road being 10+ years old, it was prudent to carry a few key spares because they were very difficult to get at short notice. We always had with us a spare ignition coil, a spare petrol pump and spare water hoses, the only thing we ever needed was a spare top hose.

A friend of ours had started an ambitious restoration programme on a 1938 Opel 12 HP a model called the 'Olympia', I think. Anyway, it was almost complete but he was fed up with not having a car on the road, for remember that most of these heroic restorations were not for the sake of the car itself and its historic value, as today, but simply to find cheap motoring. So we did a swap for the Minx. The Opel needed the final coat of paint which was easy to organise and a new headliner, which was more difficult. We managed to find someone who's Job it was to fit headliners on the production line and so, for a consideration, we got a smart Job done on that. The engine had been rebuilt so with the respray, new head trim and the seats recovered with leathercloth it was the nearest we'd ever had to a new car. It was very fast, very stable on the road and the ride comfort was well ahead of our earlier cars.

After about a year we wanted to tow a caravan again so the Opel went and we got a 1938 18 HP Hillman Saloon. You didn't see many of these, they

were very similar to the Humber Hawk, but it was our first six cylinder car, with independent front suspension, and in spite of its age, was still smooth and powerful, a very smooth ride even over the poor roads of the day. I remember once getting underneath it to remove the battery, which was under the floor below the driver's seat. I saw this ring sticking out from the U channel chassis side member and wondering what it was, gave it a pull and out came a 'King Dick' moveable spanner. It must have ridden there on the chassis since the last time some mechanic had needed to shift the battery, so you can tell how smooth it was.

It was an expensive car to run all the year round and when we decided to leave the caravan permanently on site we sold it and came full circle back to a 1935 Jowett Kestrel, in 1952, which had belonged to a market gardener, Mr. Green, who had bought it new. He lived near Shenstone and because he got a petrol ration for his business, I had often seen the car in and around Lichfield. During the war I had seen it once in a local garage and overheard a mechanic talking about it. "See that Old Greenie's car is in again". "Yes, says it's difficult to start". "Not surprised, the valves are like four lumps of porridge and there's no compression, so you can twiddle it round with the end of your dick".

And this was the car we acquired! After some restoration it did us proud. We went all over the place with it and at the time we were building our house in Stafford, used it to pull an ex-army trailer to convoy odds and ends for the building and when going to the caravan on holiday. Once we decided to go to Aberystwyth via a diversionary ride to Rhyader and the Elan valley reservoirs. I noticed on the map that there was a route marked as "Mountain Road" from the end of the reservoirs on into Aber, so I asked an AA man if that road was passable by car. He saw that the car was a Jowett then said "We are supposed to say that it's impossible by car, but some old fogies won't take their cars anywhere- if you take it easy you'll get through".

When we got past the reservoirs there were a lot of cars parked off the road admiring the view we thought, and , ahead, this steep hill with a couple of near hairpin bends going up to the Aberystwyth Road. The surface finish also deteriorated at this point, becoming mainly loose stone.

Anyway, I chopped down into second gear and off up the hill, with the trailer bouncing in the dust behind us. Round the first bend we needed to chop down into first gear and stay there for the rest of the climb. We could now see back to where the other cars were parked and it was like the start of a rally. Once the parked motorists (many in new cars) had got over the shock of seeing old Greenies car amble up the hill, at what they thought was the end of the road, they ran to their own motors and tried to follow us. But amazingly not one of them made it all the way because of going at it too hard and losing traction on the stones and once a couple had done this it blocked the road for the others.

This mountain road to Aber is today much improved and easily crossed but then it was a gated road with this very poor surface and following the AA man's instruction to take it easy, we went on picking our way through the pot holes, assuming that we were all alone. Suddenly, there was a blare of a Klaxon behind us and I pulled over to allow a single decker bus to go striding past carrying destination boards Rhyder to Aberystwyth. It was obviously on the regular scheduled run and suddenly we felt a little less like the pioneers that we thought we were.

Having decided that we wanted the caravan to be mobile again and so needing a car bigger than the Jowett I bought my first car. Up to now Dad had financed our motoring, but now I bought, in 1954, a 1933 2 and a half litre Lanchester, 4 door tourer. It cost oC60 and was, we thought, a splendid vehicle with coachbuilding by a well known company, pillarless construction so that when the hood was down and the side windows wound down, there was a completely unobscured view of the passing countryside b cause the four doors were hung from central waist high pillars cast from aluminium bolted directly onto the chassis. In fact all the body panels were aluminium. It also had double dipping head lamps and self cancelling trafficators. The seating was leather covered foam rubber. It had running boards and the spare wheel set into a front mudguard, all in the best tradition of an aristocratic cruiser. As it was expensive to run we used it only during the holiday season with the Jowett doing the local work for economy.

The Lanchester was a testament to the durability of a vehicle built with sufficient horsepower to pull along a very strongly built set of components. I once went to the local dealer's spares department for a component for the braking system master cylinder, which I had taken with me. I put it on the counter "Yes Sir" he said, "and what commercial vehicle has this come from?" He was amazed to learn that it came off a car. But that was it, built like a lorry, but only subjected to private car loadings. Caravans in those days were limited to 30 MPH although surprisingly not many people in cars travelled much faster than that, say 40 MPH. The Jowett's cruising speed was just below 40, but even at that speed it was quite common to be baulked by other private cars, some of them new. So with the Lanchester plus caravan at 30 MPH you would gradually build up a few cars behind you if on a main road (there were VERY few ears on the roads then compared to today) waiting for a straight stretch of road to overtake, but if you came to a hill of reasonable slope and put your foot down, the car held the 30MPH all the way up, which was more than those behind us could do and they soon dwindled into the distance as you watched then in the wing mirror.

My affairs were improving now and I was able to afford my first post War car, albeit not new, which was a 1954 Hillman Minx saloon, purchased in 1956. This was a nice car in terms of body design and trim, it had a bench seat for the front passengers and a gear change lever on the steering column, something which seems to have gone out of fashion, but when fitted gave a much greater sense of spaciousness at the front and allowed the bench seat layout so allowing six people to be seated in the car. Of course it didn't allow individual setting of seat positions for the front passengers, which may be the reason why it was dropped. Certainly many early post war cars used it, Hillman, Humber, Morris, Ford (Consul and Zephyr). Otherwise the running gear of the Hillman was much the same as pre-war Minx, but with it being almost new and with modern suspension, it made a new world of motoring.

We held on to the Lanchester for caravanning, but when we tried it at the beginning of the season were appalled at the noise and ride quality compared to the Minx, from a car that we had considered very comfortable, so we had a tow bar fitted to the Minx. She pulled the van

very well though it was clearly overweight and we did get stuck on one steep hill (which was never a problem with the Lanchester) and this led us to change the caravan for an up-to-date lightweight model.

In 1959 we moved up to a 1957 Morris Oxford which had a bigger engine (1500cc) than the Minx, together with overhead valves. This yielded about 50 brake horse power, the same as the Lanchester had given out of its 2500cc capacity, so the Oxford was a very nippy car, getting up to the early 60's in speed quite readily. I remember in 1950 a fellow student had the opportunity to drive a new Austin 16 and he reported on the event in tones of awe "You could corner at 30 (MPH) you know". This stability was a novel experience, but by now we knew from the Minx and the Oxford that reasonably priced cars intended for a purchaser of moderate means could combine a smart performance with a smooth ride and be able to corner in a manner not possible, even in the most expensive of pre-war sports cars. Heaters, demisters and windscreen washers were beginning to appear as standard items.

Then at the end of 1959 came our first Company car, which was also the first new car, a Morris Oxford. From then on all the excitement of motoring began to fade and a succession of new cars every two or three years took away the fun of building up something mobile from a heap of rubbish. When my wife Barbara began to drive and needed a separate car, we looked to the older 'cheapies' for a time, a Jowett Bradford Estate, an Austin A40 and early Mini, but then it became sensible to buy new for the sake of reliability.

Later on I funded the first cars used by our daughter. One of some interest was a Bond Minicar, 3 wheeler, drive wheel at the front and I think a 500cc air cooled engine. It had a device known as a Dynostart, being a combined electric starter and dynamo. In case this failed there was a motor bike type of kick start under the bonnet at the front of the engine. Not an elegant posture for a lady, so one Job was to rebuild the Dynostart and then it was very reliable. It had 4 forward gears and was capable of 70 MPH.

It could also be driven in reverse. The earlier Bonds had no reverse and to get out of a parking slot meant pushing, or even lifting, the front end and walking it round to face in the desired direction. However this Bond had reverse but to use it you had to start the engine running BACKWARDS. There was a special and complicated starter/ ignition switch which allowed this, but of course, in any manoeuvre that meant going back and fore a time or two and you had to stop and start the engine each time. We never tried it, but it was rumoured that by using all four gears you could actually get up to 70 MPH in reverse.

My last Company car was a 2.8 Litre Ford Granada Ghia estate, which I purchased from the company when I retired. Compared to the start of my motoring experience this car, within a price range certainly accessible to middle management salaries, has electric, automatic, or powered everything, plus air conditioning. The other contrast is that at a mileage of 215,000 it has never needed a 'de-coke', a tribute to, amongst other things, the improved materials and fuels of today.

CHAPTER THREE

SUCH IS LIFE IN LICHFIELD

Just before I was born a move had been made from Walsall to Leomansley on the outskirts of Lichfield. Home was one of four terraced cottages having small living accommodation but with extensive outbuildings across a paved yard. This extra space allowed Dad to build a bathroom which was rare in those days. For safety's sake it was lit by a low voltage circuit and the ceiling light was the interior light of the passenger compartment of a Daimler limousine.

Dad had happened to be at a local scrap yard seeking a 'spare' when this Limo was driven in under its own steam, its slide valve engine ticking over like a pocket watch. It had belonged to a local bigwig, Sir Charles Villiers Foster and each wheel plate had that name engraved around it. The interior light was a large walnut framed affair with an engraved glass lens and after Dad rescued it the workers stepped in and reduced the car to scrap, for sadly, progress had brought it to that status even though it was still running perfectly.

We had the standard apparatus of the day for entertainment, a 'wireless set', worked from batteries and a wind-up gramophone. The radios of those days, of course, functioned via thermionic valves and to power these, a re-chargeable lead/acid wet cell was used while the high voltage side of the circuit worked from a dry cell assembly as much as 110 volts. The wet cells had little indicator floats in them which gradually sank as the cell discharged. It was usual to have a charged one on stand-by and there must have been good business for the local electricians recharging these accumulators.

With the coming of the 'mains', which I think was about 1932 or 1933, we soon moved onto an 'all mains' radio, a Murphy, although the gramophone remained wind-up for a lot longer and was of course the basic horn type, no electronic amplification, although the horn was disguised by being built into the cabinet.

The 'mains' also brought with them other novelties, especially some of the first truly labour saving devices. Our Electrolux vacuum cleaner was one, plus an electric kettle and iron.

It's amazing how much was coal gas fuelled at one time, lighting, cooking, ironing, refrigerator, water heating and then everybody seemed to go electric mad. Gas has made a considerable come back since the days of North Sea Gas, which plus liquefied gas has allowed even isolated rural areas to get cooking with gas.

In those early days most townships of any size had its 'Gasworks', but the range over which it could be distributed at low pressure was limited, unlike today with our national high pressure pipeline network.

Some large country houses had their own installations for making coal-gas but the usual rural lighting was paraffin lamps, or candles. The absence of road lighting meant that the 'flashlight' enjoyed good sales and before that the bullseye paraffin lantern, or otherwise, moonlight.

Lighting of outdoor activities, such as market places, were by means of a simple paraffin flare hung on the stall and there were more powerful high pressure versions of the paraffin lamp which featured a 'gas mantle' as the source of light, not a wick. I remember these fizzing away on market stalls during a Winter evening in Walsall in the street leading up to Church Hill. Fairgrounds were one of the few outdoor events to be lit by electricity as they had their own generators.

The use of battery radios, paraffin and candle illumination persisted until at least the 1950's in many rural areas. Even those houses that were wired for electricity included many who could not afford the cost of lighting every room, or having more than one power outlet.

One of our regular family activities was a weekly visit to Aunty Clara and Uncle Will Hopkins, who lived at Selly Oak, Birmingham just by one of the University gates, opposite a small foundry making parts for motorcycles and next door to the Wesley Richards factory, where I believe they served as caretakers.

Wesley Richards was a famous gunsmith and had supplied items to Nelson, from who they had a letter, after one of his battles, thanking them for the performance of their fire arms. I was able to watch the gunsmiths at work assembling the shot guns, many with splendidly engraved panels. Some made for Indian Princes, were encrusted with jewels.

Aunty Clara had three children, Bill, Eva and Cedric. Eva had died at the age of 16 from meningitis, something which Clara never got over. Eva was a pretty girl, with blonde tresses, which were shaved off as part of the (usually) ineffective treatment. I remember Clara describing this to me when I was a small boy and then as the disease progressed "as soon as I saw that wry neck I knew it was hopeless". A spin off from this was excessive Mothering of Cedric, who apparently was given so many sweets and comforters (he had a baby's bottle at bedtime until the age of 14) that he lost all his teeth when a teenager and certainly had a full set of false teeth when I first knew him aged about 20.

There was a shooting range as part of the factory facilities and at Summer weekends we often played cricket on it, although the main pastime was indoors with billiards, or snooker. I always recall my visits there as "good times" but what a boy of 9 or 10 could have done to pass the time I cannot imagine. There was a small river alongside the rifle range with a weir and trees and so it probably was an ideal setting for the solitary play of an only child.

Aunty Clara had been one of seventeen children, all of whom had survived infancy and I remember seeing a photograph of them arranged in order of decreasing height, documentary demonstration of the improvements in health care in the last quarter of the 19th Century.

Of visitors who called at Aunty Clara whilst I was going there, was a Mr. Coombes, a dapper ex-service man and the only man I can remember meeting who sported a waxed moustache, brought to sharp points at each end. Another visitor had lost a leg in a motor cycle accident. He didn't get on very well with his artificial leg, so if he stayed for a game of snooker,

he took it off and I was fascinated to watch him balance or prop himself against a chair, or something, in order to cue his shots.

One of the aftermaths of 1914-1918 was the frequent sight of disabled men, sually with a leg or arm missing. Most went on crutches, few could afford invalid carriages. These were propelled by levers worked by hand mainly, but one or two were motor driven. At the house of a family friend I once met a man who had lost both legs and I asked my mother what had happened to them. She had a habit of telling me to always dry my feet thoroughly after bathing, so rather than try to explain to a child the true reason for the loss, she said 'I expect that he didn't dry between his toes'. This explanation had dug itself into my memory.

Those more dreadfully disfigured were institutionalised, or in some other way rarely seen in public. This was not the case after 1939-1945 when improved surgical techniques and better construction of artificial limbs, bettered the lot of the injured. There was also better support after treatment of the injuries, including greater supply of self propelled vehicles which were usually three-wheelers adapted for hand operation only.

Unfortunately people still suffer crippling injuries in ordinary life and gradually the adaptation of normal small cars for hand driving has taken over. One of the last times that I stopped to help a fellow motorist who had broken down was with one of these three-wheelers. The driver was just clambering out and hobbling on crutches to investigate. 'The Dynastart won't work' says he. Emboldened by my success with my daughter's Bond Hinicar. I said 'Have no fear you are in the presence of the greatest living expert on the Dynastart'. Just then I remembered that on these cars there was a main fuse conveniently situated on the dash that fed all the electrics. "Have you checked the fuse?" "No never thought of that". He put in a new fuse and she fired first pip and off he drove, so my expertise on the Dynastart was not put to the test!

The visits to Aunty Clara's ended at the outbreak of war in 1939, we heard that Uncle Will died about 1940 but apart from one attempt shortly after the war the visits were never resumed. It seemed that the time of the old

friendship had passed us by. Other regular friends in the 1930's were met through Dad's business activities or wife to wife acquaintances via my Mother. These included people who lived in modern houses compared to ours and were no doubt part of the motivation for our own house move.

One couple were Cyril Taylor and his wife, another Gladys I think, who was Manager of the Woolworth store in Lichfield. The Taylors were both natives of Nottingham, where there is a strong spiritualist tradition and during evening visits after dark any strange tappings or other noises would be explained by Mrs. Taylor as 'her Mother's spirit' trying to make contact. In the mid 1930'swe were still at Leomansley - Dad was taken ill with Erysipalis and had to be hospitalised. He was anxious that I didn't miss out on Guy Fawks Night and asked Cyril to arrange a bonfire etc. Possibly because they were childless Cyril put his heart and soul into this, thank goodness we had that big garden with space for all the burnables that turned up, together with a nearly lifesize 'Guy' of sacking stuffed with straw, a painted face and a jacket and hat. Obviously a night to remember, but I know that I wanted Dad to be there to see it; it wasn't the same for me without him. The infection, that he had called for hospitalisation and isolation because of the contagious nature of the disease, which takes two to three weeks to clear up.

At the time the only adult isolation facility was at the Infirmary which was one of the wings of the 'workhouse' and as he got better Dad collected lasting memories of life on the 'inside'. The worst part was the separation of the sexes, which was still based on the idea that poverty would breed poverty. In other words, the poor, if left to intermingle, would produce offspring who would automatically become paupers. Even people in their 60's and 70's, who had lost their home because it was tied to the job, or had otherwise fallen on hard times, which was all too easy to do in the 1930's, were separated and Dad told me of old couples who had spent a lifetime together, waving pathetically to each other across the courtyard from the windows of their separate accommodation. I remember seeing a pauper's funeral leaving the workhouse, the coffin being pushed on a little handcart and covered with a distinctive purple cloth. The last indignity to be inflicted by the state.

Talking about graveyards, one of Dad's employees, Sam Dakin, used to talk about having to go to 'cut the graves' which puzzled a boy of 7 or 8 like me. Apparently it meant keeping the grass on the grave and immediately around it in trim and relatives of the deceased took it in turns to do this service. Now some nameless Community Service server trundles over us on his ride on mower, instead of a gentle snip of shears wielded by someone who at least knew what we looked like.

The move from Leomansley came about 1936 and Alf Button was involved, Dad and he building a pair of semis. I expect that only together could they afford the initial costs. The deeds of the property referred to the land as "...the little croft of land," and Mom and Dad decided to call the house "Little Croft". I'm certain that the 'Missus' helped Alf with his commitment for when she died years later she left the balance of the cost of his house to him in her will. This was a time of excitement for us all. I remember in contrast to today, timber poles roped together as scaffolding and what seemed to me a huge pit dug for the lime, I remember clouds of steam as quicklime lumps were dumped into water in the pit so that it was 'slaked' - converted to the form of lime used to make the plaster more easily workable on the walls and the mortar used for 'torching' the roof tiles more adhesive. A lot of the builder's rubbish was dumped in this pit when it was filled in and this left us with a hard patch in what was going to be the front garden.

Here Dad's brother Frank came over for the day and hacked away at the ground with a pickaxe so that at least some topsoil could be mixed in with it. This was 1936 and Frank was still unemployed. We visited occasionally, they had a council house in a suburb of Walsall and two children, Charles, who later worked for Bolton - Paul on aircraft manufacture and daughter Minnie who, even to me looked a pretty girl, sadly with a speech impediment, so that only those really familiar with her could understand her. However, later on, this didn't stop her marriage to a personable young man.

One night as we were leaving after a visit, I was leaning out of the back window of the Jowett and I saw Dad slip a 10 shilling note to Frank, who to my utter astonishment, went down on his knees in the road "God Bless

you Sid" he said, "God Bless You". OK an extra ten shillings out of the blue could give a special treat to someone struggling to make ends meet, but the picture of the emotion caused has stayed with me. Frank remained out of work until after the outbreak of World War Two, when demand for labour improved, albeit slowly. When he got his job he said to his wife "Now I've got a job again I'll work for you until I drop dead. And he did, at the age of 64 he dropped dead on the bus on the way to work. His widow told us this at his funeral. From his own experience Dad was aware that many a hard luck story in this land of hope and glory was real and not just a try on. I did occasionally see him make small gifts to people, not all known to me and I suspect that there were many more.

Just before we moved into the new house came the abdication and we, along with Alf Button and his wife, listened to the King's radio broadcast that had been expected. The radio announcer introduced "...Ladies and Gentlemen, His Royal Highness..." "he's gone then" said Alf, and everyone nodded in silence. The Majesty was past for Edward but a lot of people had, if not sympathising, waited with interest to find if a King was as free as his subjects. And he wasn't.

I never saw Edward, or his father George V, in the flesh, my first live monarch was George VI on a visit to Lichfield during the war. But I remember the radio news bulletin the night before George V died " The King's life is drawing peacefully to its close", these were the words of his doctors and it took me a bit of time to puzzle out what that meant.

An early event after moving into Little Croft was that Dad won on the football pools. Not one of the main prizes but something like second dividend, in one of the smaller components of the football pools, the four draws, or the six sways, or whatever they were in those days. Anyway one morning a registered envelope was delivered and Dad brought it upstairs (we were only just getting up) and emptied the contents on the bed. Out fell some loose change and a few pound notes 6 pounds 7s.6p. in all. Disappointing, but not bad, a nice little pick up for those days when you recall Frank's reaction to 10 shillings. Then Mom looked at some pieces of white paper that were poking out of the envelope. "What are these Sid?" "Oh, just some spare coupons, or advertisements I expect - hey hang on"

They proved to be five pound notes (the old ones) and they totalled to a further sixty pounds, which was a lot then, a years wages for some.

It was spent on furniture - a dining room and bedroom suites -because we had moved in with what we had, for the sake of economy and I suspect that it was all hand- me downs, or second hand. On top of this it went towards the balance of exchange of the Jowett 'Blackbird' for the ill fated 10 HP BSA.

We were now moving to the peak of Germany's pre- War foreign policy. Many of our acquaintances were working people and I remember listening to them talking about what 'he' might be going to do next. There was at the time (1937/1938) a sneaking admiration for Hitler (not out and out support of course) because he did seem to be doing something positive for the workers in the way of employment.

We had three million unemployed here (once again!) and the German method which gave work in return for toeing the Party line seemed certainly better than our method of giving 50p a week in return for toeing the Dole line. If you could call it a line, the Dole regulations were so convoluted that you had to be double jointed to toe that line.

At the time, but unknown to us, the government had grave doubts about the trustworthiness of the British people with respect to once again getting killed on behalf of the aristocracy and propaganda started to emphasis "we", "together", instead of the "Your Country needs you" imperative approach.

Whilst our family life continued smoothly and we took our first and only trip abroad to Bologna in Summer 1939, even at the child's level of appreciation there was an over-hanging miasma of expectation waiting for 'IT' to happen and in due course it did. After an initial nervousness life settled down again when the furious onslaught against Poland was not repeated here.

We had by then, in anticipation, dug our own air raid shelter in the garden, a hole about four feet deep with a pitched roof of corrugated iron, which

had the excavated earth heaped over it. The garden was a large one by today's housing standards and dad had just got it to the point where it matched his ambitions gleaned from the gardens of some of the larger houses in the locality. Lawn, rose beds, trimmed box hedges, flower beds in season, plus the inevitable large vegetable area.

He had also treated himself to a greenhouse, not a big one, I think that it was 8 feet by 6 feet. He grew tomatoes, amongst other things. This greenhouse, brand new, complete with glass, putty and paint and built from good quality timber, had cost 1 pound.l0s. (1 pound 50p). It's best to leave the contrast in price implied and not to spell it out because there are so many examples over this (to date) 55 year period. But as foreshadowed, war brought an end to most of the pleasant activities, at least in retrospect it seemed to do.

I had started secondary education and a new range of subjects which gave me at least a new centre of interests, this was King Edward VI Grammar School in Lichfield, to which I walked each day, no great distance, about 1 mile return. After we had moved from Leomansley I had stayed at the school there. Dad used to take me in the morning and, if he could, collect me in the afternoon but most Summer evenings I walked home along the 'New Road' past the Clock Tower.

The building of the new road had taken it through the grounds of an ancient Friary and it joined the old town road system opposite 'Bore Street' which like 'Conduit Street' were named so because they had been part of the town water distribution system and the Clock Tower, the base of which held several water fountains had been one, if not the main, point of distribution of drinking water to the towns folk. The advent of piped supply meant that at the time of the new road it was dismantled and rebuilt in its present location marooned on a traffic island. Lichfield, lying at the hub of the roads connecting Stafford, Walsall, Burton, Birmingham, Coventry, was much relieved by the New Road and by recent emendments contiguous with it. New Road has wide grass verges between the road and the footpath which were tended by a middle aged council employee who kept his mowing machine in the ground floor of the Clock Tower.

One thing I remember is that at the time in the 1930's when the driving test was introduced it was deemed that he needed a licence to be in charge of this pedestrian controlled motor vehicle and there was for a time incongruous sight of him mowing the grass with 'L' plates displayed on his mower. I suppose for me the move to the Grammar School represented the end of childhood proper and a move, amongst other things, into long pants. But for me even now that childhood is recalled and escaped into like the Celtic other world of eternal Summer.

Although there was no immediate sign of enemy activity; when the first Air Raid warning sounded, everyone looked at each other but didn't really know what to do, so did nothing, being relieved when the 'all clear' sounded a few minutes later without any intervening hostilities.

We had all been issued with gas masks and carried them everywhere and at school there were regular gas attack practices and gas mask inspections. We put our masks on and sat in class, just to get used to the routine of putting them on and breathing in them. The school had also been supplied with some substantial air raid shelters away from the main buildings and to those we had to report when the warning sounded during lessons.

However, most of the raids took place at night. There was a universal sense of loss and loneliness when the French Nation surrendered to the Germans in June 1940. Getting the troops back from Dunkirk was a bright spot on an otherwise frightening scene with no T. V. there was no immediate visual effect available, only cinema newsreels sometime after the event and the newscaster's report at the time. Or presumably at the time, because I don't know to what extent the censorship policy delayed the release of reports on events.

Certainly for what seemed a long time the news on all fronts lacked cheer and only the continued delay of an invasion of Britain caused us to gradually breathe easier.

We even made, what was our last attempt at a family holiday, going by train to Llanon. We got there but the travel was lengthy and a tedious cross-country jaunt and it's only the journey that I remember of that

holiday. Of course by now there was no private motoring. Early there had been a small ration and we made one or two trips to Aunty Clara's, but by now the Germans had started to bomb Birmingham and it made a sobering contrast to the travelling of only a year previous to see the gaps where buildings had stood and to drive in places through freshly cleared rubble. The air raid sirens were sounding now in Lichfield for real for they were invariably followed by the peculiar cyclical roar of the German bombers overhead, and the crimp of bombs exploding in the distance.

At the height of the bombing campaign in the Midlands, Dad was taken ill with peritonitis and was in hospital for some six weeks. During this time the raid on Coventry took place. By now we had stopped using the dismal shelter in the garden and instead took refuge in a utility cupboard under the staircase. Coventry night was the closest the bombs came to us. The City was 25 miles from Lichfield but it sounded as though one bomber had gone astray and a stick of bombs dropped across our end of town. It's amazing how menacing they sound as they explode closer and closer. We heard this bomber, loud, low and the first explosion wasn't too bad, but they got closer and louder and just when it seemed that the next one must be us, there wasn't a next one and the engine noise passed overhead and faded. These bombs had dropped across what were in those days open fields behind the houses on the road to Tamworth and the last one failed to explode. It landed far enough from our house not to cause serious damage, even if it had exploded, but we would have lost a few windows. So Lichfield got off lightly in terms of bombardment, in spite of being near an Airfield and a large barracks.

The increase in military activity brought with it 'billeting' of Army and Air Force personnel. We had with us an Air Force officer and his wife. He was a 1914-1918 air crew called up again but put into an administration post at the new airfield at Fradley, which was about six miles away. Because of this he got a petrol ration, and for a time we had a mobile car back on the premises.

A side effect of the aerial warfare was that the car breakers yards, which I had been used to 'haunting' because of my interest in cars, began to fill up with shot down German aircraft which were recycled into the war effort. I

noticed in one cockpit of an ME109 fighter that the armour plate behind the pilot's seat had a hole punched in it by a shell just about level with the shoulder blade area of the flier. I wondered what had happened to him, had he got out just before the shell passed through? The rest of the cockpit looked pretty clean, with no bits of pilot sticking to it, or blood-stains, so maybe he had!

It was at this time that Germany attacked Russia and when that news came on the air there was, at first, an almost audible sight of relief, for now it seemed clearly that 'he' had bitten off more than he could chew. When Dad came out of hospital he was not fit enough to continue with his own business where in any case conscription was taking from him his more reliable employees. There was in addition to armed service, a general registration of men and women up to a quite advanced age and when your age group 'came up' you could be directed, if deemed applicable, to employment directly in the cause of the war effort. This could sometimes take civilian workers away from work deemed 'non-essential' and at the same time a long way from home.

In Dad's case, after recovery from his illness, his wartime job was with a company making tools for aircraft and vehicle manufacture, fortunately an easy train ride from home. Young people had to register at age 16 and usually went into one of the Cadet Forces at this stage to get some pre-service experience. In my case this was the Army Cadet Force, which could be joined at age 15 I think. This brought with it, for someone more academic than military, an added problem.

Being a barracks town the streets of Lichfield contained a considerable number of Officers and on parade days, when I was in uniform I had to remember to salute them. As I was not oriented towards the military life at all I found it a great strain to be aware of wearing uniform on that one day per week. There were a series of training and tests that could be taken, or rather in the circumstances, had to be taken, and I worked my way up to the rank of Corporal quite legitimately.

At the end of each year, when the Senior Boys left, of course at the same time we lost most of our Senior NCO 's and Junior Officers and so some

rapid promotions could take place. Such an event took me from Corporal to Quartermaster Sergeant virtually overnight. This put me in charge of all the stores belonging to our company, issuing uniforms to new entrants, issuing rifles on parade days and getting them all back. We got involved in various ceremonial marches which included units of the real Army and Air Force. We were expected to perform just as seriously as them and there would be a saluting base set up on the Market Square with the Civic dignitaries and Military folk on board. I can't remember what any of these parades were for, I think one was giving the Freedom of the City to a resident who had distinguished himself in the war.

One time there was some sort of reception afterwards and I was delegated to be a car door opener at the place where it all happened. I remember very clearly opening the door for an RAF Officer and as he stepped out of the car, the first thing I saw was the sleeve of his Jacket emerging from behind the door. This sleeve displayed what seemed to me to be an endless array of the rings of rank. I was taken aback at being in the presence of such exalted rank and, of course, forgot to salute. In spite of the crowd of arrivals and goings on he noticed and took the time to tick me off for it.

When the Americans arrived they were barracked at Whittington, in peace time the Headquarters of a local regiment. The white soldiers were in the Barracks and the black soldiers were all under canvas on the adjacent Whittington Common. I cannot recall ever seeing a black American in town, they did seem well segregated.

We got invited out to meet the American Army and clamber over some of their equipment, items like the DUKW and its small partner the amphibious Jeep were on show, I remember thinking that there didn't seem to be much of an attempt to waterseal the bodywork of the Jeep and raised the question of how it stayed afloat, with an American Officer. He explained that shortcomings in water sealing were offset by powerful bilge pumps which came into play as soon as the primitive propeller was engaged, which had to be done before actually entering the water.

If the engine stopped the pump stopped, you stopped, and you sank pretty promptly. Although the DUKW's were often seen in pictures of

amphibious action I never saw any of the jeeps, so maybe they either were abandoned, or all sank.

I suppose the main retrospect of the war years for me as a young boy (11 to 17 years) is a sense of being hemmed in, especially compared to what teenagers were able to start doing again within two or three years, especially travel. The total devotion of effort to support our defence against the German aggression is difficult to recapture now even for those gone through it. The absence of fuel made even local travel difficult unless it was very local on a bicycle. The vehicles still running, apart from public service, were Doctors and other 'essential' users, plus delivery vans used by local tradesmen.

A few motorists fitted their cars with huge gas bags on the roof which were filled with Coal Gas and others were towing small trailers that generated 'Producer Gas' from red hot coke and water. Travel by bus or train was crowded and always brought you face to face with "Is your journey really necessary?" propaganda posters. So, broadly, for the ordinary man, unless you were directed to go somewhere, travel restrictions hemmed you in. Petrol shortage gave us an extension of the use of horse drawn transport.

In the 1930's there were still many local traders who used a horse and van for local deliveries and collection and distribution from railway depots often used horse and cart. Our local Baker, Griffins, used horse vans and I could sometimes get a lift home from Leomansley school after we had moved to 'Littlecroft'.

Again there was little traffic and the horse knew the way so we trotted with the reins slack while the roundsman did up his books for the day. Very short distances were covered by using a handcart, one with a closed van body top if used for bakery and other food stuffs. Shoppers didn't have to carry their own goods about in those days as there was always an 'errand boy' for delivery work. Where we lived in the town there was opposite us a stables, where the local delivery horses turned in for the night. Mr. Stanley had a Carter's business further down the road from us and a vivid memory is of Old Man Stanley's horses pulling the cart home

at the trot, Mr. Stanley standing with one foot on the dash, whip in hand and as he came to the turning (horse traffic had priority over other vehicles) up would go the whip to signal the turn and round they went making a bee-line for the stables.

Another effect of transport shortage was 'Zoning' where the production and distribution of goods was restricted within zones, especially "non-essentials" like sweets, chocolate, soap, polish and others. We were lucky in the Midlands as many National brands like Cadbury's were in our zone, but otherwise the national distribution of well known brands came to an end and wherever possible existing local manufacturers (and brands) filled the gap. This was the saving grace of a lot of small local manufacturers who all of a sudden enjoyed a monopoly and for some, those years were the only ones giving a profit.

Anyway everything was rationed, the packaging of familiar products was pared down, cigarettes and chocolate just in a paper wrapper without metal foil or cellophane outer, all the savings going into the 'War Effort', although things like that didn't get back to 'normal' until long after 1945 because of the general poverty of the country. Newsprint was also rationed, the average daily paper being down to four pages from a single folded sheet, although I always seemed to get my boys paper 'Dandy' or 'Bean o' as long as I wanted them. Fish and chips and other foods were then wrapped in newsprint with a single piece of greaseproof between the food and the paper. This again continued for years.

Many foods, such as bakery, were simply unwrapped. With rationing the volume of foodstuffs being handled was much reduced in any case and many of the shelves in stores gradually became empty and stayed empty. Food rationing was the problem tackled by the housewife. Some of the rations, like half an egg a week, were pathetic and frustrating, so that many households started to keep a few chickens and even a pig to get some home produced food. Chickens could be fed on household scraps, but for pigs a meal ration was available. In return for this your pig production went into the national pool and you were paid the going price, except that you could benefit by reserving one pig, or half a pig, for yourself, which came back butchered and cured.

I remember home cured pig as fatty and salty, but better than going short. Egg production also had its ups and downs, which was levelled out by learning the mysteries of egg preserving using silicate of soda solution. So what with this and vegetables in season from the garden the restricting effect of food rationing was not as great as it might have been if you lived in a rural area.

"Black out" had the greatest effect of hemming in, because as well as the absence of street and other public lighting, it replaced the natural beginning and end of the day. Once upon a time the sun would go down and windows would be left with curtains undrawn, houselights being switched on as needed, but now the onset of need for artificial light meant that the 'black out' had to be in place. Usually heavy close fitting curtains would suffice, but entering the house meant that doorways needed some sort of double light-lock arrangements, which would be combined with very low wattage illumination at the vulnerable points.

Getting in and out of public places, shops, cinemas, was just as bad and at times the gloomy activities were reminiscent of one of the underground races discovered by science fiction writers. Extended daylight saving "British Double Summer Time" helped a lot in extending outdoor activities. Because of the black out and other precautions against air raids, people were appointed as "Wardens" in their spare time to check on black out precautions and give guidance in the event of emergency.

There was much part-time activity like this, including "Fire Watching", when people stayed all night in schools, offices and the like to give an immediate response to incendiary bombs, or the spread of fire from other buildings. These activities seemed to continue even after the threat of manned bombers had receded. I suppose it was thought necessary to keep everyone on their toes, even though it was the Southern part of the country still most prone to an attack.

Trainers were sent to schools to teach the older children how to fulfil the duties of Fire Watcher. They took a gang of us to a place in Beacon Park, where there was a windowless wooden hut, a life size dummy, a stirrup

pump and a large tray full of magnesium turnings, to represent the 'bomb'. First we had a general training in how to use the pump to control and then extinguish the flaming magnesium that was set on fire in the tray. The trainer also demonstrated how to crawl below the smoke level, locate and rescue the injured casualty (the dummy). We were then individually shut in the hut with the burning metal, plus pump, plus dummy, to do our stuff. All went well until after a boy called Watson had been in (he went on to win the Sword of Honour at Cranford Cranfield) when the next trainee staggered out without the dummy. 'Where's the casualty?' says the trainer. 'Can't find it' says the boy. 'You're hopeless - shut the door after me' said the trainer going under the smoke in the approved fashion. He was gone for a long time and eventually came out somewhat dishevelled and sans dummy. By now we knew that Watson had hung it on a hook behind the door. 'Alright' says the trainer glaring at us, 'what have you done with the ****** dummy?' It's hanging behind the door Sir' says Watson politely. In such fashion do trainers learn. To give him his due, he burst out laughing when he knew the truth.

Another thing that affected the older boys was farm work. For the 'duration' the long Summer holiday had been split into two segments, the later one matching the time of year when root crops were harvested. Although we weren't press ganged into it, the older boys were all expected to turn out for the 'potato picking'. You got paid for it at a rate agreed with the school. During the first week we sussed out that by going to a farm, not in the scheme, you could get a slightly higher rate of pay and be free of teacher supervision, so a few of us moved to the next farm down the road, which was the home farm of Swinfen Hall, then occupied by Old Colonel Swinfen-Broune who used to come round the fields with a large basket of apples for us to choose from.

One of the regular farm employees who worked alongside us was the man responsible for the turkey flock at Christmas. I was working near him when the Colonel came round and he told me this. (I can't recall his name, let's call him "Carter"). Turkey's are prone to disease called 'black Spot; which can run through a flock like wildfire. It shows itself by some signs around the head of the beast. Anyway carter had to keep a stock of some specific to treat it if it happened and one year when he noticed the

symptoms he was out of stock! 'I was petrified' he says 'If the Colonel caught me I'd get the sack, so in desparation I caught hold of these Turkeys and pissed on 'em. Washed 'em in my own piss, and it worked. Next day they were clear'. So he kept a bottle of this natural product to hand after this. Unfortunately later on he was caught out. The Colonel trundled round "Ah Carter" he says "I see from the accounts that you haven't bought any of that Black Spot cure this year. Why the blue blazes not?" Carter said that being caught out in this unexpected fashion left him little option but to tell the truth and when he'd finished the Colonel burst out laughing "Well bugger me Carter" he says " If that isn't the funniest thing I've ever heard" and pushed off still chortling to himself. "To be on the safe side I went back to the proper cure after that but when he was around he'd poke his head round the door "Still got a bottle of your cure handy Carter?" - Not a bad old stick the Colonel". We got paid about thirty shillings a week (1 pound 50p) and as up to then I'd got maybe two shillings a week pocket money, this set us up nicely for Christmas.

By now, although we were still in the grip of rationing of everything, the tide of fortune in the war was swinging in our favour. The Russians were in, the Americans were in. The Russians were originally allies of Germany and the co-attackers of Poland, so they got a bad press. Then suddenly they became our glorious allies and the Government dug out some brass hats who had been to Russia at some time and sent them round the schools to persuade us how good the Russians really were. We got some Brigadier who told us some of the good points of the Russian system and how basically Stalin was a 'decent sort' having done more for the people than the Czars, and the Russians themselves were 'brave' and 'honest fellows' who could be trusted, whereas the scumbags who lived in Germany couldn't. We who listened learned a lot about politics and foreign policy.

The biggest cloud was the war in the Far East, which seemed one rapid defeat of our forces after another. Although the threat was distant compared to Germany the sub-human character of the Japanese was filtering back in reports of their treatment of the civilian and uniformed prisoners of war (this being reinforced by propaganda) and there was always this gloomy view that somehow we had to push all these little yellow bastards all the way back to Japan and then set fire to it. The truth

of the Japanese urge to torture and murder was confirmed for me by a later interview of their victims, but at the time had we been asked to vote on the A-bomb we would have all stuck our hands up for "yes!", with the rider that it was a pity that we only had two instead of two dozen.

Then came the defeat of German forces and almost before the dust had settled, the A-bombs dropped out of the blue for everyone and that was that. Or so it seemed. With huge relief that we didn't have to fight over every inch of Japanese held territory. Plus the benefits of an atomic powered future.

The end of hostilities brought with it a General Election and the first Labour Government with a majority that would enable its socialising policies. This event was a shock to many, partly because it meant a rejection of Churchill, and partly because of the entrenched attitudes of many of the middle class, who were surprised to find that the workers could bite back. I had never suffered from the excesses of the Conservative policies.

Like a lot of voters I didn't appreciate the 'never again' determination of the former unemployed. Not that it was all the fault of the Conservatives because there were Labour and Coalition Governments along the way. But the owners of private property were seen as the villains of the piece and the Government of whatever hue seemed ineffective against them.

The overwhelming picture of the Gentry/Aristocracy living off the labour of the underclass was seen by more and more people as robbery and their manipulation of Capital led to the labourer being robbed of the only thing he possessed - his ability to work.

George Orwell in 'The Road to Wigan Pier' portrays the dispair that gripped the unemployed and the unwillingness of Government to do anything that carried with it some measure of natural decency and justice. The war brought full employment and raised people from poverty and produced in the middle layers at least a much more open social structure which all reinforced the determination not to return to the interwar social and economic conditions.

No doubt it was a somewhat startled Clem Attlee who suddenly found his Labour Party with a strong majority in the House of Commons which gives a British Prime Minister a power to rule that is unmatched.

We were still in one piece as a family and all our neighbours had survived and those who had been away to war were comimg home. I'm sure it wasn't typical but I didn't hear of a single former friend or relative being killed or injured. This contrast with the First World War can be seen in a general way by the relative numbers of names on War Memorials. The desolation of 1914-1918 was only really driven home to me when we started to holiday in Scotland, where even in the remotest Glen one would find a War Memorial with its record of sacrifice.

CHAPTER FOUR

LIVING AND LEARNING IN LICHFIELD

I remember my first school, Christ Church, at Leomansley, we lived about a quarter of a mile away and after a short time I used to walk to and from school unaccompanied, except by the slightly older children of our immediate neighbours. We were near some open fields crossed by public footpaths, an area known as "The Moggs" which was our pre-school playground where we could organise our "gangs" each with its own "den". The path across them came out at the north end of Lichfield not too far from the Cathedral Close and we felt very brave if we ventured into this 'foreign' township. Sometimes as we got closer a childish panic would seize us and we would dash back helter-skelter to the safety of the den.

I learned to ride a bike across the moggs at about the age of six, Dad kept me upright until I was in control and then he said "off you go to the stile and back". Well, at the stile I had to stop and dismoumt in order to turn on the narrow path and then had the problem of getting on and riding a bike for the first time on my own. There was fence nearby and I balanced stationary by holding onto this and then gave a mighty push on the pedals and after a few wobbles was away. This was my first two wheeler, not new but carefully and smartly restored by Dad.

This school was founded around 1850 by a Mrs Hinckley whose children are commemorated by Chantrey's "The Sleeping Children" memorial in the Cathedral. Compared to the present, the resources given ~o schools were limited, but often limited by primitive technology rather than any meanness by the Education Authorities. Our school had gas lighting and I cannot recall electric power. For music, to accompany infants class dancing (which I hated) in the playground we had a wind-up gramophone and, of course, things like electric slide projectors and other aids were impossible.

The infants class was divided into two sections, the absolute beginners and those doing more interesting things like learning to read and write. To move 'up' from the lower section one had to overcome the obstacle of learning the alphabet, not by rote but by recognition of the letters. The

general rule was that as soon as you felt confident you volunteered for the test. I recall that I got stuck on the letter 'G' and couldn't recall the name of that letter, even after several attempts, although I sailed through the others. However the teacher, a Miss Bradbury, I think, took pity on me and let me move to the next class in the charge of Miss Foot.

After the infants there were four classes, the Headmaster was Mr. Milton Saunders, who lived not far away from us and walked to school each day surrounded by a gaggle of his pupils, something like the pied piper. We had some children from some of the tougher areas of Lichfield, but I don't remember any rowdiness, in fact, no extremes at all such as bullying, just an even and constant life. We were good little kids, made a hell of a racket at playtime, but as soon as the whistle blew an orderly return to quiet and the classroom.

The discipline was all due to the respect/fear relationship we had with Mr. Saunders, who in those days, was backed by Corporal Punishment if he felt it necessary. There was still, I seem to remember, the possibility of a birching at the local Police station for minor crimes committed by youngsters, for one of our 'marginal toughs' received that sentence. There was bravado before it happened, but after he gave us all the impression that crime didn't pay.

Mr. Saunders used a thin silver knobbed ebony stick on a siding scale depending on the severity of the offence. Being late for school merited one stroke across the hand and on the few occasions that I was late this is what happened to me. The classes lined up before moving in and if you missed that line-up, you were late and had to stand to one side to await the pleasure of the Headmaster. We all lined up, held out our hands, protest was of no avail, if we looked like flinching the hand was held to receive the blow, as he moved steadily and Purposefully down the line.

There was little anarchy at Christchurch school. Christchurch being the local church of course, Rev. W.C. Buncher, Vicar. Every morning school started with optional religious instruction. I can't remember anyone taking the option and not turning up, perhaps we thought that it would count as a technical late arrival and so we'd end up in the usual line up.

The instruction comprised learning the Catechism by rote, the whole class saying it out loud. Sometimes in a burst of enthusiasm, we would end with a Hymn. From time to time the Rev.Buncher would take a class and provide a mini-sermon at child level. I recall the subject of two of them, one on the communal nature of Christian prayer, it being us and our, and not me, me me, and one drawing a word picture of "Palestine" and Jesus growing up, as we were, but in that semi-desert climate. The Rev. paid a visit to his parishioners from time to time and on one occasion he had been to the school that morning. I heard him say "Ask Barry about the talk I gave this morning." I was blowed if I could recall anything that he had said on that occasion, but fortunately mum didn't take him up on that suggestion.

Schooling at that level concentrated on the three R's. There was a great variation in performance but out of a class of, say 25 pupils, I think that you could reckon that the top 10 could read, spell, write and figure tolerably well and I only recall one boy who never mastered the art of reading, in the whole time I was there. Other subjects were taught as well, geography and drawing. I remember large maps on oilcloth that could be unrolled from cases hung from the ceiling. P. E. was catered for on a fine day in the playground with organised races, skipping and mild gymnastic 'drill'.

Much of the effort that brought me to where I wanted to learn was put in by my parents, although this curiosity was helped by the lessons at school and caused me to ask questions about the things that we saw when we travelled about the locality. How did airships fly? How did airplanes fly? How do plants grow? Why do people have greenhouses? How do guns work? And so on.

Some toys had an educational bias. Steam engines, chemistry sets and crystal radio sets were looked upon as especially educational. Dad bought on one of my birthdays a 'proper' steam engine, one of the more serious toy locomotives made by a firm called Basset-Loake. It came in its own wooden case beautifully finished in green with brass fittings. I think that my favourite of all time was a pedal car which I doted on. Eventually it

was sold when I was considered too old for that sort of play, having just started school. On my way home to 4, Church Lane I saw a stranger carrying it off on his shoulder and I ran indoors heartbroken for a time.

Watching Dad working on a car was probably the biggest educational toy of the lot! How it worked, how it was cooled by water, how that water in turn was cooled in the radiator, how things moved easily when oiled. How some of the electrical ancillaries worked. By the time I left Christchurch school, I had been fortunate enough to go to lots of places a bit out of the ordinary for the average lad. Air displays, the British Industries fair, the airport at Croydon, dockyards at Portsmouth on a navy open day, on a battleship, in a submarine, on Nelson's 'Victory', Westminster Abbey, St. Paul's, on a paddle steamer on the Thames. Most of these events tending to give me a learning towards technology. A whole lot of things, photography, watching a picture appear on daylight paper, Dad shaping a piece of wood into a boat and fixing the steam engine plus paddles to it. Using tools that he had probably inherited and some of which I have and use now.

The paddle steamer was a failure, we took it to the canal to try it, but the paddles spun so fast that they sent a spray of water everywhere but didn't drive the boat forward. He also had an idea for a folding canoe. This was made from plywood, the sides being sprung out into a leaf shape by a suitably shaped keel and buoyancy was supplied by a series of old inner tubes fixed around the keel. Again to the canal, where having proved that it at least floated, Sammy Dakin was persuaded to act as passenger on its maiden voyage. This proved the inadequacy of the buoyancy devise, when Sam stepped in, it didn't keel over, but instead slowly sank beneath him leaving him standing in the canal up to his knees. Later, with some modification, this was tried again at the seaside, but it would still only float with me as passenger. The idea was that by folding flat it could be carried easily in, or on, a small car and didn't have the hassle of the extensive use of a pump associated with an inflatable.

School at Christ Church was near the 'Moggs' which were our evening playground. When we moved to Little Croft this playground, and to a large extent old playmates, were no longer available and out of school

play became more solitary confined to the garden, or the street outside, where I was not allowed to take my bike out of the street. As we came towards the end of the classes at Christ Church there was the shadow of some little understood 'Scholarship' exam that loomed over us. This in some way allowed us to go to Grammar school.

Being a small town the Grammar School at Lichfield was very apparent in the daily life of the town, what with the school uniforms and to Join it was a challenge. Everyone that I knew in the adult world, even those without much education, pressed on me the advantages of Grammar School, especially as it seemed that I was destined to 'do science'. The advantages were of course in the scope of education - Chemistry and Physics Labs, well equipped, the teaching of languages, other than English. These were not in the general run of national Secondary Schools then, so it was only by paying, or getting a Scholarship that you could be exposed to this wider chance of learning. If that's elitism, so be it, that was the system in those days and those who didn't get a scholarship simply regarded you as clever, without rancour.

The time of starting schooling brought me, for the first time, into a wider society of children and their condition. On the health front there was a regular system of inspection for parasites, condition of the eyes and teeth. Only over parasites did the state have any form of control by Statute when a 'verminoue child may be cleansed compulsorily', - the parent was not obliged to follow up medical examinations by taking action. In my case, I needed spectacles, for reading anyway, but as soon as I could arrange it, I persuaded my parents to abandon the Local Authority dental treatment, which by the standards of today was primitive and violent and put me off dental treatment for years. This, of course, is something that I have learned to regret for I am sure that truly painless dentistry existed long before I found it and started to fight for my remaining teeth.

Both my parents, of course, were of a generation where they had suffered the effects of poor dentistry, for it wasn't until the Dentist's Act of 1921 that untrained practitioners were debarred from treating the public. Thus their experiences had made them sympathetic to my attitude. For a long part of my life there were not many diseases that could be cured. The

causes of many were well known, but only in the case of smallpox was a means of prevention widely used.

About the year of my birth progress was being made in the use of hormone extracts and vitamins to correct the symptoms of some diseases like diabetes, anaemia, but by and large 'childhood' diseases, diphtheria, scarlet fever, polio, meningitis, brought to the parents the serious, sometimes certain risk, of fatality. Tuberculosis, of course, was one of the incurables and every street had someone dying in it. A victim lived a couple of doors away from Alf Button and I remember Alf describing one of the poor lad's haemorrhages 'the bedroom looked like a slaughterhouse'.

Ricketts was present in the mid-thirties, with improvements after that. There were children who were shabbily dressed and I often saw children who were not at school going barefoot in the street. I cannot recall anyone from those school days having anything more serious than the 'childhood ailments' but for the more infectious complaints there was the Isolation Hospital at Curborough and now and then someone would be banished thence for a week or two, usually with scarlet Fever.

Another regular outbreak was Typhoid, but these never really came close to Lichfield. In the early 1940's a vaccine for Diphtheria was developed and this was probably my first jab, at the age of 13. Anyone who had bean to the Isolation Hospital achieved a temporary celebrity status, as the rest of us wanted to know what want on there and what had happened.

After the scholarship exams in 1939 we heard that I had been successful in obtaining a place at Grammar School with 100% assistance with the fees. These at the time were 4 pounds, 4s.0d. a term and to be awarded 12 pounds 12s 0d a year doesn't seem much from today's standpoint, but bearing in mind that it was possible for a man's wages to be no more than 78 pounds a year the assisted places represented a welcome relief from part of the parental burden of further education.

As we were gearing up to start this new adventure war burst upon us. At first the school was requisitioned for use as a temporary military barracks. Where the school was going to go wasn't clear and it soon seemed to dawn

on the powers that ware that they ware going to have more schoolboys than soldiers, especially as part of Camp Hill School from Birmingham ware billeted on us. So there was a U-turn on the use of the school and term started on time after all. The visible difference in the school and in fact in most buildings, was the fixing of strips of gummed brown paper in an X shape to each pane of glass in the windows. This is what I suspect was the forlorn hope that bomb blast would not shatter the glass into fatal shards. The school was a move into another society which I had, to some extent, been prepared for by stories from 'just William' and the boys books like Dandy and Beano.

School started with an assembly for prayers, a lesson read by a Prefect and comments by the Headmaster about the events of the day, admonitions about yesterday's behaviour. All the staff wore gowns at that morning assembly. Most wore them during the day unless, as in the laboratories, or gymnasium, they were an encumbrance.

The school had a long history and after some to-ing and fro-ing in its relationship to local monastic houses, the Priory of St. John was refounded by Bishop William Smytha, as a free Grammar School (and a home for aged men) and in the statutes laid down by him dated November 3rd, 1495, included provision for "A Master of Grammary in Priest's Orders... with a stipend of 10 pounds annually". (The Headmasters of Eaton or Winchester had no more than 10 pounds originally). The statutes laid emphasis on the provision that the teaching should be 'gratis'. Several of the original statutes have bean observed during the history of the School, for example until the middle of the 20th Century all the Headmasters had been man in 'Priest's Orders', except one.

I suppose the School's best known old boy is Dr. Samual Johnson of 'Dictionary' fame, but also wall remembered were Addison Garrick and Darwin. In my time the four school 'Houses' were named after these gentlemen. This Darwin was Erasmus of Botanic Garden fame, who lived in a house near the Close. And so in 1939 we had a school that was redolent with history and drawing into that boys from a catchmant area that extended wall outside Lichfield and now included all walks of life as their background.

Apart from the fact that travel was restricted I'm sure that our school life was kept as normal as possible under wartime conditions. We were introduced to the novelties of French and Latin, which together with Chemistry and Physics were the biggest departures from the earlier schooling. I had already developed an interest in things scientific and I found Chemistry fascinating with Physics interesting, but not grabbing me like Chemistry did. I suppose that the set piece experiments of school physics seemed to just rework timeworn information that you could look up in a book.

Things like coefficients of friction, specific gravities and latent heats, all no doubt illustrating a principle but not quite as intimate as your own experiment in a test tuba, watching chemical change take place. And in Physics we never seemed to get the right answer, not far off, but never right and I don't remember once being encouraged to try again, eliminating sources of error. No doubt the physics teacher, Mr. Ellwood, was disillusioned with the constant stream of mediocre students and with reflection on the day to day sameness of his life. I'll give him this, he taught us Physics.

All the staff were determined, if not totally dedicated teachers and most of us did our best to learn. As the war wore on we gradually lost our younger teachers to War service and they were replaced by men who were either too old for service, or had some slight disability. I think also that a few of the older ones must have carried on after normal retirement age to help fill the gaps.

We only, as I remember, had one woman teacher, a Miss Jones, who in 1946 was teaching Latin. Occasionally we had teachers who were only a year or two older than Six Formers, presumably as part of their training programme.

I remember one discussing with me the next examinations that he was entering and I was astonished to find that I was better qualified than he was. Teaching was backed by discipline, of course, which in or out of class was monitored by the Prefects, who were also allowed to beat boys

who came under their Judgement during Detention. The Head was the only one who administered a serious beating, but you had to be a real hooligan to warrant that. Teachers gave minor punishments, but their greatest weapon was 'lines', which wasted much more of a boys precious spare time than a couple of whacks with a cane or slipper. Mr. Tremberth (Art and Woodwork) employed a length of rope with a knot in it. He was fairly rough and ready, not coarse, but more 'craft' than 'technical' and occasionally the whole class made acquaintance of the rope's end.

One of the oldest was R. H. Jacobs (History) who was known as 'cheesy' (from Jacobs Cream Crackers of course.) When in the Science Sixth I won the History prize, no doubt as much to his surprise as mine. The senior French teacher, Mr. J. M. Ball, was known as 'Sparrow', for he wore a gown in class and as he entered we all stood and he would talk through the class fluttering his hands under the sleeves of his gown to signal us to be seated hence Sparrow. He was also the C. 0. of our Company of the Army Cadet Force as Major Ball.

The Maths teacher, Mr. P. Laithwaite, was known to be 'Percival' so of course his nickname was Percy. He had written a short but informative History of the School and was rumoured to be the author of the School Song, but proof of that was never offered. When we were in the Upper Sixth preparing for Higher School Certificate maths he tended to unbend a bit and regale us with tales of his youth as a student. He told us how a group of students would buy an old car at the start of the long vacation for about a fiver and use it for a touring/walking holiday in the Lakes or North Wales. At the end of the holiday the car would be sold again for a fiver. The car would be an old Rolls-Royce, or similar good make, and he made it sound as though the country was littered with old Silver Ghosts at a fiver a piece. He need not have been far wrong.

Later in the early 1950's when I was looking for a big old car to pull a caravan there were plenty of Rollers around at 50-60 pounds, dating back to the 1920's. Once when on holiday in the New Forest, I met a man with a nice four light 20/25 that he had bought for 60 pounds. It was from the 1920's because it had a radiator cowl with horizontal thermostat blades. He

had not spent a penny on it in the two years that he'd owned it and, as he put it, the Rolls-Royce was the only car that a working man could afford.

Percy was an M.Sc. apparently by examination, because he told us that the examination included a practical paper. The invigilator stuck to the rules and only allowed Percy to turn over the question paper at the appointed second. The revealed question read "Determine the moment of inertia of the flywheel provided". But where was the flywheel? There was a puffing and scraping noise outside the room and as if on cue, Percy's Professor and the laboratory steward huffed and puffed dragging a weighty wheel into the examination room, a wheel resting on bearings on a massive cast iron base. The examination question had arrived.

Our first Chemistry teacher, Mr. Patterson, had a son who had attended school, so for more than one reason he was called 'Pater' but pronounced 'Patter'. I had for a year or two taken an interest in things scientific, without knowing about things like Chemistry and Physics as subjects to be studied. For some reason after I had taken my exam for a special place I had to go for an interview with the Head master E.A.G. Malow and amongst other things he asked me if I had heard of Louis Pasteur. As it happened I had and was able to talk about some of his work on the theory of disease and when my teacher at Christ Church School heard of this triumph, I was given a picture of Pasteur that had been pinned to the school notice board.

Anyway 'Patter' gave me my first organised appreciation of Chemistry and was always prepared to listen to the enthusiastic babble of a schoolboy. Sadly he died in 1943 and his place was taken by another. This was Dr. Hughes, who because of a superficial resemblance to the Japanese war leader, was nicknamed 'Tojo'. I suppose 'Tojo' was the first to make me realise that there was more to going to University than just getting a degree. Tojo doesn't seem to have left any other great impression on me, possibly because during his tenure 1943-1945, we were struggling with the School Certificate examinations.

A Junior Science teacher was Mr. T. Ainsworth, who had a party trick at the blackboard of drawing a perfect circle free-hand, pivoting his hand

around the elbow, he also had a process for determining whether a system was capable of doing useful work. His instruction was to try to find a method of getting the system to work a sausage machine.

During Summer 1945 the Chemistry teachership changed again, the new incumbent being Mr. D.T.Radford, a graduate of Reading, who had been involved in the application of Chemistry to the war effort, some of which was used in the manufacture of Mosquito aircraft. Unfortunately whilst investigating the cause of a breakdown in a chemical plant he was gassed by chlorine and for health reasons left industry for teaching. He introduced us to the art of glass blowing and we made small scale apparatus in which we carried out some standard organic synthetic experiments but on a small one or two gram scale. This was a very useful introduction to devising experiments that were not the same as the text books, even if they were only scaled down.

Later, I found, of course, that many experiments in research were also on this very small scale through necessity because of the shortage of raw materials, where they were difficult to make or were only present as a small percentage in the material of origin.

It was about this time that I made the acquaintance with a young man called Peter Binns who joined us at VIth form level when he came to live in Stafford. His family lived with Mr. Murray-Atkins who was the Registrar of the Diocese and had a house in the Cathedral Close. Mr. Atkins had a 1939 Vauxhall 14 which Peter and friends used to drive around in during holidays. Even the simplest maintenance such as fitting a new light bulb had been carried out on that car by the local agent. It was the only car that I have known that was utterly silent. I have stood by it talking to Peter and he has then just let in the clutch and glided away without me ever being aware that the engine had been running. It was famous amongst those of us who considered ourselves motoring aficionados. I remember when Mr. Atkins died, I was talking to Mr. Radford, my former Chemistry teacher and a mutual acquaintance walked by. "Did you hear that old Murray-Atkins is dead?" Radford and I looked at each other and our first words, simultaneously were "I wonder what's happened to his car?"

Through Peter Binns I met a new scale of living. The Bishop of Stafford - Lempre Durrell Hammond, lived next door to Peter and his was the first post war new car that I encountered. He had wanted a Vauxhall 12 but because of delivery problems found it quicker to take a Vauxhall 14, the same model as the Murray Atkins car, but of course brand new, in a sort of deep maroon colour.

It was strange to see a car spotless in every detail, under the bonnet, everywhere, not a speck of dust or dirt. I've seen many new cars since then but none have seemed quite as new as that first new Vauxhall. It had been registered in Wolverhampton and had the registration letters LDH. It was while we were all cluttered around it in admiration that it suddenly dawned on us that these were the Bishop's initials, an early but fortuitous personalised plate. After going up to University (Peter went to Bristol) our meetings were less frequent, mainly in the vacations and especially at Christmas, when there was a round of parties.

Peter's sister Pamela had the ambition to be an actress, I think eventually going to RADA. At the time we had live theatre in Lichfield, housed in a former cinema and fired by youthful enthusiasm. Pamela got to know the young actors who appeared there and they made interesting guests at the Binn's Christmas parties. In 1946 Lichfield Cathedral celebrated its 750th anniversary by staging a play, in the cathedral, written by Dorothy L.Sayers. This was "The just Vengeance" which was a choral work with music by Anthony Hopkins. A number of us were roped in as assistants. I was in charge of two of the stage spotlights which were fixed in the South Clerestory.

During those parts of the script that gave lengthy intervals between colour changes, I used to wander off and explore the upper parts and passages of the Cathedral structure not normally accessible to the public, including the battlement-like gallery that ran round the outside of the base of the great central spire, from which vantage point one obtained a view all round of the structure, the leaded roof, the buttresses and so on. Not far from the base of the spire is a stone marking the landing place of a workman who fell from the top of the spire during repair works.

Mr. Radford the Chemistry teacher cunningly encouraged some rivalry between Peter and myself. He was closer to our age and closer to his own University days than many of the other teachers and he gave us really positive encouragement in our, then half formed, ideas of University.

I was meeting more people with research degrees in Chemistry, some of them through association with Peter, and so realised that there could be more than teaching as an outcome of higher education. Both Peter and I had our own surprisingly well equipped laboratories at home where we reinforced our knowledge, particularly in Organic Chemistry. Peter blew himself up once, being temporarily blinded, and spending some time in hospital.

In my final year at school I became a Prefect and when it was my turn to read the lesson at morning assembly for the first time, I happened to meet the Bishop of Stafford at Peter's, so I asked him for a text appropriate for the day. He obliged and then asked for a favour in return. Hitching up his cassock he showed me that the leather straps with the button-holes to fasten braces to trousers had come adrift on one side. "Can you fix these?" It was a simple Job given a pair of pliers and when these were produced I carried out the repair.

Next day, when I announced the text for the lesson, I noticed that the Head gave me a sidelong glance, so hopefully the Bishop had chosen an apposite text. Bishop Hammond was at the time not a graduate of any University, the only example in the Country I think, and the powers that be decided to award him a "Lambeth Doctorate in Divinity", which at last gave him a hood to wear when attending meetings. He had always taken an interest in these colourful symbols of academia and he told me that at one meeting he had noticed a hood that he could not reconcile with any degree or University known to him so he courteously mentioned his admiration for this hood. "Oh I'm so glad you like it - my wife made it for me" said the wearer.

Of the subjects taught at school, Latin and French were new to me. The classes were generally arranged in two streams, the 'A' level stream and

the 'B' stream. The 'B' stream could also have, what was effectively an extra year before matriculation, by being shunted into Remove between the lower Fifth and Upper Fifth. Having Latin at School Certificate (Matriculation) level still in those days gave you a wider choice of Universities. In our first year we lost our Latin teacher to military service and his place was taken by a gent styling himself as "The Reverend Professor James". He certainly wore a clerical collar and I think the 'Professor' bit came about because he had taught at a college. How he got past the eagle eye of Old Marlar I'll never know, he must have been desperate for someone.

During a lot of the time the Prof. used to regale us with stories of his smuggling activities during the years of prohibition in the U.S.A, tales about having a gaggle of Nuns with him, all having extra pockets sewn into their cloaks and having these pockets filled with bottles of the hard stuff as they went ashore. How they didn't give themselves away by clanking was not explained.

After about 18 months the reverend Professor must have been rumbled by the school exam results, for we learned nothing, he left and the unenviable task of bringing us up to speed in just over a year fell to Mr. Blackburn, whose main task I think was English. By a discipline based on a form of psychological warfare, he managed to pump enough Latin into us so that all, but a few, got passes and one or two even managed 'Credit' levels.

When we were in the VIth Form, divided into 'Arts' VIth and Science VIth, the Headmaster made a practice of taking a class which comprised the whole of the VIth Form, in which he touched on current affairs, religion, Literature and Poetry, the latter as a precaution no doubt against the Science VIth becoming totally Philistine in outlook. The character of Marlar and the power of his Office meant that these classes had to be taken at least half seriously. During one class he was introducing us to the glories of ancient poetry and rolled off the line of Virgil's Aeniad. "Arms virumque cano" - "Can anyone translate that?" he says. Watson (Science VIth) came back without hesitation "Beware of the dog sir". To give him his due, after a frowning pause, the Head joined in the general mirth.

It was now 1945/1946, I was in my final year at grammar school and I was seeking a place at University. A total change in our life pattern crashed on us because of the sudden serious illness of my Mother. This had probably crept up on us unnoticed under the cover of the general changes wrought by war. It was an overactive thyroid gland resulting in Thyrotoxicosis or Graves Disease, which necessitated surgical treatment towards the end of 1946, on the face of it this was a success. I had just gone up to University.

At the time the Government were given the priority of places to returning ex-servicemen and in spite of much funding to increase the number of places school leavers who got a place were lucky, as well as being those at the top of academic achievement. I was offered places subject to interview at Manchester, Liverpool, amd Nottingham. Nottingham was the first to come to maturity with a positive offer and I took it. So the second stage of formal education closed in 1946.

We had had the opportunity to get an introduction to the whole range of matriculation subjects and to Higher School Certificate level in our chosen subject. Apart from my own inclinations the part played by science in winning the War increased everyone's interest; after all we hadn't won by throwing Latin Grammars at 'em.

Details of the chemistry of 'plastics' were being released, the chemistry and biology of Penicillin likewise. The conversion of petroleum into raw materials for chemical synthesis made chemicals that had once been chemical curiosities available in tank-car quantities. Although the culminating scientific demonstration was the realisation of atomic energy. My own fascination was Chemistry and especially Organic chemistry. I had been made aware of the excitement of carrying out original research and that became my next aiming point.

The final year at school was marked by the return of a civilian petrol ration and those of us with access to cars were able to travel around with something approaching pre-war normality and although the relief of rationing in general was still some years away, that year was probably the best of our lives up to then.

Although in the late 1940's things relevant to travel were improving all the time, never having been used to travel on my own, I was reluctant to move somewhere too far away. On the other hand I felt the need after discussing University life with the few sources available that I didn't want to be too near home, I wanted to develop independence and not pop home every five minutes. The war years took away a lot of things for a lot of people but in the case of a child of my age and background they took away the opportunity to experience travel and meet people away from home. 'Is your journey really necessary?' was the theme.

The reputation of Nottingham as a centre of learning has grown to be second to none but in the residue of teenage ambition I went there with a tinge of disappointment because it was not a full blown University like the ones most of my pals were going to. I did find out as much as I could, I visited the campus, got a meeting with the then professor of Chemistry and was reassured by the impression gained.

You see in those days there was still an overwhelming sense of a shortage of everything including University places and if something in short supply was offered, well you didn't miss your chance. Again, from my background, taking the chance of waiting for something better to turn up when you'd already secured a dream was unthinkable. Also dropping out for a year for things to sort themselves out was unheard of and would have been seen as failure.

When I went up, there were still signs of wartime vegetables growing on the campus and we still had some 'evacuees' remaining from the relocation of some London colleges including Goldsmiths College (later on we waterproofed the roof of the new library of this College in London). The increase in student body was taught in part in 'temporary' single story buildings (the 'cowsheds', they're still there) which included Chemistry laboratories. Hall of residence accommodation was swamped by numbers and so for many an impossibility.

Nottingham had an active Mechanics Institute in the 19th century and following pioneering Cambridge University extension Lectures at the Institute in 1874, one of the promoters provided funds for permanent

buildings for them, followed by a scheme for a college opened in 1881. The City Council had ambitions to raise this to University status but World War One put an end to these; soon after the War Sir Jesse Boot became the founding benefactor of the University College. Jesse was a man of rapid decision and firm resolve in implementation. The present campus occupies much of the lands of the former Lenton Priory which since the dissolution had been protected from deleterious development by use for the mansions of local magnates.

There had long been plans for an East Midlands University which eventually came to nought but the subject had caught the interest of Jesse who put his energies into the development of University College. He had already bought large chunks of the Priory lands with an idea of building a model village/factory complex a la Bourneville of Cadbury's but this fell through after his sale of his Pure Drug Company.

A chance remark by a companion when they were admiring the view across Trent Vale that this would make a good site for a University , seemed to kick start Jesse and at lightning speed compared to some other public projects, the works that led to the now spacious University of Nottingham some forty years later were soon under way. All the other ingredients for a University town were already there, a famous river, a famous sports field at Trent Bridge, some characters in history of universal tradition and some good pubs with a few sympathetic landlords. So when the Charter of University status finally matured in 1948, staff, students and location were already well settled in University tradition.

The campus at Nottingham was built to house a potential student body of 700 but prior to 1939 never got more than 400, a reflection more on wealth of its catchment area, rather than the abilities. In my first year the student body had been raised to over 1,000 actual and as a result, even as a school leaver Freshman, I was unable to be allocated a place in a Hall of Residence (there was only one for men at the time anyway) and so got rooms in town. Ever caring

Mom came over with me to inspect and see me settled in on enrolment day. Alf Button had driven us over to the main Trent Building. It's

amazing, there were so few cars then that even on enrolment day you could just drive up and park right outside the front door. After farewells I walked the short distance to the building. I didn't look back. I was alone for the first time.

When on leaving school I had called into the Headmaster's Officer (R.G Marlar) to say good-bye, he told me that everyone leaving the Sixth Form that year had got a place at University. He seemed of mixed opinion about this, pleased and yet somehow feeling it unfair. In previous years he'd seen the bulk of his Sixth go into the forces with one or two going to Wartime University courses of three years work crammed into two. I suppose to see things back to normal so suddenly was a bit of a shock.

CHAPTER FIVE

THE LIFE OF A STUDENT;
FROM FRESHMAN TO EMPLOYMENT

The transition to University came smoothly, made easier by peace time conditions. I had an early disappointment because I was only able to obtain a place on the general degree course, however, this did not last long and I had letter from the Prof (J.Masson Gulland) telling me that there was place for me on the 'Special Degree' course in Chemistry. In those days Nottingham was still a University College and the courses led to External Degree examinations of the University of London. Accommodation in Hall was not possible at this time because there were only two halls at Nottingham then and because of the continuation of certain Wartime uses and the vast increase in the size of the student body, I in common with many others, had to take lodgings in town.

My first year in digs was spent with a Mr. and Mrs. Slack who lived in Sneinton, a suburb of Nottingham, on the East side of the city. I was there with one fellow student, a John Bickerstaff, whos family were just struggling back to resuming their pre-war activity of bulb growing in East Anglia.

As I had found before, Nottingham had a reputation as a centre of Spiritualism. Mr. Slack told us that he had served on an official Council Committee which was formed to investigate local phenomena. He also used to play the tin whistle as a relaxation in the evenings. When he did, he sat in an alcove by the chimney breast and particularly in Winter evenings as it grew dark he would regale us with memories of spiritualist phenomena. His sister was also interested in the subject.

He told us, interspersed with tin whistle solos, "My sister and her husband had returned home, parked the car in the street and went indoors (tin whistle). Shortly afterwards he went out again to get something from the car and was killed by a passing vehicle. My sister carried on living in the house on her own and one night a few months later she was woken by a tremendous crash. which sounded as though all the furniture in the house had been thrown down (tin whistle). She wasn't a nervous person and kept

a revolver in the house, getting it, she walked from room to room, but nothing was disturbed (tin whistle). This happened two or three times and each time she felt close to her husband (tin whistle).

A friend suggested consulting a Medium, so she went to a public performance by a Medium who from time to time had messages for the audience, suddenly (tin whistle), the Medium said "Is there anyone here called 'My Lass', I have a message for 'My Lass' (tin whistle). Now my sister's husband had always called her 'My Lass', so she stood up and said "That means something to me" (tin whistle). The Medium said the message is that "I went out with a bang and I will come back with a bang" (tin whistle). Now as she was telling me this, she was staring at me and she said "Are you alright?" "Why?" said I, "Because", she said "I can see orange flames dancing around your head". As she said this I fainted.. ..(tin whistle)".

Sneinton was on a direct bus route that got us to the University entrance without a change, but it was a tedious journey, especially if it was foggy in Winter. In fact in my first term we had a real pea-souper that, looking back, I find incredible, but in walking down the driveway to the main road I had to keep one hand in touch with the railings to know where I was.

At the road there was no sign of a bus so I started to walk and after about a quarter of a mile, I was slowly overtaken by one of the Corporation Buses and as it drew alongside I stepped onto the platform. The driver only intended to find his way back to the Depot, but this was on the Sneinton side of town, so it helped. Then on foot again, trusting to memory on the route. After a time I heard other footsteps ahead of me but the person could not be seen. Coming to a fork in the road I knew that I wanted the left hand road, so I crossed over and carried on the left fork as I thought.

Suddenly the other footsteps stopped and a voice called "Where are you heading for?" I shouted my reply (we still couldn't see each other) and he said "You've taken the wrong road, go back to the fork, keeping on this side and cross the road again." At the fork, I had gone too far along the right hand fork, so when I crossed, I missed the left fork completely. To

this day I cannot understand what made my unknown fellow traveller ask me where I was heading for. Unless he was one of Nottingham's 'spirits'.

At the end of the first year Mr. and Mrs. Slack decided that looking after two young men was too much for a couple of old age pensioners, so John and I looked around and found some rooms much closer to University, in a large old house where we had a mixture of students. These were two ex army, one of whom was a freshman that year (1947), he had been a Second Lieutenant and didn't seem able to cope with the sudden demotion to civvy life and spent the first few weeks stalking around in his uniform.

John was studying Electrical Engineering and our move brought us other disciplines - a physicist, a geographer, a student of English and a photographer, studying at the local Technical college. During our second term the landlady fell ill and we carried on for a time on a self catering basis but again John and I decided to look elsewhere and John got a tip off for some rooms in Lenton on Lenton Boulevard, so we moved there.

This again broadened our social contacts, for our fellow lodgers were a Manager of the local branch of an insurance company and a Pharmacist, who was already MPS and studying for a Pharmaceutical Certificate (Ph.C). He was a mature student and augmented his student grant by working part-time at a local Asylum (Ranton). He was at the time assisting a senior member of the staff in a research project, by producing sections of the brains of people who had died from Syphilis (General Paralysis of the Insane) and in this work he had an assistant, who was one of the more stable of the inmates. This assistant carried a toilet roll in its holder on a cord around his neck and offered to give money to anyone he met. "Any amount, come on any amount". When at last one gave in and asked for, say, 5,000 pounds he would write a cheque for that sum on a leaf of the toilet roll and solemnly hand it over.

In return for his duties he earned five shillings a week pocket money and whilst you could have any sum on toilet paper, you could not get him to lend you even a penny of his real money. He knew the difference alright.

In the University environment one made friends, not only with fellow students of your own subject, but some engaged in other studies. Of my fellow students, my biggest buddy was Cyril Pelham Conduit, a native of Nottingham and a very bright lad. We shared a similar sense of humour and an intense devotion to Chemistry, talking of nothing else when we were together.

I also played chess on a regular basis and learned, but didn't excel. Cyril was Cox to a rowing team and got his Blue for it. Our studies, now of course, took us more into the depth of how discoveries took place and what prompted the search that led to them, rather than simply learning the outcome. Much more modern information about industrial practice was also imparted and its relationship to the discoveries of the researchers emphasised.

We learned how the basic rules known for years were still valid and useful and had their application, not only to controlling the course of reaction in some huge plant, but also in devising sensitive analytical methods. The relatively new polymer chemistry also came our way, much of it by today's standard being driven by brute force, high pressure and temperature, milder catalytic methods and particularly directive methods of controlling molecular shape and size were yet to come.

The Special Degree of London University comprised a three year duration, with a principal subject and a subsidiary subject, in which the examination was taken after two years, leaving the third year to concentrate on Chemistry alone. Physics was my subsidiary subject and, although the written papers could be sat at Nottingham, the practical examination called for attendance at London. In my year the two practical questions were to determine the latent heat of fusion of ice and measure the internal resistance of a galvanometer.

I wonder if Physics Degree practicals are more imaginative these days? Anyway I took this in 1948, in due course notification that I had passed came, thank goodness. People, my mother was one of them, were puzzled why I was so elated, as after all (it was only the subsidiary). It was

difficult to explain, but for me it had been the last hurdle between me and a life of nothing but Chemistry.

It was, I think, in the first term of the 1948 /1949 academic year that professor Gulland was killed in a rail crash, when returning from Scotland where he had been instrumental in establishing the industry that produced Alginate thickening agents from seaweed. Gulland and his family had always taken an interest in the welfare of the Scottish Crofters and, for a time, until other harvesting methods were devised, Crofters were able to augment income by securing the masses of seaweed that were thrown on shore during storms for collection by the processing plants. These Alginates are now used worldwide to control the viscosity of paints, foodstuffs, cosmetics and so forth. The

Professor's own principal line of research was the composition and structure of D.N.A., by classical methods that would now seem so crude as to be unbelievable. An earlier holder of the chair, Professor F.S. Kipping, had been a pioneer in the field of silicone chemistry. In these materials, compared to the carbon (backbone) of the better known polymers, the silicones were built on a backbone of silicon oxygen silicon chains with (normal) carbon based side groups. Polymers with oily, rubbery and resinous properties could be made which, because of their chemical nature, had totally different behaviour to changes in temperature compared to (normal) materials. From them electrical insulation was made that resisted higher temperatures and so allowed small motors to deliver higher power, also materials that stayed flexible or fluid at very low temperatures could be made. These were of interest in particular as aircraft control systems became more complicated.

The manufacture of silicones was established in the U.K. eventually and I remember that the personal management from the company concerned were astonished to find that research on the topic of silicones had faded out years before, after the retirement of Professor Kipping. Was this an example of lack of British foresight? No, I think it was just the way in which chemical research was oriented at the time.

The work started at a time when there were not many techniques available to assign a definite structure to a new substance and the one's there worked best of all with substances that formed crystals, or were easily distilled liquids. Only these forms gave you a chance of making a pure sample of a single substance on which to start structural analysis.

When the products of a reaction were treacly, gummy, ill defined, the interest of the academic fell away and industry at the time, had enough problems with naturally occurring, ill defined, gums and sticky things, without going to the trouble of actually making some more.

Eventually the commercial success of early substitutes for natural fibres, rubber and resins, changed the point of view and academics became interested in the study of the structure of these ill defined materials to find out why some were rubbery, some plastic and some brittle.

The successor to Professor Gulland was Professor F.E. King, from Oxford. He seemed to be a bit of an unknown, at the time, and what process of selection was I don't know, but its outcome seemed to leave existing members of staff slightly puzzled. He continued with the 'traditional' Professor's research based on Organic Chemistry, other aspects of chemical research -Physical, Inorganic, were in the hands of Senior Lecturers, it was some years before the University created Chairs in these other fields of Chemistry.

The University was rapidly increasing the size of the student body in line with Government policy and consequently the number of lecturers was also increased. One or two of these were men whose academic careers had been interrupted by War Service. One, Dr. B.D.Shaw, had been there at the outbreak of war and had spent most of it as a prisoner of war in Germany. He was famous for a lecture entitled "Explosives" which was illustrated with a series of very active (or reactive) demonstrations.

Another was Dr. C.C. Addison, known as 'Daddy' Addison, our mentor in Inorganic Chemistry and there was Dr. Partington, a son of J. R. Partington the author of well known text books. He had what later would

have been called a 'hippy' attitude. Others might have said careless, because he had already lost an eye and two fingers in experiments.

This was the time when Science had proved that it could make things go with a bang and money was being made available to upgrade the capabilities of some of the provincial science departments. So life was enlivened by the appearance from time to time of some new and exotic piece of apparatus, one was a U. V. spectroscope which fell into the care of Partridge and the first time that he demonstrated it to a bunch of us students, wanting to show us the inner workings and not being able to get it open, he started to clamour for a hacksaw. "Anybody got a hacksaw?" We assumed he didn't mean it.

The new Professor F.E.King arrived in time to give some of the lectures of my final degree year. He had a dry sense of humour but, again something to do with the authority vested in the office, we never seemed to get as pally with the Prof as the other Lecturers.

The lecture theatres were of classical science subject layout, with rows of bench seats rising in tiers to give a view of the demonstration bench. One day in Summer the windows were open and the door propped ajar, a large dog, collie size, wandered into the Prof's class while his back was turned and was persuaded to stay with and sit down in the middle of a bench between two students. It was big enough, thus seated, to be peering over the top of the bench in front like his 'fellow' students. It kept quite still and we waited for the Prof to notice, which he didn't seem to do, even though he faced us from time to time during his writing on the board suppressed excitement of the class seemed to communicate itself to the dog, who suddenly gave one or two loud barks, jumped down and ran out of the room. Prof finished writing that line of equations, then turned to us and said "Is there a dog in the class?" which was pretty obvious, but of course by then we were able to answer "No", leaving Prof wondering if he'd been hearing or seeing things.

Through the various Student Societies it was possible to arrange visits to industrial operations, particularly in final's year. One was to the Stanton pipe works where pipes were produced from steel by a centrifugal process,

the pipe mould being spun whilst molten steel was fed in via a central pipe. The quality of the steel was monitored by analysis using a mass spectrometer, something which a few years before was a device only found in academic laboratories.

Again showing how quickly inventions are exploited in industry if useful. Originally developed to study the isotopic composition of elements - if there were atoms of slightly different weight in them, but with the same chemical properties - but now to study the different types of elements in the steel feed stock. The advantages were that it was a speedy method compared to classical chemistry and repeated checks could be made, if necessary and it could also detect traces of elements not normally found by routine chemical analysis, plus it could be installed on line.

The Players cigarette and tobacco factory was in Nottingham and they had just restarted a pre-war tradition of conducted tours of the factory. In fact the one that I went on was the first. Cigarettes were not rationed but were in very short supply and as soon as the buzz went round that a certain shop had them, a queue would form immediately, as if it had dropped down from the sky. If the University Refectory had a delivery, a long queue of those not in class would form stretching right through the building.

One of the old hands had mentioned that at the pre-war visits, Players used to give each visitor a presentation pack of twenty-five cigarettes, with samples of the whole range of products from Perfectos downwards. Perfectos were at one time rolled by hand but at the time of our visit this was down to packed by hand, a machine having taken over rolling. Because of the state of cigarette supply at the time, this visit was heavily over-subscribed. To those who had only bought cigarettes 20 at a time, the sheer scale and speed of the operation was amazing with each machine producing a continuous cigarette, everything set up so that at the cutting station the name and, or, the cork tip was exactly in the right location on the cigarette.

I think the machines produced cut cigarettes at about 1,000 per minute. By then packaging had improved and the wartime soft paper pack had been replaced by the pre-war style of thin cardboard. There was still no inner

foil and the outer wrap of cellophane was only used to bind the packs into tens, that is 200 cigarettes. It still wasn't possible to afford a wrap on the individual 20's. After the visit our guide took us back to the entrance hall. In there was a small Excise, office which he went into and came back with a brand new pack of 100 Players 'Medium', which he opened and handed to us. There were about 12 of us in the group. We thought that this handing round of a box of 100 might be the post-war equivalent of the 25's pack and by the time this box got back to our guide, there was only one fag left in it, that was broken and I think it was a Woodbine that someone had thrown in to clear their case. I've never seen a bloke look so surprised as that guide. Then, much to our, or at least my embarrassment, he went back into the excise office and came back with an armful of packs of 25's, just as foretold. We were getting them after all!

Another visit was to the local brewery, Shipstones. Like most things, beer had been in short supply. Nottingham is built on a limestone cave system and the Shipstones brewery used a reputed 14 miles of them for cellarage, the barrels being slowly moved through the caves taking a year, we were told, to complete the journey so that pre-war, no beer had been sold less that 1 year old.

On the day we were there, the beer was being filled out and packed onto the lorries for despatch straight away and the cellars would be seen stretching away ahead of us completely empty. The process of brewing was one of the earliest industrial uses of biotechnology but nobody had the gumption to call it that in those days.

The highlight was a visit to the sampling room where barrels of each type of brew were on stillage. The workers were allowed, I believe, seven pints a day, free of charge. It seems a lot but the alcohol content was very low in those days. We had a pint pot shoved into our hands and told to help ourselves, the only limit being a time limit - drink as much as you can in half an hour. Fortunately the bus was parked very close to hand and we all climbed on board in a faintly alcoholic haze. We drove back to the University and ate fish (extra chips), apple pie with ice cream, all swilled down with tea. Ah, the stomach of the young, what a marvel.

During the time that I was an Undergraduate Mom's health deteriorated and after an initial spell of improvement, degeneration of the heart's pumping capacity led, through gradual decline of health, to the stage of being bedridden and returning to hospital, this time the Victoria at Lichfield.

The last time I saw her she was having a noisy struggle for breath and could hardly recognise, or speak, to anyone. Having seen her in that state and being baffled by our inability to help or heal, my reactions when she died a day or two later were strangely neutral. I did not grieve in the usual sense of the word.

It was my first experience of death and in a way I was occupied in observing the aftermath, the funeral arrangements, the funeral itself - a cremation at Perry Bar - the smear of scattered ashes amongst wreaths, Dad bending down to stare at them in silence, all that was left of so much of his life and memories. She had followed my life with great love and interest, knew all my school friends and had met my new found friends at University. And yet I did not grieve.

We had of course resumed our usual pattern of holidays and Dad built a caravan so that Mom would not have to put up with the rigours of camping. This van was built in the garden at 'Little Croft' and was built in two 'lifts' because at its full height it could not be taken out through the garage which had been built with double doors at both ends so that the car could be driven through for cleaning and maintenance. So we got the 'van out in two layers and bolted them together outside.

We towed the 'van down to our usual holiday haunt of Llanon where we were able to park it on the farm where before the war we had camped out. The idea that Mom should be able to spend more time away in the relaxing coastal environment came to nothing because of the early return of ill health.

I never knew Dad when he didn't find something to do and it was the same with the caravans. Having built one, it gave him the ideas of how to do it better next time and he built two more caravans in the course of a year or

two and these ended up parked at different points on the Cardiganshire Coast. Eventually we scrapped two of them keeping the one that was best for towing. This we used for our holidays after my marriage and as finance permitted we replaced it with commercially built models.

The death of my mother obviously marked the end of an epoch in our lives, my father especially, for I had the distraction of the finals examinations and trying to plan a post-graduate continuation of study. Youth drives you forward in your own life quite selfishly and about half way through my post-grad work I was married and another set of generations established now stretching forward to great grandchild status. Another story, a happy story but running alongside the story of my occupational biography.

I had by now been having discussions with Prof. King about a research degree and when the results of the finals were known (I got a second) he offered me a place in his research laboratory working for a Ph.D. A grant was provided by the then Department of Scientific and Industrial Research (D.S.I.R). The Prof worked in two areas of natural chemistry at the time, one was the extraction and identification of chemicals from wood and the other was the synthesis of simple peptides. He also had, at least, one student left over from the Masson Gulland DNA days. Simple, low, molecular size peptides, compounds of amino acids, had recently come of interest because of the part that they played in cell metabolism.

The antagonist theory of drug action was at the time still fairly new and hence compounds which blocked the way in which normal metabolites worked was of interest as a clue to the path to substances that would block the activity of, say, a bacterial cell. New routes to the manufacture of simple peptides therefore attracted grant support.

The late 1940's had also seen the exploitation of tropical timbers in furniture and construction and it had been noticed that some of them were resistant to organisms that caused rot, and some of them caused unpleasant reactions in people working with them. Both these effects were considered to be due to the presence of active chemicals produced by the metabolism of the tree.

The choice of the Professor for me was to work on methods of peptide synthesis. Compared to natural biological processes now understood (even the deep culture of Penicillin was in those days in its very infancy), the laboratory organic chemical methods were brutal and inefficient, but in the absence of any other routes then, what you've got is better than nothing. Also these simple products of known structure might give an insight into natural active materials. However, the day on which I walked into the Research Laboratory for the first time as an active Ph.D. student to carry out original research was in some ways the first day of my life.

This was for me what it had all been for, the efforts of the last years sloughed away as if they had never been and all was new. The broad basis of the work programme was set by discussion with Prof. as I was one of his students. Two of the other senior lecturers had research students as well. My work was a continuation of work started at Oxford and two of his students had migrated with him to finish off their Ph.D. work.

My particular sector was based on the discovery made by the Prof and his students that a certain type of peptide precursor that contained two reactive centres potentially available for adding to the size of the peptide molecule seemed to react through only one of these two possibilities, thus giving the potential of a unique direction at that phase of the synthesis.

My introduction was to extend the range of compounds so far made to find out if this direction of the course of the reaction was general. Most of the apparatus that we needed to use was familiar to us from undergraduate work but where there was something new to tackle, it was usual to discuss it with a fellow student who had used it before.

It was tedious to work on a larger scale than, say, 3 grams, because of the effort needed to build up stocks of 'raw material'. If the new reaction you were interested in was 3 or 4 stages away from the starting material, all these stages had to be gone through to get the raw material for the phase you were interested in.

Some chemicals were available from the store, or to order, but of course, if only you had ever made them you couldn't get them like that. Here, interestingly, the work that we had done with Mr. Radford at King Edwards on small scale experiments came into its own again, as also glass blowing to make small scale distillation apparatus.

A colleague who had suffered from these problems of raw materials was Crosby, who Joined us from Glasgow where he had failed to get his Ph.D. The reason was that he was trying to extend and conclude the work of his predecessor who had taken the synthesis of some natural product right up to the penultimate stage. Crosby spent 18 months building up stocks of the intermediate needed to have a go at this final stage and then spent 6 months proving that the final stage didn't work. So at the end of his grant period he had no original work at all to submit as a Ph.D thesis and therefore was not considered. Interestingly, even at this stage, he was still less than 20 years old, having taken advantage of the Scottish Universities lower enrolment age of 14 years. Anyway he had plenty of time left in which to find further funding and try again.

We had one more student who failed, rumour had it because of his poor command of English, he was a student of the former Prof Gulland and was working on the structure of D.N.A. One day there was great excitement because he produced, via a nitration process, what seemed to be a crystalline derivative of D.N.A. This prompted great excitement because in those days x-ray examinations of a crystal was one of the few ways of determining details of the spatial arrangement of atoms in a substance, that is how it was built, rather than what it was made from. We all queued up to peer at this damn crystal. It was pale yellow, not unusual for a nitro derivative but, I thought that it looked like one of the crystalline forms of sulphur and said so. This view was discounted because the unknown had been crystallised from toluene and it was thought that sulphur would not dissolve in toluene. Suddenly all went quiet and when I asked I found that low and behold it had proved to be sulphur after all.

The investigation of natural products from wood involved converting the candidate timbers into sawdust and extracting this with a series of solvents and evaporating them to find out if anything had been leached out. The

source of some of the timber was a local timber merchant on the edge of the campus and Prof King used to prowl around the stacks looking for tell-tale coloured streaks on the ground beneath which indicated that at least something water soluble was in it. These excursions earned him the nickname of 'Firewood Freddy'.

If small scale tests showed anything of interest the extractions were repeated on what were quite massive scales for laboratory work. We had one extractor which held 10kg of sawdust, which is a lot. Some of the solvents were highly inflammable eg. diethyl ether, low boiling petroleum fractions, acetone. To dry the sawdust between extraction attempts it was the practice to spread it out on a tile topped bench to let the solvent evaporate. Heaven knows what current Health and Safety requirements would make of this but these were the good old days when chemistry was fun. Open flames were, of course, used elsewhere in the laboratory and from time to time a batch of drying sawdust would take fire and cause great excitement until brought under control with 002 extinguishers.

Another point of interest was that regulations governing the external appearance of the building had not allowed the use of external drainpipes, so there was effectively a ring main, an open trough, which ran all round the walls of the laboratory and collected the drainage from each bench. Some of this drainage was inflammable. We used metallic sodium to dry certain solvents and sometimes the odd bit would get into the drain, where it reacted with the water and burst into flames, if enough solvent was there as well, the whole ring main would light up like a Christmas pudding, usually burning itself out in half a minute. Anyway, at that stage there was nothing you could do about it.

Having isolated the stuff from a sample of timber sawdust it was up to the student to find out its structure. again by classical methods. If the chemicals came from timber of known insecticidal activity they would be tested in this area as well. Some of these chemicals were surprisingly complex.

We had a visit once from Sir Robert Robinson, at the time President of the Royal Society, and he went round the lab with a few kind words for us all.

He had offered to discuss problems if wanted and the student at the bench next to mine, Keith Sellars, had a substance with a basic structure containing 22 carbon atoms and there was one bit with 2 carbon atoms, and Keith wasn't sure where it fitted in. He had drawn out the 20 carbon atom chunk on a sheet of paper and had the 2 carbon bit on a separate small piece of paper, the idea being that you could move this about from one likely point of attachment to another and try to decide the most logical. Along comes Sir Robert and asks Keith what it is that he wants to discuss. "Well we've isolated this C22 to compound" says Keith laying the large piece of paper on the bench. "That's not C22 it's C20 says Sir Robert" at a glance before Keith has time to explain the significance of the small bit of paper. I suppose with experience anyone could do it but it still seemed impressive at the time that he could dispute in an instant the one fact that he'd been given about a hitherto unseen structure.

We also had with us two or three Australian post graduate students working for Ph.D's. Until then the Australian Universities had not offered the degree of Ph. D. The first post graduate degree was M.S.c and if you wanted a doctorate, you had to work for a D.Sc which could take a lot of time and not many people could afford to support themselves for the time involved. Hence there was a bit of a brain drain from Oz to the U.K. and others.

The one guy, Leonard Jurd, had an M. Sc and one day he showed me his M.Sc. Thesis, which was well written, but I thought rather elementary in the experimental level. A number of the chemicals used, which we would have drawn from stores, he seemed to have had to make. Rather incautiously I made some such remark to him, whereupon he was quick to point out to me that of course in Oz his lab had only been a log cabin in the outback and all the experiments had to be carried out on the top of a pot bellied wood burning stove. Very dry sense of humour. One thing that he commented to me was the English Student habit of calling people 'Sir' - Running after someone in the corridor calling Sir! Sir! Whereas everyone has a handle, so use it. If he's Professor Jones or Doctor. Smith, or Mr. Williams, call him that. For one thing if you use his name and title he'll probably want to know yours, as he has a better chance of remembering

you after the conversation, compared to some kid shouting 'Sir!' This bit of advice stood me in a good stead later in life.

Sir Robert and Lady Robinson (who was also a chemist) had at one time worked in Australia when research was the be all and end all of everything for them. One of our Australian's had done a little research at the same University and had met the Laboratory steward who had looked after Sir Robert's own laboratory. Apparently, on Friday nights at the end of the week's lecturing stint, he had to ensure that the lab was fully stocked with clean apparatus, chemicals, etc. for Sir Robert and his Lady would 'disappear' into the lab on Friday evenings and, rumour had it, not be seen again until the start of Monday's classes. Anyway, when this steward went to clear up on Monday morning his story was that he could hardly get the door open for used apparatus piled against it and that the whole lab was in a similer clutter, apart from one small clearing left for working on the bench.

This level of work was what was needed, however, to get anywhere in the time available as far as a Ph.D. student was concerned and, of course, in the research field generally if another team was aiming for your target as well, there was the added pressure of getting there first as the Kudos of original research only comes along if your work is original. We used to work on average 65 hours a week, going up to 80 hours if things were going badly or getting exciting.

In spite of the rationing the University Refectory used to serve what I remember as excellent suppers. After the daytime rush, the diners, reduced to just staff, members and post grads, the kitchen had time to devote to a bit more out of the ordinary menu. After supper we used to work until 10.00 p.m to 10.30 p.m. when I would walk home. I had by then a bed-sitter about a mile from the campus and I used to walk there in the morning along Cuthrough Lane and back in the evenings along the main road University Boulevard which took me past a fish and chip shop just before home where practically every night I purchased my final meal of the day.

Being a regular and solitary late night customer I used to chat with the young man who served me, who was the son of the proprietor. I learned that he was studying lace making at the local technical college. Nottingham then was still a centre of lace manufacture. I was surprised that he was doing this, thinking that the chip shop was a more profitable future, but he said no, lace and fabric design was going to be big in the future, what with new fibres coming along and fashion changes emerging from the war time gloom. I hope that it was right, for him.

As postgrads we still had a member of staff appointed to us as Tutor, the main idea I think was that we had someone to turn to as a mentor or just for a chat, if need be. My Tutor was Daddy Addison and we only spoke once officially. Apparently one student who lived alone was taken ill and when examined by the Doctor was found to be suffering from malnutrition. So there was a purge on people living alone and one day Daddy stopped me in the corridor. "you live on your own don't you?" "Are you looking after yourself?" I think he could see the Refectory meals and chip suppers reflected in my frame so when I said 'yes' that was the end of the conversation.

I've said a lot about food but not much about drink. We had a sort of interdenominational drinking club, comprising post grad students from most of the Science based disciplines. Once we had found a landlord sympathetic to our student ways, and with a room to hire, we tended to stay with him even if he changed pubs.

We met about every third week during term for a general letting off of steam. We used to put so much into a 'kitty' to depersonalise the problem of getting in the drinks. The evening passed in swapping stories, some 'shop' and a bit of sing song, or recitation. Eskimo Nell was obligatory and the ex-service characters brought with them songs describing the physical attributes of the Nazi hierarchy.

The drinking wasn't as bad as it sounds, the alcohol content of the beer was very low still and even at 5p a pint you couldn't really consume a damaging amount. Afterwards if there were cars amongst us we would drive back to town. In those glorious anarchic days of no breathalyser, no

MOT and, importantly, very little traffic, the ancient wrecks driven by students didn't attract special attention.

During my research years I kept up my interest in the game of chess and developed an amateur interest in Bridge. We developed a technique for a Bridge four to operate whilst working at the bench. After the deal the cards held by a player would be placed face upwards in a drawer of the work bench and the bidding shouted out from player to player around the lab. In the event of any interruption the drawer could simply be shut to hide the cards. When a contract was arrived at, the dummy hand would be transferred to the draw holding the declarer's hand so that he could play both as usual.

One night the Prof's secretary told us that he wasn't able to get back from a visit to the North as he'd just 'phoned to say he was 'stuck in Crewe'. That time we threw caution to the winds and sat round a table in the middle of the lab, wandering off when necessary to attend to the various phases of the experiments we had under way. Suddenly, quite late, the Prof walked in and cards flew into the air, pipes and cigarettes stubbed out and one of the older members said "We thought you were stuck in Crewe". "So it seems", remarked Prof, turning on his heel and walking straight out again. Obviously he felt that meaningful discussion was unlikely after that.

Prof Gulland had a habit that if anyone got stuck on a problem and he was stumped as well, he'd say "Why don't you go and clean your bench". Now as it happened, when you did this, clearing away the debris of dirty apparatus etc. from earlier experiments, you would often find something that sparked a memory or new angle on the problem, or you'd find that something in a flask that you thought would never show results, or crystallise, had done just that and set you off again. We often followed this bit of folklore in the days after Gulland, as we had to clean our benches anyway. Some people were very fussy about such appearances, with everything neatly arranged and labelled. In the main things were more chaotic in appearance, but it was ordered chaos with all stages of an experiment recorded.

Only the person whose bench was immediately inside the door had any obligation to keep things under control at all times because this was the bench that was sure to be seen if Prof had visitors and gave them a quick glimpse of the lab on his tour. One occupant of this bench took this duty very seriously, all bottles neatly labelled and where he could, he re-cycled solvents used in experiments, recovering them by distillation. He had, amongst others, a large bottle labelled 'Recovered Acetone'. Once, we put alongside this a bottle lying on its side labelled 'Shagged Acetone' and amongst jars of products made in his experiments, one with a piece of lavatory chain in it marked 'Long Chain Compound'. He didn't twig it for sometime even sitting at the bench for discussion with Prof who looked from one bottle to the other with a quizzical expression but said nothing. He knew the student in question was too staid to have done it himself.

I've mentioned Dr. B. D. Shaw who endured the war as a P.O.W. He told us one or two tales about this including his successful supply of alcohol by fermenting potato peelings. For this he needed to establish a yeast line and he worked on the principle that yeast might pass through a bird undigested, so in Summertime he looked for droppings from birds likely to feed on fruit and was successful in getting a usable fermentation going. A few strategic bits of piping found during normal prisoner activities allowed a small Still to be built. How long he got away with it I don't know.

One of our fellow students had also been a P.O.W. He'd been in the R.A.F. It was allowed for prisoners to be put to work of a civilian, or non-warlike character and in his early days he worked painting buildings. The Germans started to build an airfield near the camp and one day a high ranking Luftwaffe Officer came to inspect the works and our man wandered across out of curiosity and the officer demanded to know why he had not saluted him. One of the officers in the group explained that he was in the R.A.F. whereupon there was an up-roar and that particular work detail came to an abrupt end.

Later in the war they were moved away from the advancing allies to Southern Germany where they were allocated to a local coal merchant to fetch coal from the railway sidings to his coal depot. The work was done

at night to avoid daytime strafeing and then, in pitch darkness most of the time because of air raids. It seems that much of the coal was shovelled onto the ground instead of into the back of the lorry using the darkness as an excuse when told off by the guards. It was a diesel lorry with a large dustbin like producer gas generator strapped on to it as an auxiliary fuel supply. The diesel ration could only be relied on to get them up the hills and downhill, or on the level, the driver moved a lever to the producer gas supply and tried to judge, to a nicety, the point at which to swap back to diesel for the next incline, if he miscalculated the guards and prisoners hopped off to give temporary help by pushing until the engine picked up.

It was at this camp that they went on strike because of the poor quality of the bread. In response, the Commandant, who seems to have been a decent old stick, paraded the prisoners and said, "Gentlemen, the bread you have is the best in Germany, we have the same in Germany today, even the Fuhrer eats this bread". This said with a slight catch in his voice. The parade dismissed in silence. Many had an uncomfortable feeling about having made the complaint. These few eye-witness tales began the rehabilitation of the Germans for me.

During my second year as a research student, I was able to earn a little extra cash working as a part time demonstrator in the undergraduate laboratories. I worked in the "Intermediate" class laboratory. This is roughly equal to Higher School Certificate (A level) and a number of entrants, then as now, needed to 'top-up' their A level holdings to meet the entry requirements to courses.

So I had a mixed bunch, who thought that chemistry was their best bet to make up their own particular shortfall in A levels, but their interest in the subject did not stretch beyond that into the future. There were, for example, a number of Engineering students. My job was to answer any queries about the methods of work they had been set, put out any fires and make sure they didn't blow off too many fingers.

I don't remember getting any special training so I used the knowledge I had acquired in my own schooling. Looking back it was by today's

standard a surprisingly responsible position, as I was in charge during that one and a half hours of practical chemistry.

Disappointingly, but understandably, we were dealing with the dregs of the intake as far as chemistry was concerned, so it wasn't very interesting as an introduction to academic teaching. I can't remember any untoward incidents. The only event, when I was supervising, was in earlier days when at school in the Upper Sixth, I'd been asked to 'keep an eye' on a couple of first year Sixth during some extra experimental work. They were making phosphoric acid from yellow phosphorus and concentrated nitric acid. All seemed to be in order, when there was suddenly a squawk from them and the whole damn lot had gone up in flames. I turned the fan off in the fume cupboard to stop the fanning of the flames, they were all in favour of throwing an asbestos blanket over it to smother the flames, but I thought this might knock everything over and spread hot acid everywhere, so I swamped the flames by gently sliding an asbestos board over the top of the dish used in their experiment. When order was restored, they were panicking a bit, protesting that they had only followed instructions, so we read them together. The book said "place the yellow phosphorus in an evaporating dish and cover it with 100 cc of fuming nitric acid ", this was right at the bottom of the page and I knew that thus far they would get the fire that they had experienced. Turning the page over the sentence continued "...diluted with an equal volume of water...!!"

Chemistry experiments described in text books for students are usually selected and described to give a wide margin of safety. In the more advanced experiments there are usually a few arcane clues - "This mixture has been known occasionally to explode without apparent cause"- means that it bloody well will when you do it. I suppose that from the above experiment we all learned the lesson to read 'all' instructions before starting on any novel procedure.

My work in the research lab had gone well giving enough to put on paper as a Ph. D thesis. There was some new work in terms of new compounds and extension of the scope of the earlier work, there was enough failure to show that I didn't give up easily and some true originality in the development of a route to simple peptides that nobody had thought of

before, and I think nobody wanted to use again, except perhaps the student who followed immediately in my footsteps.

Times were changing in the production of natural products and experience with the large scale production of natural products such as Penicillin had laid the foundations for milder more direct routes to specific bioactive molecules using biotechniques that were the fore runners of today's genetically directed methods.

Anyway, I had plenty of material to put together for a thesis so I borrowed a typewriter and got to work. It took me about fourteen actual working days, more or less flat out, then off to a local bookbinders to get the two bound copies needed for the University. The external examiner appointed to my thesis was Professor D. H. Hey of Liverpool. One stage of the examination of the thesis was a Viva Voce where the examiners were able to put to me, in person, questions about the subject matter of the research.

So now I was left waiting for the call to this examination. On the day, Prof Hey opened the batting "Now on page 1 you say . . ." I thought aye aye, he's going to go through this page by flipping page. But he didn't, his query on page 1 was about the use of the word bacteriocidal, instead of bacteriostatic, and after settling the choice of usage, he had relatively little to say and my own Prof chipped in with a few questions on the future development of the work. What he was getting at, was further use of the peptide synthesis that I'd developed as the last phase of my work.

As Organic Chemical synthesis and the requirements for Ph.D. achievement stood, then there probably was scope left for a further Fh.D. student. I was reminded how there had been a Professorial takeover of that idea. Distance in the initial early stages when he didn't think it would work. "How's that idea of yours coming along?" Later when it seemed promising "How are you getting on with our idea?" and finally "Any more results from my suggestion...?"

After preparing my thesis and handing it in, several things happened relevant to the future. First the end of my full time education meant the end of my deferment from military service and I was called for a medical

examination. Fortunately, or unfortunately my physical state did not meet the requirements, ruling at the time for military service, and my next problem was to find a Job.

My interest still lay in the field of synthetic organic chemistry and initially I applied for a Job in the Research Laboratory of Boots Pure Drug Company in Nottingham and was offered one with a start date a few weeks after my grant funding ran out. Thus conveniently, I was able to stay in Nottingham whilst awaiting the conclusion of the examination of my thesis.

Then came the day when I actually left the University. This was at the end of one of our working days, when I went to the Gatehouse to sign out for the last time. The name of the man on the gate was Mr. Fox and as a matter of course I had always addressed him so. As I was signing the book, I happened to remark that it was my last occasion, whereupon, Mr. Fox emerged from his cubby-hole. " I'd just like to say" says he, "that of all the students in this place you're the only one whose regularly called me Mr. Fox. The others call me 'Fox' and it's 'Fox do this' or 'Fox do that'. As far as I'm concerned, Sir, you can come back into this University anytime you like but I'd make it hard for the others to do it". Of course, I had only been doing what seemed to me to be common courtesy, but Mr. Fox's little homily taught me a lesson I never forgot. Always treat the man on the gate politely and with respect to the importance of his job. There is more to being a gateman than meets the eye.

When I went to Boots for my job interview the time was just as the mass of employees were returning to work after lunch. In those days most went by bus and so finished up walking through the gate and I found myself in a crowd, shoulder to shoulder, across the entrance road. The Gateman spotted me as a stranger, shouldered his way through the crowd and tapped me on the arm and said "yes sir, what do you want?"

Then on the 11th March, 1952, I had a letter from the Registrar of the University telling me that he was pleased to inform me that "Senate has approved a recommendation of the Board of the Faculty of Pure Science that you be awarded the Degree of Doctor of Philosophy". I was working

at Boots by then and a couple of days before the letter, someone at the University, regrettably who it was is now forgotten, had telephoned to leave a message at Boots. The call was taken by one of my colleagues who wandered round to my bench and started calling me 'Dr. Jackson'. "I'm not that yet" I said. "Oh yes you are, that was a call to say that your degree has just appeared in todays notices." But isn't it strange, I've no idea who made the call. Those students who had been working for a Nottingham degree (a few had come with Freddie from Oxford and were completing an Oxford D. Phil) were in the main, successful, one was recommended for an M.Sc instead of a Ph.D. and two failed.

Yes, people did fail Ph.D. The man who had worked on the bench next to mine, Keith Sellars, was successful. I think we must have had our VIVA VOCE examination on the same day because we were able to swap a few notes on them. Keith had worked on chemicals extracted from timbers. The first question his external examiner asked him was what it was Keith cut his lawn with. Somewhat puzzled, Keith said "A mower". "How do you spell it?" Apparently, in a reference to a well known natural product developed in hay - coumarone which finds use in perfumery - Keith had said that it was responsible for the characteristic odour of New Moan Hay, hence a quip from the examiner that he had wondered if Keith cut his lawn with an extinct bird. You wonder if the examiners hadn't got anything better to do, but I was to find later (as an examiner) that these small errors which you don't notice when you check it as the author, seem to leap out of the page to the stranger.

So that was it, student days were over. Of course not, I soon found that in post University life there was always the need to study and try to understand something new in the science of chemistry and I came to realise that in spite of the apparently laid back approach of my Mentors, they had given me exposure to a wide range of experimental and study techniques which gave me the confidence to have a go at any new situation in my field of activities. Later I met Ph.D's from other Universities who seemed to have been totally directed in their 'original research' and not been allowed to follow up any of their own hunches at all, or use anything but the prescribed technique and apparatus for a particular situation. They had worked in blinkers.

The Boots research programme, so it was said, had suffered from a loss of experienced researchers during the war years and now had a motto expressed by management of "a Ph.D. on every bench". This was my first experience of industrial work and I set to working at the same rate that I'd had as a student. After I'd been there about six months, a colleague for whom I had formed a great respect approached me and said "You know what your trouble is, don't you." "No" says I. "Well you work too hard. We've noticed how quickly you complete a project. We don't do that. You ought to slow down and make the work last longer". This was a total surprise to me and put the thought in my mind that maybe this wasn't the way I wanted to work.

The chemical research activities were divided into two main sections, compounds potentially useful in human disease and compounds potentially useful for horticultural and veterinary use. Possibly because some of my pep tides work had a vague connection with a disease of tomato plants known as 'tomato wilt' I was assigned to the Horticultural and Veterinary Section.

There were other sections like Biochemistry and the overall Director of Research was Sir Jack Drummond, well known for his work on dietary requirements. The man in charge of chemistry was Dr. F. S. Short, reputed to be the youngest man ever to get the degree of D.Sc. Reporting to him was Dr.Peake, who looked after the medical side, and my boss, a jovial character whose name I've forgotten.

There was at the time, in the Patents Department, a Dr. G.Hobday who was viewed with some awe because he managed to get certain patents set aside so that Boots were able to continue the manufacture of drugs, for which they had had a war emergency licence to manufacture from the originators and it seems that a fair chunk of the Boots turnover would have suffered had that licence been revoked at the end of hostilities. For some reason I was selected to go ob one of the Boots training courses for Managers and I was amazed how much was revealed about the political history of the Company.

Jesse Boot had one of his earlier houses on land which is now part of the Campus of the University and he had been a generous benefactor towards the construction of the then University Buildings. Jesse came from humble origins and apparently from a child enjoyed ill health, as the saying is. He was one of several brothers. His father moved from an agricultural background to open a Drysalters shop in Nottingham and when he died Jesse was left with his Mother to run the shop and the more robust brothers went back to the land to earn a living. Jesse's basic tenet was to supply products of reliable quality at a fair price and based on this the business prospered.

There is no doubt that Jesse was a hard worker and he had some smart ideas in the development of the business. His attitude towards his chosen market did a lot to sort out and establish to the public benefit the Pharmaceutical retail industry as we know it today. Naturally, his efforts to offer medicinal products at favourable prices, earned him some enemies.

When legislation required that every pharmacist should have a Member of the Pharmaceutical Society in charge of dispensing, Jesse was accused of only employing a few M. P. S. 's and using each one to supervise several shops. His response was to take the whole front page of one of the National Dailies (in about 1903, I think) and advertise the names of all the M.P.S's employed by the company. The whole front page was covered with column after column of names set in the normal small print size of a newspaper column. I knew several pharmacists in my home town and one who had been in business since the beginning of the Century told me of the rivalry that existed between the independent pharmacists and the Boots managers and some of the tricks that they got up to in shop window displays to discredit the opposition.

At the time that I worked at Boots they had over 1,000 shops. Jesse married a daughter of a Jersey bookseller and she brought her own brand of business acumen with her being responsible for the formation of the Boots Book Lover's Library, where most of the larger branches had part of the shop set out as a lending library usually, at the rear so that users had to

walk all through the shop and so be exposed to the bargains on sale there, before paying their tuppences to borrow a book.

The First World War also helped the Boots fortunes because the company became heavily involved in the manufacture of gas masks. In the 1920's it seems that Sir Jesse lost confidence in the ability of the business to continue to expand. We on the training course were told that he lost confidence in his son's ability to maintain the family flair. Anyway, whatever, he sold the business to an American Company, Rexall. In the event, in the following slump, it was the American outfit that went bust and a consortium was able to buy back the Boots shares. In those days Dollars were in strict control and we were told that Players, the local Tobacco Company, used some of their 'tobacco dollars' to buy the shares and were then reimbursed by Boots in Sterling. Sir Jesse continued to prosper, so much so that it was held that his widow, Lady Trent was in her day, the richest woman in the world. The original Boots home at Lenton was eventually used as a guest house by the Company and the land and gardens used for the testing of horticultural products.

We also had a farm, where animal drugs were tested, a few miles outside Nottingham. My work involved me in visits to these places and some of the methods of determining the effectiveness of, for example, insecticides were surprising. For example, fruit crop pests, where selected trees would be sprayed with the test product and others left as 'control'. After the appropriate interval, white cloth was spread beneath each tree and the tree gently shaken to dislodge the bugs. The total population per tree was determined by actual manual collection and counting, including dividing them up into the separate species. The counts of 'treated' versus 'control' were compared to determine the effectiveness of the pesticide. I believe that even today a similar technique is used in field trials.

Boots management of research was what could be called a 'shotgun' approach. Although there was the broad division of activity, every new potential drug that was synthesised was tested on a broad front of activities, animal diseases, insecticidal and bacteriacidal properties being tested. Boots, of course, already manufactured certain drugs, particularly antimalarial products and natural products, such as insulin and antibiotics

of the penicillin type. Insulin was extracted from calf pancreas imported from South America. After it had stood out in the storage yard for a bit, it used to stink, but it still yielded the life extending white crystals of insulin at the end of the process.

Saccharin was also made at the plant and in the packing plant the air was heavy with sweetness as you breathed it. Managers from different departments met together in the canteen at lunchtime, so it was easy to get an invite to visit an operation of interest on the plant, which at Island Street, had been built in the middle of a residential part of town, and had gradually absorbed, streets, buildings and all into the factory operation.

At that time many of the buildings were used, as they stood, for small processes, as stores and for some laboratory purposes. A disused chapel housed a sensitive microbalance because its massiveness damped down undesired vibrations.

It was strange to walk along these streets and see the old shops still with the enamelled advertising signs fixed to their walls.

One area of excitement was the discovery of the first effective drug for control of tuberculosis, which was still the scourge of civilisation. Surprisingly this had a relatively simple structure. Naturally Boots included antitubercular activity in their screening tests, the rating of results being from 0 to 10. I was at one time making compounds intended to control Red Spider Mite which was a scourge of tomato plants.

When I walked into the lab one day there was a buzz of excitement, caused I found, by one of my bug drugs which in the anti-tubercular tests had scored 8+ on the scale. The man in charge of that whole section was waiting for me and asked for a copy of my experimental records to hand over to the chemist designated to do the main anti T.B. work, who hadn't had much success up to then. The central chunk of the molecule that I had made had a cyclohexane ring linked to the rest of it by di-sulphide chains. I was making a whole family of similar compounds with different bits in the middle and being lazy I used to walk around the lab stores to find out what was ready made. Much to my surprise, a few days later, the lab

assistant working for the aforementioned chemist came to have a word with me. "Don't tell Dr... I've spoken to you, but we can't find a laboratory method of making the paradichlorocyclohexane that you used." "How did you make it?" "I didn't" says I "It's on the shelf in the stores". "Never thought of that" he muttered and pushed off. It appeared later that Dr... was jealous of my accidental success and this had caused him not to ask me for help and it was left to his poor assistant to sneak round on the quiet. This was my first experience of professional jealousy which I met later in various forms.

We did some troubleshooting in the research lab occasionally and one amusing case was when a certain batch of weed killer failed to work; an expensive re-call by the time it had been broken down into small packs and distributed. The active ingredient was a dichloro compound and the control method at the chlorination stage was to have a purpose made hydrometer which measured the density of the reaction mix, this had a red line painted on it to mark the correct point at which the chlorination process should be cut off and a sample sent for analysis. When analysed, this faulty batch of product proved to be an equal mixture of monochloro and trichloro product - which in terms of chlorine content analysed more or less spot on for dichloro.

Apparently what had happened was that on nightshift the operator had dozed off. When he woke, the red line was sticking up, way out above the liquid line and he knew that it would fail the test for chlorine content, so he temporarily put the batch on one side. Losing that batch threatened the production bonus, so being friendly with one of the works analysts in another department, he got a sample tested and learned the truth. He then deliberately under chlorinated another batch and mixed them together to hit the required chlorine content for an apparent dichloro compound. Unfortunately for this approach both the di- and monochloro compound are lacking in weed killing activity. This was the first case that I came across that showed the intelligent cunning of the factory worker, plus a demonstration of a little knowledge being dangerous. I met this several times later. It concentrates the mind on the choice of control tests, particularly for processes where some sort of bonus scheme is in use.

When I started at Boots, the Director of Research was Sir Jack Drummond. I learned something important from him. Jack had the knack of asking the daft question at meetings. You know, a famous scientist has been invited to speak to the research staff and at the end he invites questions. You have a question, but you hold back because you think that the answer must be obvious, if you'd understood what the speaker had said, so you hang back for fear of appearing daft. Sure as eggs, Jack sitting on the edge of a table or desk swinging his legs, would ask YOUR daft question. He was Sir Jack Drummond FRS, nobody was going to call him daft. But as often as not, it turned out that the questions weren't as daft as you thought and sparked off the discussions. It also encouraged one to be bolder at future meetings, or when chairing a meeting ones self, to be prepared to stick your neck out to get things going.

Jack arranged a meeting at Lenton House, the experimental station, where at the time some anti viral work was going on. Later he invited comments on the event and after a day or two his secretary toured the lab asking for contributions as no-one had said anything. I said to her that I thought serving a cup of tea would have relaxed people amd promoted more discussion than actually went on. "Tell him then" she says, so I did. I got a polite reply saying lack of catering facilities had prevented this, but it would be borne in mind for the future. It seems I was the only one who wrote.

Later that year he was murdered along with his family whilst on holiday in France. I was on holiday myself and remember the astonishment on reading the headline in a newspaper as I rarely bought a paper on holiday but just happened to do so that day. His successor as Research Manager was Dr. Gordon Hobday, later Sir Gordon and Chairman of Boots Company and later Chancellor of Nottingham University.

During my time at Boots I came to the conclusion that carrying out work programmed and directed by someone else was not what I wanted, I wanted to move to a more independent situation where I was formulating my own programme for the realisation of the desired result and perhaps something where tangible, useful results came about fairly quickly.

During my research years at University I had married and we had a daughter, so clearly I was looking to put down roots for more than one reason. The Labour Government was still in power and their housing policy at the time made it a very expensive matter to build a house of your own. The Government had developed charges on building land, which effectively doubled the cost of building your own house and of course, there were nothing like 90 to 100% mortgages then and a high contribution was looked for from the prospective house owner. I knew several people who only built half a house with the intention of finishing it as funds improved. These were people with good jobs. All these things conspired to make it seem that a lifetime in Nottingham was not on the cards.

Whilst at Boots some old traditions had continued and a new one developed. Going out for a drink with the boys was still an activity, usually now the excuse being a stag night or "wetting the baby's head". I also continued with my interest in Chess and played in the Boots Chess Club/Chess Team. My first game was against a stalwart called Frank Pyke, a game in which I felt comfortable. Then I heard a bystander say "That new man is beating Frank Pyke". I hadn't seen it like that up to then and went slightly to pieces and eventually settled for a draw.

At the time Dad had bought for me an old Jowett 8 HP van about 1938 vintage, which I used to get back and forth to home. Don't forget that this was a two cylinder engine and this particular one had the endearing characters of no compression on one pot and a cracked cylinder head on the other. A leak sealer helped but from time to time the leak filled the cylinder and the engine could not be turned over to start it. To counteract this I carried a pack of drinking straws and a spare sparking plug. When the leak was bad I took out the plug, pulled the engine up to top dead centre and used a straw to suck out the water that remained. Putting in the dry plug usually caused it to fire first pull and away we went.

If we played Chess 'away' we usually used this van to get there and on occasions the dexterity with the straw, etc. amused my fellow players and earned me an undeserved reputation as an expert on cars. Once I had the chance of playing for the County team. I was about the third or fourth

reserve and the others dropped out so that I was 'on'. The game was played at the Mechanics Institute in Nottingham and I noticed that one player kept muttering "Of course Draughts is my game really!" During the evening a few well known figures in the Chess World dropped in and one of them, the Rev. Blackett, said "Excuse me gentlemen, but do you know that you are honoured tonight by the presence of the Draughts Champion of Great Britain", and he waved his hand towards this player, for who, it appeared, draughts really was his game. I think I managed a draw. It was a sixteen board match, I seem to remember.

My new interest was Bridge. I had played a little at University but the research staff at Boots seems to be comprised entirely of dedicated players and lunchtime would see one or two games at play. I learned a lot just by watching and eventually joined in. One of the stalwarts was Dr. Hastings Wang. My first meeting with him was memorable because just around the corner from me I could hear this broad Scots accent, which did nothing to prepare me to come face to face, as I turned the corner, with a person of typical Chinese features, except for height, Hastings was about 6 feet tall. I understand that his Mother had provided the Scots ancestry, whilst his father had been a professor at Hong Kong University. He was what can only be described as a 'character'.

Another friend at the time was Dr. Peter Macey, he was a keen Bridge player and he and his wife were very generous in their friendship by providing hospitality during the time that I was away from home. Peter later became an author of science fiction. I discovered this during my hunting through the contents of second-hand bookshops many years later, about 1990 I suppose, when it was a surprise to see his photograph amongst the cover 'blurb' of a book that I picked up. I have a feeling that I knew him before going to Boots, but whether he was at Nottingham, I can't remember. He and others from the Boots lab used to play in Bridge Tournaments and I would go along as a spectator. Very interesting to watch the bidding on the same set of cards by partners from each of the opposing teams.

As already noted I had felt the need to look elsewhere for employment and living. Dad still had the house in Lichfield and it seemed sensible to try to

find a job where Lichfield would be a suitable home base for the time being. So I did something which wasn't often done, I advertised for a job in the journal of the Society of Chemical Industry (then known as 'Blue Bits' in the trade because of the colour of its cover.)

A final item on the time at Boots, which was, in many ways an extension of the academic atmosphere with little contact with 'The Workers' and none with the customer. We had in the Department a full time cleaning staff who worked during the daytime and had a mess room of their own on the fringes of the lab. I had noticed that one of them was always in there knitting, knitting, knitting. Eventually I asked one of the lab assistants what she was doing, to receive the answer "She's a loyal employee of the company". "You're kidding " I said. But no, it seems that there was a concentrated air-raid on Nottingham the night 8-9 May, 1941 and those employees who had been at work that night and stayed at their posts were given the title 'Loyal Employee of the Company' and allegedly a job for life with no risk of dismissal for any normal misdemeanour. That air-raid also caused severe damage to the old University College building in Shakespeare Street.

CHAPTER SIX

EVODE...SOME CHARACTERS AND CHARACTERISTICS

Back to the advert in 'Blue Bits' which prompted four replies. As it happened two were from Stafford, a convenient daily travelling distance from Lichfield. One of the companies seemed to be involved in a varied range of chemical products, so I went for them first.

This was Evode Limited and my interview there was my first experience of (what was then) a very small firm. It transpired that they wanted someone to establish a manufacturing process for bitumen emulsions of a special nature. These they used in roof water proofing but at that time were buying them in. I first met Elias Peak, who was Chief Chemist, he outlined the general scope of the work I would be doing. I hadn't really got a clue what bitumen emulsions were, although in connection with the work at Boots I had been making emulsions as a means of applying insecticides, so I at least knew what that bit was. I asked if I could have a look at the factory, to be told that this was out of bounds to all visitors, but I could ask the boss, Dr. Simon when I met him. Being used to good library facilities I asked "Where's your library?" "You're leaning against it" said Ken Wood, one of the laboratory staff.

So I went to meet Dr. Simon, who was the founder of the business and amongst other things asked about a tour round the 'works'. He thought deeply, "Not today, but you can call again in about a week?" So it was fixed and in that week I spent a few hours in Boots' library mugging up what I could on bitumen emulsions. The outcome was that they offered me a job as "Works and Laboratory Chemist".

Had I really appreciated how small Evode was at that time I don't think that I'd have gone, but I was protected by naivety and accepted. The trip around the works had shown me some intriguing practical applications of organic chemistry, I liked the people I had met and they seemed to like me. The location served my purpose so that was that.

They asked for a reference and I suggested that they wrote to Prof. King who I happened to meet a few days later at the University. I don't know

what Evode had said in the letter but the Prof was clearly a bit puzzled. "This Evode firm you've applied to join - are you sure that you are doing the right thing?" I assured him that it met my purpose. A couple of years later he left Academia and took a job in industry as Director of Research for a company that made artificial fibres from wood cellulose. The connection with his own interest with wood chemicals was obvious.

I took the opportunity to tell him, as this was his first departure from the academic life and was his first industrial post "I hoped that he felt he was doing the right thing". As it happened after a couple of years there was a merger with another fibre company and his research activities were made redundant. His eventual fate is unknown to me.

With me, life had taken one of its full circles and I was back in Lichfield at least pro tem, but with the difference now of being a family man. I travelled daily to Stafford using the Jowett Kestrel, the one which had belonged to Mr. Green the Market gardener, near Shenstone and which needed a lot of restoration to make it really usable as a family car. This was 1953, the year of the Coronation of Elizabeth II, the year in which I began to get used to regular contact with television, a service which had been by now extended to cover most of the country with transmission stations with their large aerial towers, which at the time were one of the World's wonders.

One of the first domestic targets was to get a house in Stafford in a location convenient to the workplace which was then in the centre of town. After looking around at the older houses that were on offer we decided to build new and to build a bungalow. The first thing was to find land, which Dad did. His idea was to ask someone who is always moving around an area in detail from house to house, such as a postman, or a milkman, to ask them if they have noticed land for sale, or land not built on that looked as though it might be available. We found two plots in this way, but went for one in a district called Doxey, on the western outskirts of Stafford.

In his lifetime Dad had become convinced that a house should be within easy reach of one's work, a conviction born on him by the vagaries and

availability of transport so far in the 20th Century. It made sense to be within easy walking, or cycling distance, of one's work.

In 1953 only four people motored to work at Evode, me, the boss and two other Directors. Everyone else walked or biked. Doxey is a corruption of Dochesig, the spelling given in the Domesday Book of 1086, when it is recorded as being held by 2 Frenchmen and a thane as sub tenants of the Bishop of Chester. Until the late 1930's it remained a mainly agricultural area and the piece of land in which we had an interest was the remainder of a pre-war development which had been brought to a standstill by hostilities.

Most of the development had been pairs of semis but the remainder of the land was sold off as double plots and we bought the last one of the lot. The cost was a 100 pounds, unbelievable now and having bought it the next job was design and building.

Once again we were startled by the estimated cost of most of the designs that we looked at and eventually decided to build the house by 'direct labour', that is to employ as sub contractors the various trades, as we needed them. Dad took a great interest in this and gave me a lot of guidance, first and foremost on the financing, by suggesting a loan from the Council, under the provisions of the Small Dwellings Acquisition Act, instead of going to a Building Society. An advantage of this was that the interest rate was fixed for the term of the mortgage, which could be selected from 15, 20 or 25 years duration.

We also found that a pre war acquaintance operating as a 'jobbing builder' was still in business and he agreed to do the building work if I transported him from Lichfield to Stafford each day. This was Mr. Bicknell of Shenstone Wood End near Lichfield. Mr. Griffiths, a retired builders labourer came into the team and we were in business. Or so it seemed.

We had not bargained for delivery times on materials - even common bricks were on a 12 months waiting list and some things, like timber, were in very short supply, so much so that the era of having boarded floors on the ground floor, as well as upstairs, had vanished and the Asphalt tile

made by Marley and others had taken over as the ground floor finish. We wanted a timber floor finish and as we were having a bungalow, this meant that somehow we had to overcome the ground floor problem. A stroke of luck was finding that a Prisoner of War Camp built on the grounds of Teddesley Hall, near Cannock, was being demolished and the building materials from it, which were not of any great age, being sold. So from this source we recycled about 24,000 bricks (cleaning them up by hand) plus a lot of useful structural timber.

There was an allocation of timber for private houses and our architect had designed the house around the volume of timber that could be expected from that allocation. Mr. Bicknell objected to one aspect of this- the amount of timber designed into the roof support. Here the Teddesley supply came in handy and as our specially chosen roof tiles were easier to get than run of the mill products and we were able to get all the roof materials easily enough, the savings from the recycled materials covering the extra cost.

The floor board problem was solved eventually by exploring some of the businesses around Walsall, the scene of Dad's youth.

It is amazing, and still true today, but in those local clusters of small businesses, the forerunners of today's trading estates, there is always the chance of dropping on unusual sources of supply. In our case at a timber yard near Walsall Wood, we found a supply of mahogany which we got cut into flooring planks sufficient for the whole bungalow. To fix these, at Mr. Bicknell's suggestion, we made 'joists' out of coke 'breezes' and cement which were cast in place on the concrete sub-floor. When set these were capable of being nailed into and because of the alkaline nature of the cement, did not corrode the nails.

Anyway, one way or another we had a house completed by Christmas 1953 and ready to move into by February 1954. The old Jowett had served us well, towing a small trailer when needed but by now the engine needed serious attention and we had it rebuilt, as changing cars, especially to something significantly better, was still an expensive business in 1954 and

so we settled down to family life in Stafford, which in those days was still a pleasant town, no traffic, no parking problems, no yellow lines.

Evode proved to be a fascinating place for a chemist. Although very small, the turnover was about 560,000 pounds in my first year there, and only just on the fringe of becoming famous for EVO-STIK, the range of the products was enormous, paints, polishes, roofing materials, cement admixtures. A sales force was employed to move all these products in the market place and they all called for a considerable technical service back up to be sure that the product was matched to the service conditions.

The first project for me was to finalise our own methods of producing bitumen emulsions that were used in roof waterproofing. Most of the products sold were derived from the personal experience of the founder Dr. Hermann Simon who, being Jewish, had to emigrate from his homeland Germany in 1938. He was born in 1900 and in the early 1920's, after completing his degree, joined one of the typical small German companies in the chemical industry, Chemische Werke Zimmer, where he eventually became a partner. Here, already, there was the same broad spectrum of products that he eventually brought to Stafford.

During the time of hyper inflation in Germany it became the habit that at the end of business each day one of the partners would set off to buy the raw materials for next days production, if left until the next morning inflation would have wiped out any trace of profit. But things gradually stabilised, at least on the financial front, and the company prospered. But there were some weird political situations. During the rise to power of Adolf Hitler there were periods of intense anti-Semitic activity and in one the feelings ran so high that Hermann decided to cross the border to France. Unfortunately, this coincided with the German re-occupation of the Saarland and he found the French just as anti-German as the Germans had been anti-Jew. He took to a 24 hour cinema and stayed there for two or three days until the various furies died down. He had, of course, been born and bred as a German and regarded himself as a loyal German in those days (although he was later to be prouder still of his British Citizenship) and like many other Germans in similar circumstances, just

could not believe that there would be any discriminatory actions against them by their fellow Germans. But time soon proved otherwise.

To leave Germany one needed evidence of the existence of employment in the proposed host country and in 1938 Hermann could see that the survival of his family and self, depended on leaving Germany. Because of his interest in bitumen for roof water proofing, he was able to get the offer of employment by Shell in Great Britain through his contact with Royal Dutch Shell in Holland. When the day came that he and his family left Germany, the train stopped at the German Customs Post while papers were inspected, then moved on and stopped at the French Post, where the papers were examined again. During this time the platform was patrolled by members of the Gestapo and, as he told me, when we had got to know each other better, he afterwards could not remember breathing between the time that the train stopped at the German border and when it moved off into France.

His eventual arrival at Stafford was due to a blend of coincidence, wheels within wheels, or grapevine that operated at the time between those under the Nazi threat. It seems that a certain Adolf Axelrath, who had operated a Polish company in Germany, had come to an agreement to supply the Lotus Shoe Company with shoe polishes to be sold through the Lotus Shoe shops. Lotus, of course, had their Head Office and principal factory in Stafford. Another young man seeking to leave Germany at the time, was John James Ernest Forman, born in Germany, but a British Subject because his father was British. He came to Stafford to establish and manage the small factory making polishes for Lotus and also establishing it's own brand of floor and furniture polish. The brand name 'DOVE' was chosen for these products.

Two members of the family involved in the Lotus business became Directors of the polish company, which was then called 'Spic and Span Polishes'. Adolf Axelrath came to the conclusion that if war came Britain would lose and he'd be back in trouble again, so he skipped to the U.S.A., offering his share of the business to Hermann. In spite of his wife's objections, who thought that to be an employee of Shell would give greater security, Hermann became a Director and Managing Director of

Spic and Span Polishes. His ambition was of course to graft on to this business the know-how and market knowledge that he had brought from Germany.

He had had a brief acquaintance with polish manufacture so he felt at home with that and with the other products. He initially acted as his own salesman. The first order that he got in Britain was from a Builders Merchant, Walter Tipper in Uttoxeter for five gallons of a bitumen solution. He got the order, went back to Stafford and made it, then back to Uttoxeter to deliver it, all in the same day.

All too soon the Second World War intervened, the business was kept afloat by the effect of 'zoning' on the polish business and orders for quicksetting and waterproofing compounds used in concrete of airfield construction. The water-proofing materials were used to repair bomb-damaged roofs and to make food stores safe against poison gas. The war also saw relatively long term detentions under the 18b regulations for both the Directors who had come from Germany and there was also some prejudice in Stafford because they were (a) Germans, and, (b) seemed to operate processes using large amounts of highly flammable materials, in the centre of town.

With the victory in Europe things did not immediately return to normal but the business was still afloat and several means of additional future development were being followed up. That part of the activities that were the speciality of Dr. Simon, paints, concrete, admixtures, waterproofing, had been known since 1938 as Evode Chemical Works, originally the name registered had been Dove Chemical Works, a logical extension of the use of the trade mark DOVE used with the polishes.

However, there already existed a company "Wailes-Dove" (well known at the time) deeply involved in bitumen and pitch based products for buildings. Although a little late off the mark, they did eventually object to the similarity of names and objectives and the response was to use EVODE, the dove reversed. Wailes-Dove met the cost of this change. This of course gave a very strong Trade Mark as it is 'made up' and cannot be confused with a real dictionary word, somewhat like 'KODAK' so it could

be used across a wide range of products without fear of treading on any existing toes.

Contacts with the U.S.A. and Germany had caused an interest in synthetic waxes and the possibility of importing them for resale to other wax users. Unfortunately they were more useful in other processes, particularly moulding techniques such as making gramophone records and not having expertise in these areas the idea folded, but the Company name stuck, literally, to Evode. In somewhat premature anticipation of selling these waxes the name SPIC and SPAN had been changed to ENGLISH WAXES and this stayed with the polish business.

It was also in the years 1945 to 1950 that the Company became interested in adhesives, initially through changes in shoe industry methods brought about by the properties of some of the new synthetic rubbers. Shoes manufactured by stitching had never been capable of effective mechanisation. True, there were machines to do the stitching, etc. but the assembly was still largely a matter of cobbling by individuals and not the smooth passage of shoe fabrication along a production line.

The new adhesives had the property that completely dry films of adhesive could be made to bond together, either under pressure, or a combination of radiant heat and pressure, both features being easily built into a 'line' process. The ability to pre-coat components which could be stored until the bond under pressure was needed, meant that it was possible to feed components on demand, each stage of the assembly process being completed without delay.

Lotus had always made simple latex based adhesives for non structural use, like fixing insoles, but were not equipped to make adhesives that used highly flammable solvents needed to dissolve rubbers. One of the U.S. companies, expert in the field, was Angiers Corporation. Initially founded by two brothers, it seems that they quarrelled and parted brass rags, one brother coming to Britain and establishing the Angier Company that made 'Angiers Junior Asprin' amongst others. What the quarrel was about nobody ever knew, but neither the brothers or the companies corresponded again until both brothers had died. By then Angiers U.S.A. had diversified

into adhesives technology and someone there had the initiative to write to Angiers U.K. and say "What about it?" U.K. decided to stay with what they knew, but in their enquiries amongst potential users of adhesives, they had come across Lotus and in the light of their own decision, suggested that Lotus might be an effective working partner.

The two most active Directors of Lotus at the time, James Bostock and Godfrey Bostock, were always go ahead lads, looking for means to improve their fortunes and not just rest on their laurels. Now, all God's children got shoes and the market then, as now, was huge but to stay in the forefront new methods of volume productions were essential. James and Godfrey bethought themselves of Evode and its familiarity with flammable solvents and Hermann found himself in the adhesives business as a licencee of Angiers Corporation, on an initial five year period which had just been re-signed when I joined.

All the products made by Evode had common threads of chemical properties running through the demands of their composition, application and practical performance. The main common feature was the way in which surfaces behaved when in contact with one another. A paint has to spread so that its liquid surface wets a solid, such as metal or brickwork and then when dry adhere firmly to it. An adhesive has to have the same behaviour, but a paint also has to resist the effects of weather so that it protects the surface that it has been applied to; an adhesive film usually ends up in a closed bond and the effects of weather are not so easily inflicted on it and so on. Wetting, spreading, adhesion and resistance to weather are the common denominators, the chemist has to figure out how to build them all into a formulation to the best effect for the intended end use.

Just before I joined Evode there had been a serious fire which destroyed most of the laboratory which had then been re-built and re-equipped to a level well above that of an average small company. So this was also the age of the heyday of the Research Associations to whom could be subcontracted investigations needing bigger investment, so one way or another, I must say that I never felt at a disadvantage in terms of capability to experiment in the chosen fields of the company.

So here we were all in Stafford, Evode, myself and family, which still included Sid Jackson, now living with us instead of vice versa. Memories now divide into three main groups; dealing with totally new applications of Chemistry in product development and being involved with the end use/user; having close day to day contact with people doing much the same as me, but in other activities of the Company; family life.

The people that I worked with were, of course, also like me responsible for shaping the future product range. Some were the originals, Dr. H. Simon. founder, Mr. J.J.E. Forman, Director - administration, both from Germany. Cyril Lawton, Dr. Simon's first laboratory assistant (1938) and ex R.A.F. Gunner, flying crew, Mr. Elias Peak, Chief Chemist and Production manager with a varied industrial background, Mr. A. Adomenas (ex Lithuania) Paint Chemist, Mr. Ken Wood, Adhesives Chemist, Mr. R. Yudolph, Sales manager, Mr. E. Beaumont, Sales Manager Adhesives (ex Bostick, South Africa), John Arnott, Sales Manager, Polishes, T. Woitulewicz, Foreman of Bitumen Plant, Polish Army, via USSR and R. Geheb, ex Waffen SS Leibstandarten Adolf Hitler, so it was a pretty mixed bunch to start with and more characters were accreted along the way.

Incidentally Dr. Simon's father's Professor of Chemistry was KEKULE one of the pioneers of Organic Chemistry.

Hermann Simon brought to the Company products and technology that seem unremarkable looking back from a modern standpoint, but which at the time (and for a considerable time afterwards) were what would today be described as 'state of the art'. First was the use of chemicals to improve some of the properties of Portland Cement products - mortar and concrete - which had the disadvantages of either not setting, or setting very slowly, in cold weather and when set were porous and could allow the percolation of water into the built structure. The strength and water resistance of concrete can improve enormously as it ages by 'natural causes' but this takes 12 months or more to happen and often better properties are needed early on.

Hermann had acquired the knowledge of certain chemicals that reacted with cement to improve its properties and he was one of the pioneers of Construction Chemicals. He was not alone in this of course, but he had the advantage of experience in Germany which showed that the products worked and this gave him the confidence to battle against the traditional conservatism of some British Architects and Specifiers. The need for rapid setting of concrete for wartime buildings gave things a boost as well.

Next in the field of paints his special knowledge was in the use of Chlorinated Rubber. Obviously all paints need a 'film former' and need to be liquid to be sprayed, or brushed and then dry to a tough resistant film. (They need to be coloured as well to be decorative, but that's by the by).

Compared to earlier bases for paints such as Linseed Oil and Resins, Chlorinated Rubber has excellent resistance to attack by chemicals and will also resist degradation by mild alkalis like those which form on the surface of concrete. The basic raw material is dissolved in rapidly evaporating solvents and as soon as this evaporation has taken place the rubber is left on the surface as a continuous dry film. Over metals like steel a corrosion inhibiting first coat, or primer, is needed to mop up any traces of chemicals that might get through defects, or damaged areas, of the top coats. Red Lead was the preferred corrosion inhibitor in those days, but the Red Lead primers available were attacked and dissolved by the solvents in Chlorinated Rubber Plants.

Another innovation that Hermann acquired from Germany was a primer that was solvent resistant allowing wide use of these paints in the protection of steelwork. Thirdly, he had been involved in roof waterproofing using a method based on bitumen coatings that gave a very thick final layer which was strengthened by having a woven fabric embedded in it as the work proceeded. This was very effective in repair and maintenance because it readily conformed to any shape of roof surface and was applied without any need for using melted bitumen as an adhesive.

Bitumen emulsions were the most effective form of coating to use and on the basis of materials that were bought in, Hermann had built up a sizeable

specialist business devoted to selling the materials only, or on a 'supply and fix' contract basis, using our own roof waterproofing operatives. Out of the approximate 560,000 pounds turnover of Evode in my first year there, 60,000 pounds was in roof waterproofing, so my first project, which was to find out how to make a suitable bitumen emulsion, made sense.

In the beginning Dr. Simon did all the laboratory development work himself and his note books are an interesting bit of history. In common with many German manufacturers he was very keen on trade secrecy and all his raw materials had a secret coding known as 'G numbers'. For example, water was 'G400', portland Cement was 'G454' and so on. As the number of people increased this system fell into disuse and I never saw a complete list of G numbers. Occasionally, when faced with trying to understand an ancient recipe, you would come across people moping around saying things like "What the hell was G448?" His lab notes started at April 1938 and were originally interspersed with notes written in German, and the DOVE trade mark is applied to paint and other products.

The notes are in English a year later, each experiment is carefully numbered. In November 1938, the adult scribble of Hermann was interrupted for a spell by the large schoolboy 'best handwriting' of Cyril Lawton, the first lab assistant. Emulsions are usually dispersions of an oil in water, the oil being broken down by vigorous mixing into tiny droplets. Of course, if at this stage you stop the mixing, then the oil and water soon separate out again, the trick is to find a third ingredient to stop that happening. The ingredient looked for is something that modifies the surface of the oil droplets so that they no longer run together again, but stay separate and dispersed. A typical 'Surface Active Agent' is ordinary soap, but something more complicated is needed to give the long term stability required for a product that has to be usable after being in stock for a year or more.

I knew that bitumen could be melted to an oily liquid and that soap was surface active, so I started off by using this as a model system. I had done measurements on the stuff we bought to get an idea of what might be the average dispersed droplet size in a typical product and my note books start with a purely academic calculation of the number of molecules of soap

needed to give a single layer of them over each particle of bitumen that would be produced in a five kilogramme scale experiment, then working this back to the weight of soap needed for this 'theoretical' emulsion. Then I thought, here goes and we ran these amounts in the small scale emulsifier.

'We' were myself and 'Ted' Wojtulewicz, who was in charge of the bitumen product plant and it was on the strength of this co-operation that most of the eventual bitumen based products were realised. Much to my joy, a rich, creamy, brown emulsion came out of the machine. Jackpot, it seemed. Elias Peak, who had made some experiments himself in the past, came along to ask me how I was getting on and I told him how I had calculated the theoretical requirements and - he interrupted me. "You found that you needed x grams of soap for your 5 kilo charge", quoting a figure for x that was very close to mine. He had found this out by starting off with what was far too much soap and gradually reducing the amount in a series of experiments until he got to the point where no emulsion was formed. Thus he had arrived at my answer empirically. "Don't worry about it" he said "By using a bit of theory you've got as far in one day as I did in several months of experiment".

I carried on with this simple soap model to find out the other chemical conditions that were needed for stability and then began to work this basic information up to the point where a useful product resulted. 'Useful' meant that it had to be easy to apply and yet give a high thickness of material, dry quickly and not be damaged if rain fell on it shortly after drying. After all it was to be used for roof waterproofing.' There was also the matter of durability when applied to a roof, Evode gave with each completely treated roof, a five year free maintenance warranty, which at the time was a significant offer to make as a firm written commitment.

It was Dr. Simon's opinion, based on his own experience, that if panels of applied material were exposed to the weather for a full 12 months without any visible change, then it would survive and exceed the 5 year warranty period.

Towards the end of 1953 we had a practical formulation, one that could be made reproducibly on the factory scale and cautious field trials were started. This brought me into regular contact with our Waterproofing Contract Managers and in contrast to a large organisation, the Development Chemist had direct contact with the end use and the people using his product. This product stayed with us for at least 30 years because it was found particularly suitable for Export markets.

On the Domestic market the contracts operatives asked for a quicker drying product which was arrived at after a few modifications. This product continued in use virtually unchanged to the present day. All the financially significant formulations were revisited at intervals to check if improvements could be made using state of the art information, but time showed that in some way we had hit the nail on the head first time round.

By mid 1954 the first round of weathering trials were completed successfully and full scale use of our own product was introduced. These weathering trials were continued until we had a history that well exceeded the 5 year warranty period. This was our regular policy later on, that any major introduction weathering data of at least 5 years duration was available. Although this brought to a conclusion my first major project, the contact with the field staff of the waterproofing department brought me eventually some friends for life, as well as my first experience, during Technical Service Support, of face to face meetings with the customer who could be one of a further fascinating range of people - building owners, architects, structural engineers, consultants, maintenance managers, Local Authority Officers and as people are usually happy to talk about their own work. I also got to learn a lot about what went on underneath the roofs that we were waterproofing.

The overall manager of the Contracts activities at the time was Mr. Colin Williamson and it was with him that I most frequently travelled on these technical service visits. Every roofer has to have a good head for heights but Colin was exceptional. On the Thomas Cook building in London we were working on two roofs at opposite ends of the building and the easiest way to get from one to the other was across the front of the building where there was a low parapet with a narrow gutter behind it, which was backed

up by a long run of sloping roof light glazing. Colin just hopped up onto the parapet and strolled l along, hands in pockets, I had a look over and there far below were cars looking like 'Dinky' toys and people like ants. So I followed him by crawling along the gutter.

Again, on the roof of a tall cold storage building in Liverpool 90 ft high which had a Mansard roof, (a flat top with steeply sloping sides falling from it). For inspection purposes a set of steps had been built into one of these slopes, no handrail to it, although the flat bit where I stood cringing had a safety rail around it. Colin calmly walked down these steps right to the eaves and looked at the gutter and over the edge of the roof from the very last step with nothing between him and the ground, and watching him brought heart to mouth.

Another attribute that Colin had from his travels around the country was always knowing where the best meal was to be had, no matter where we were. Often in some back street establishment where one least expected it. Often on these Jaunts we got involved with the local salesmen and so quite soon I became known to most of the field staff of the company.

With the manufacture and use of our own bitumen roofing products established, the next area I got involved with was the manufacture of polishes. Of course the basic products were well established but at the time there was a lot of speculation about the incorporation of silicone oils into polishes to give easier spreading and a higher and easier shine. It was at Nottingham University that the original research on organic-silicon chemistry had been carried out by Professor F.S.Kipping, so again in a small way things had gone a full circle.

We had a very go ahead Sales Manager in the polish company at the time, a man called John Arnott and he was keen to see the product range extended well beyond the basic floor and shoe polishes of the time. He was pleased to find that there was now someone who could give this some regular attention, Elias Peak had given some - but the growing demands of Production Management gave little chance of more than sporadic activity.

This part of the business was, of course, the oldest and had kept the Evode business afloat during its early days and because of this Dr. Simon had a sentimental affection for it. It had, on paper, the largest Gross profit of any of the activities but the volumes sold were small and the cost of selling them and trying to increase them, very high, as the bigger and better known 'Mansion' or 'Kiwi' could easily outdo us in advertising expenditure. However incredible as it seems we were the first to sell a Silicone modified floor polish and for a brief spell it was the only one on the market and was the subject of Evode's first venture into T. V. advertising.

The apparatus required to make polish and fill it out into the tins was remarkably simple. A long horizontal table traversed by a multi-spouted tank. Setting was speeded up by fan cooling. Young women were employed to load the table with empty tins and to lid them when filled and set. Men loaded the melting kettles with the required waxes and moved the polish into the store when it had been packed into cartons.

A great deal of care was needed handling these large amounts of hot solvent and wax and it says a lot for the people involved that I cannot recall a fire of any sort during the time that we operated that plant.

In contrast to the experience of Sid Jackson during his stay at Fort Dunlop there were now flame proof electric motors for mixers and pumps and we also used steam jacketed tanks to melt the waxes and heat the polish. After the introduction of the Silicone Floor Polish sales began to mount and Mr. Arnott was keen to discuss further additions to the range.

The late 1950's saw the introduction of the aerosol spray polishes and of course, I was asked if we could do the same. We did, and this let me into the mysteries of products suitable for handling by an aerosol packer and which would be stable in long term storage. By now Mr. Arnott's contacts with the market had increased to the point where the first manufacturing run was of considerable size compared to the laboratory development scale. The Gross (144 containers) became the standard unit and even a first order from the Sales Manager would be for a thousand gross, 144,000 tins, a lot of dissatisfied customers if anything was wrong with it.

The worst scare that I had was over the matter of a disinfectant. It seemed that this could be a useful product to add to the range and at first, I made a formulation based on up to date developments in bactericides, which allowed a simple, very stable, product, to be made and one which gave a consistent result in performance tests measures then by a property called the 'Rideal-Walker Co-efficient'.

I went to a lecture at University given by Sir Eric Rideal, it was a public lecture and the great hall was used to hold the fairly large audience. He carried out an experiment to illustrate part of his lecture, a very simple one it seemed to be, but it worked because a change in colour of the contents of his flask took place, as he had predicted. At this there was a hesitant, but increasing, round of applause, initiated and led by our Professor who was sharing the platform with Sir Eric. I realised then what it meant to be a 'Grand Old Man' in your subject, present applause was recognising past successes.

Anyway Mr. Arnott didn't like this new fangled disinfectant because all those known to the housewife smelled of pine oil and went cloudy when mixed with water. These were made by solubilising pine oil in a solution of Castor Oil soap and the active bactericide was a chlorinated phenolic substance. Here again was a new topic for me, solubilisation, the making of a clear liquid from things that, on the face of it, just shouldn't mix together at all.

All went well at the laboratory and small scale production level and we were within a week of making the first 1,000 gross, when, wham, the pilot scale batches in the Works Store all became milky white after the first cold night of the season and although they all went clear again on warming, this wasn't a good thing to happen on a retailer's shelves. Bafflement. Then I realised that in the lab batches, which stayed clear, we had used distilled water and town supply in the pilot batches. We couldn't afford to use distilled water on the works scale, so I set up a series of experiments to explore the chemical methods of counteracting the hardness of the water and I ended up with a freezer chest full of bottles of different formulations.

On the Sunday before the day when we had to make this '1,000 gross', I went into the lab and peered into the chest. Just two bottles had stayed clear and we had two workable formulations to choose from, compared to non the day before. We made the Castor Oil soap ourselves from the oil and a caustic alkali and for a long time, although we were a 'chemical works' this was the only chemical reaction actually carried out by us.

Lavender disinfectants were available as well as pine oil and of course, Mr. Arnott wanted one. We used a lot of perfumery products in the polishes and I had got involved in their selection for new products. I mentioned the problem to our lavender man and after cautiously disclosing a little information about our product, he was able to make a recommendation (which worked incidentally).

On one occasion he told me a tale illustrative of the rag tag and bobtail activities that went on at the bottom end of almost any market during those halcyon days before too much Health and Safety and Consumer Protection. Our man had a customer in Lancashire who took small quantities of perfume on a regular basis. He knew that the customer was a retired chemist from a household products manufacturer and he knew that the volumes taken would never increase, so he never made any actual sales visits. The customer in question was ekeing out his pension by making disinfectant, loading a barrel of it onto his Morris 1000 pickup, then hawking it round the local working class estates, filling the housewife's own bottle for a few pence a time. He did quite well at it.

The lavender salesman came under pressure from his bosses to make an actual visit to this regular customer and report on the potential and so he came to an actual face to face. Having assured his client that there was nothing sinister afoot and that he didn't owe money (the usual first concern of someone suddenly descended upon by a rep). They got to chatting, during which his customer pulled a tattered piece of paper from his pocket, on which was written his formulation (and a pretty good one too, said the storyteller). He explained that he loaded all the ingredients into a steel 40 gallon barrel, topped it up with water and rolled it to and fro in his garage to mix it. Then he rolled it up a couple of planks onto his pick-up

and off on his rounds. A sudden burst of confidentiality; ticking off the ingredients on his paper he said "Things have got very expensive, so now I no longer put this in, or this, or this..." Leaving basically the lavender oil and a bit of soap. Then cheerfully said "But it still smells good with your Lavender".

There was one of the usual type of market analysis reports published anually on the polish and cleaner sector and we increased our sales until we were just out of the 'others' category and got an individual listing with something like 0.5% of the market. On paper it just about broke even, but it had a diluting effect on the financial ratios of the business as a whole, for which plans were being laid for a Stock Market quotation. So the polish business was sold off separately, partly to KIWI and partly to PRESTIGE. I remember that the Chief Chemist of KIWI, a gentleman named Pottle was much concerned that I might have been done out of a job by the acquisition and seemed amazed when I told him that I was in a way relieved to be out of it.

This was a change in ownership where only one or two people were no longer employed and they were probably already of pensionable age. The reason being that the growth of the other parts of the business had led to the need to produce small packs of products and the dexterity of the girls who had packed and lidded polish tins was put to continuing good use. Polish was, of course, the oldest part of the business and had included some of the first employees.

The Foreman during my time was Mr. Reg Moseley, whose service dated back to the time when roofing work closed down during the bad Winter weather, but a nucleus of trained people were brought back and employed in the factory until Springtime. Reg was one of these, but eventually opted for full time indoor employment. The roofing Sales Leaflet at one time carried a picture of Reg working on the roof of the Stoll Theatre, London.

Stafford also seemed to act as a centre of 'Displaced' or 'Stateless' people, who had been put out of their homelands by the European War and for one reason or another could not return. They settled initially in buildings that were part of now redundant wartime airfields and in particular, a strong

Polish contingency grew up in Stafford. Other countries were also represented, Lithuania and Eastern Germany.

One man who worked at first in the Polish factory was Rainer Geheb from East Germany, who had been in the Waffen SS 'Liebstandarten Adolf Hitler'. He had ended up in Berlin in the Bunker during the last days of the Reich and was delegated to act as a guide to get some last minute visitors to the Bunker out of the City. This duty discharged, he found himself milling about in the chaos of collapse. It was at the time of the levee en masse, when even the boys of school age had been called to arms and he suddenly found himself surrounded by a mob of youth, who had gravitated towards the sight of an SS uniform and demanded to know what to do. He somehow persuaded them that the best thing was to save themselves for Germany by surrendering to the Western Allies and when they saw a British 'spotter' plane they waved white 'flags' and shouted to indicate their intentions and so were taken under the wing of the British Army. After a rather harsh process of de-Nazification in a P.O.W. Camp in Schlesswig - Holsten Rainer eventually ended up near Stafford and working for Evode.

I suppose that at the time, because of its small size pre-war, it had only a small commitment to returning ex-servicemen (Cyril Lawton was one) and as it was expanding its labour force, it was able to absorb some of the stateless persons. There may have been some 'sympatico' between the owners, who had similarly been displaced in their time and the new arrivals, but here was an ironic full circle, a man booted out of Germany by the likes of the SS, now employed them in England!

Rainer was the only person I ever met who had actually met and spoken to Hitler, or rather been ticked off by him, for when on Guard Duty outside the Fuhrer's office the doors opened and out came Adolf and his entourage. Rainer threw up a smart Nazi salute and shouted 'Heil Hitler'. Adolf went up to him and told him that he should only salute like that on formal ceremonial occasions and if they met otherwise at close quarters to salute in the normal military fashion and say 'Vein Fuehrer'.

Rainer had problems with CHD in the last years of his life, but lived to see the Berlin wall come down and reunification. He had been eligible for an

ex-service pension but needed to go back to East Germany to prove his identity and he didn't want to return when the 'Ruskies' were still in charge. When I last spoke to him it seemed that all was settled and that he would be getting his SS pension. I don't know if he lived to draw it.

Another man employed as a paint Technologist was from Lithuania, this was Alphonse Adomenas. His tale was another sidelight on the fortunes of War. At first, as the Germans pushed back the Russians who had occupied Lithuania. They were welcomed by the people but the German policy of treating all Slavonic races as 'untermenschen' soon changed that, for example if a German soldier was walking on the pavement Lithuanians had to step off into the road and yield right of passage.

Alphonse was at University studying Chemical Engineering and this was not disrupted by the Germans and he was allowed to finish his Degree. Then he was deported to a labour camp in Austria where he was allocated to a local plumbing firm as a labourer. Every day they left the camp under armed guard, wearing a badge sewn on to their Jackets to show that they were not Germans and at night they were collected by the guard and returned to camp. Under these conditions Alphonse managed to marry and start a family.

There seemed to be a strange mixture of policies towards non-Germans. Reiner used to say that policy-wise Germany's problem was not that it had Hitler, but that it had a thousand Hitlers, each with their own nest to feather.

Alphonse said that at first work was rough because he was at the bottom of the pecking order in the plumbing firm and was controlled by the usual German mixture of shouted abuse and some blows, but he said there came a time when he was entrusted with an assistant and then life became better because he had someone to kick. Naturally he watched the advance of the Russians with mixed feelings, as it became apparent that a return to Lithuania would be out of the question.

Things got chaotic and guards slackened their vigilance and Alphonse took his family out of the camp and managed, somehow, to get them on

what proved to be the last train to Berlin and, what was to become "The West"; so heavily laden with people was this train that at any tunnels, passengers clinging to the sides or the roof had to get off and walk through, getting back on at the other end.

Once in Berlin, Alphonse put his family into a hotel whilst he sought out the British authorities and declared his situation, which lead, after further adventures, to working at Evode and living on Cannock Chase in what was little better than a timber shack.

Shortly after I met him he was able to move into a new house on a private estate just south of town. In the mid 1950's he was able to re-establish contact with a brother who had ended up in Australia and Alphonse and family then emigrated and Joined him.

It was through discussions with Cyril Lawton and Alphonse that I came to learn something about paints and what made them tick. It is not widely realised just how aggressive our atmosphere is towards seemingly solid materials of construction. The atmosphere can crumble to dust rocks that have been around for billions of years, it carries water about from one place to another and water will slowly dissolve all things. This water contains dissolved Oxygen from the gaseous components of atmosphere and this solution is intensely corrosive towards mild steel, one of our most versatile construction materials. Carbon dioxide is also dissolved in this water, which can speed up its solvent action on limestone, as can sulphuric acid produced by the burning of certain fuels. The sea acts as the final receptacle for all the products of these solvent activities and storms can cause particles of salt to be carried inland as well as just to coastal regions and salt is a powerful promoter of corrosion of mild steel.

These properties of the Ocean and the Atmosphere cause problems for use when we decide to travel the world in structures made from steel or, build special fixed structures at sea, like oil rigs. Now paints are magical things being liquid, easy to spread and after a short time set to a tough plastic state and this tough plastic film, which can be coloured to make it decorative, isolates the stuff underneath it from atmospheric attack.

The proper manipulation of paint properties calls for a broad knowledge and understanding of the chemistry of all the materials involved. Every component must be capable of resisting the corrosive conditions at the site of application. The basic requirements began to be worked out as soon as mankind wanted to be an artist, or apply decoration to their dwellings and survival of these early works demonstrates their durability, usually when not fully exposed to the elements.

Oils made by plants, especially those that can be squeezed from their seeds, are sometimes "drying oils", which exposed to air, form a skin, or set to a soft jelly - example, linseed oil - others 'non drying oils' like olive oil, are exceptionally stable in the air even when heated and keep their liquid condition. Drying oils eventually form a tough plastic film, a process which can be speeded up by chemicals which are found in some of the colouring pigments, such as iron oxide or red lead.

Understanding of the chemistry involved had led to great improvements in drying, or setting performance and in the chemical resistance of the dried paint and a great industry exists for the manufacture of paint components.

The cross over point for me at this stage in my career was that bitumen has good chemical resistance and had the benefit of low cost, so that in spite of its colour, it is often used in the manufacture of economical protective coatings where colour doesn't matter. The bitumen is usually dissolved in a rapidly evaporating liquid, a petroleum or coal tar derived solvent and at the time I was interested in trying such solutions in roof waterproofing to give better drying in Wintertime.

But as in every case, I couldn't bump into something new where chemistry was involved, without wanting to understand it. These discussions and exchanges with our paint experts prepared me for the next phase of product expansion which was the manufacture of sealants.

Host building components, like windows, doorframes, walls, when fitted together leave a gap which allows chill winds and draught to enter, so something, a sealant, is needed to fill the gap. This needs to be something which can be got into the gap easily and which sits firmly so that it can be

painted and resist idle fingers and yet stay a bit flexible so that it stays in the joint for years.

Once again it seems a job for good old drying oil and putty was an early example of a gap filler based on Linseed oil, byt putty would eventually set too hard and crack and crumble. One answer was to make a very soft and sticky 'putty', (too sticky to handle and to apply it from a tube fitted with a nozzle.

We weren't the first to do this, of course; they were made first of all to seal the glazed roofs of the vast greenhouses used by the Market Gardeners who supplied London with fresh vegetables. Being exposed directly to the forces of the weather on a sloping roof, putty itself did not last very long, but the stickier stuff in the tubes did. Of course it wasn't long before people tried them around doorframes and other awkward areas to seal and a sizeable annual business was generated.

Now, if you can, it is often more efficient to buy in information or 'know how' on proposed new ventures rather than do it all from scratch. We had in 1955 been made aware of John Bryant, who had been Chief Chemist of a company called Rainbow Adhesives and Mastics who, it was said, had been manufacturers of a novel and more effective form of this type of sealant (usually described as an 'oil Bound Mastic') but in spite of the claims the Company had gone broke and John was trying to find employment on the basis of his knowledge and experience.

Now there were some very good ideas in John's portfolio which certainly distinguished his products from the competition and initially we let him have his head and carry on making the products he had developed, but for us. of course, one thing that we hadn't realised was that our contacts with Builders Merchants and the like, called for a much larger scale of manufacture and stocks than had even been the case at Rainbow Adhesives. Whilst the Rainbow sealants were novel and superior in properties when applied to a building, unfortunately they didn't store very well in the tubes and in a matter of a few months set to a firm consistency that could not be extruded from the tubes into the joints.

There is nothing worse that you can do to a saleman than feed him with a new product that has a great sales story with it, which he, in turn, loads onto his favourite stockist customers only to have them tell him a little later that their customers are in trouble with it. By then the product is so widely distributed that the cost of dashing around from Job to job to make sure that it is a general problem and not just limited to some accidental circumstance is great in itself, without the cost of trying to save the goodwill of our stockist.

At this time any problems that seemed to be chemical in nature were usually run past me and what we needed here was to identify the cause of the problem, do something about it, and have a method of test to check that what we did was a long term cure. I widened my reading of drying oil literature and found described in it the phenomenon of 'livering' where paints, particularly the older more primitive types of paints, formed soft pasty masses, either in bulk or as a thick surface layer. This more or less looked like our problem and whilst no specific remedy was given, by looking at all the published formulations I could find for paints described as 'non-livening' I found that they had a common factor in the presence of some mildly alkaline filler, such as chalk.

For an accelerated test I had remembered that an increase of temperature of 10 degrees centigrade doubled the rate of a reaction, our problem was showing itself after about 6 months storage, which could in our climate be assumed to be at about 10 degrees centigrade. Storage at 50 degrees centigrade should therefore begin to produce signs of the problem at, or within, 1 month's storage time. For the standard product from the factory this proved to be the case, it was too thick for application after 1 month. So we had a test, did we have a cure? I chucked in about 3% of finely ground chalk, just added to the standard product and this gave no problems on storage at 50 degrees centigrade for a month. We didn't really have any more time to spare, so we went into production with that and ran behind it with confirmatory tests, including real storage conditions. But we had no further problems with that.

I had similar use of this heat ageing test on an adhesive formulation giving us storage problems, but here because the solvent in the adhesive would

have boiled away at 50 degrees, I made glass phials which could be sealed hermetically by fusing the glass in a blowpipe flame. Because of the size and shape of some of the suspect-components, it was a bit like making a miniature ship in a bottle, but we got an answer to the problem with it.

John Bryant left us a couple of years later to join a roofing company and I never really found out where he got the idea from for his Rainbow Mastic formulations. A colleague told me that during a drinking session with John he had mentioned that during the Allied advance through France, after the Normandy invasion, he had come across a small deserted paint works and in the laboratory office there was an open safe and the papers on top, which John pocketed after a brief perusal, were the foundation of the Rainbow range.

I travelled a lot with John in the early technical support of the sealants and he never told me this himself, in fact I never did learn much about his early background, except for one invention that he claimed for his father. Again it shows that through meeting people you can reach out in time well beyond the confines of your own life. At the time of this invention the butler's tray was still in sufficient use to get worn out, usually in the place where hooking his thumb over the edge to carry it, wore out the pattern that decorated these silver dishes. So it was a case of buying a new tray. But John's dad developed a process where he took an impression of part of the undamaged pattern and treated this so that it could be used as an electrode in a silver plating process and in this way a piece of pattern could be built up and inserted as a repair by the Silversmith.

It seems that at some time John was very interested in small craft and spent some time refurbishing old sailing barges, putting in a diesel power unit and generally modernising. Again, this was at the time when brand new vessels like this were virtually unobtainable, but there was enough cash around to pay for a conversion. As a result John became well known around some of the old Thamesside boat yards, like Eel Pie Island, and was at one time a member of the Institute of Navel Architects. He told me what he claimed was the true origin of Jeffries Marine Glue.

Ships' decks need to be watertight and this calls for sealants, this connection being the way in which John became interested in sealing materials and eventually in Rainbow sealants. The gap between ships' decks planking needs the use of a caulking compound to make them watertight and for many years hot pitch was used as the basis for this, with a coarse hempen rope being hammered in at the same time.

Trouble was that in hot weather and on a sloping deck (as a pleasure yacht might have) the pitch would soften and run from the joint to the detriment (in those days) of the ladies long bustled skirts. It seems that the original Jeffries wracking his brains over this problem, spotted some recently deposited horse manure on the quayside and popped a bit into the melting pot. It worked, the fibrous nature of the manure when dispersed in the pitch, kept the stuff in place in the Joint and thus the fame of Jeffries was secured. It was rumoured that Old man Jeffries guarded his secret allowing his workmen to melt the basic pitch ingredient, but then at the crucial moment he would approach the pot alone and add the 'Secret Ingredient'.

John also told me of an event at one of the meetings of the Naval Architects when Thames sailing barges came up for discussion and there was a long argument about how they had been handled and in particular on which side of the mast the sail had been lowered and stored. Now John had converted a few of these vessels and didn't know the answer. Suddenly, a voice was heard saying "Why do we argue when we have with us tonight the World's greatest living expert on the subject?" Everybody, including John, looked around to see who he meant and it slowly dawned on John that he was the expert in question. Slowly rising to his feet, John mentally flipped a coin, it could only be Port or Starboard. I can't remember which he plumped for, let's say it was Starboard, anyway as he stood there another member was slowly cranking himself to his feet, he was one of the oldest members who only turned up once every fifty years. "I used to work one of those craft", he says "and Mr. Bryant is perfectly correct!" As John said, it's amazing sometimes how a reputation can be established by pure lucky chance.

It was during the late 1950's that the Company began to establish a regular hierarchy. Business had for some years outstripped the potential of the

original site and the saga of "The New Site" began, eventually settled when the land formerly used by a Brickworks at the North end of town was purchased. The priority was increased production for Bitumen products, adhesives and polishes and factories for these went up first. Laboratory and offices followed a couple of years later.

Production was by now the main concern of Elias Peak and in true Germanic fashion, everything that went wrong was a 'bad batch' and blamed on Elias by the 'Old Man' Dr. Simon. We had fairly elaborate quality control systems and for those who were developing the new products, like myself, the value of a 'bad batch' was to find the cause and adjust the quality system so that it wouldn't happen again. For Hermann of course it was "my money you are wasting" and from time to time there were some right old shindigs trying to apportion blame rather than secure prevention.

Remuneration was in two parts, salary and bonus and there was a tradition that a high bonus was paid and for some of the older employees, like Elias, it could be as much as 40% of income. In fact it was difficult to live through the year without anticipating some of the bonus. The bonus figure was decided on a purely subjective basis by Hermann. Because all the stuff which caused problems was made in the factory, Elias had a tough time during October when bonuses were decided. He usually came out OK but Hermann was a great one for saying something like "Your bonus for this year is so and so, of course if you had not done (here mentions some heinous crime related to a product) your bonus would have been - here mentioning a very much higher figure. However, for the rest of the staff both administrative and technical the release of the bonus results were the excuse to organise a visit to a local boozer to celebrate. This was very much a continuation of the academic tradition.

There were similar celebrations at the announcement of Births and Marriages: This continued into the 1960's, in fact, this was the era of post War vigour when many of todays respectable companies had, like Evode, just started to climb. I don't mean that they weren't respectable then, but there is the exuberance of youth to take into account. There were, of course, many new chemical products unknown before the War and a lot of

these were being handled by new names, particularly for materials coming from the recovering European Chemical industry. It was the heyday of business entertainment when when virtually all the associated expenses were deductible.

As a Country we were still revelling in the wider availability of foods previously rationed and most meetings centred around a meal of generous proportions. All in the interest of promoting an understanding between companies with new materials to offer and new, or relatively new, companies with places to go. Salesmen used to run on a regular luncheon circuit to keep customers sweet and to learn. After a couple of drinks people would open up about problems that might arise, or the activities of competitive salesmen, thus giving the rep information to keep on top of the situation. Don't forget that this was in the days of primitive communications, a primitive and restricted telephone service, no speedy copying machines, no fax, no mobile phones to report in from anywhere. A regular face to face was the one sure way of seeing, hearing and feeling what was going on.

Travel was not easy, in my early days of travel on business in the late 1950's with steam drawn pre-War rolling stock, a journey to London, one way, could take three hours and sometimes standing room only all the way and sometimes no corridor, so therefore no access to toilet facilities. Mind you, the layout of some of those older coaches led to a more sociable Journey with upwards of ten people facing each other in one closed-off compartment.

On one journey we had to change at Rugby and then stop at damn near every station after, there were three of us in the compartment - the local trains could be less heavily loaded - another man and a rather expensive sounding lady with two small dogs. She seemed to have a passing acquaintance with the other gent and she and I had a desultory conversation based on mutual regard for dogs. She kept referring to 'His Lordship' mentioning once that 'His Lordship' was following on alone in the Rolls. One of the stops was Rugeley and as we halted the head and shoulders of a porter were framed in the window. He opened the door. "Good evening Marcel" says the bird - now who'd have thought that there

was ever a porter at Rugeley called "Marcel". "Good evening your ladyship" says he, taking the little luggage that she had. As we drew out of the station I asked my fellow traveller "Who was that?" "The Countess of Shrewsbury" says he, so all the 'Lordship' and 'Rolls' talk had been for real.

Because of the slow and difficult transport an overnight stay at remoter destinations was the norm and many of the larger companies maintained their own 'Guest Houses' (as Boots had done) or had a special arrangement with a local hostelry. After staying at the Grosvenor in Chester, courtesy of 'Shell', I watched our host, who was the Regional Sales Supremo, pay cash for our accommodation from the biggest roll of notes I'd ever seen outside a bank. Cash for this sort of exchange is unheard of now of course.

On another occasion I scored one of those 'hits' that can establish a reputation, even if temporary. We were in Scotland, courtesy of ICI Nobel Division, where a colleague and I had gone to negotiate purchase of their Silicone sealants. Notice how things tend to rumble round in circles. Prof Kipping and organic chemistry of Silicon -University of Nottingham - me - Evode and sealants - ICI and organic silicon derivatives used in them. Anyway it was at the time when I was subscribing to one of the earlier 'wines by post' schemes and I had taken a fancy to Claret, Margaux, to be precise at just over one pound a bottle(!). At our meal, where we were entertained by some ICI Bigwigs a red wine was served and I thought 'I know this bloody stuff', just then I heard the waitress whisper to our host "I'm sorry Sir, I could only get the 1964". At that very moment taste buds and memory banks clicked and I knew it for Margaux, without thinking I held my glass up to the light and said out loud "Margaux '64". Astonishment, because our host and the waitress knew that I was right and they said so in some amazement. Fortunately before the wine buff scene got too intense, someone at the table who knew me better called out "From the North or South of the slope Barry?" and "Do you think Pierre trod the grapes again?" came from somewhere else. It is still about the only wine that I can recognise and my involuntary surprise at that dinner acted as a useful ice-breaker.

A lot of these activities closed down as communications improved, diesel and later, electric traction units, brought London to less than two hours from Stafford. Motorways meant that you didn't have to plough through the centre of every town on a journey and distance of up to 500 miles a day were possible, but the event which seemed to have the greatest effect was the 'Poulson Affair', which mainly involved Local Authority dealings but for Industry in general drew attention to what size of 'gift' could be regarded as a bribe to secure preferential treatment in negotiations. Local Authority decision makers had long been a fruitful source of expense account meals and my first personal experience of the 'Poulson Effect' was when I gave a lecture to Officers of the Borough of Camden on the subject of Sealants. During question time we had a friendly response from some of the junior members of the audience and as we were leaving I suggested to My Salesman Colleague that we took them for a beer and sandwich lunch. "They won't come" he said, but nevertheless as we were crossing the road outside the Council Chamber I mentioned it to one of the youngest in the group, "Beer and sandwich in the Pub opposite?" He passed the idea onto the Senior member of the group, who somewhat sadly shook his head and said "Sorry, but no thanks - Poulson". And, that was that.

The size, regularity and 'normality' of some business gifts must have been quite something, for I remember (pre-Poulson) meeting a Ford buyer whose activity was buying basic body components, sealants, sound deadeners, carpets etc. and during lunch with a couple of his staff, one mentioned that he was leaving and going to another Company in the industry as Managing Director. I commented that this seemed a good career move, but my companions were shocked at my naivety. "But he buys all the sheet steel for Fords" one said and seeing that I still looked puzzled said "His house must look like Aladdin's cave at Christmas time, he would only have to mention an interest in something and they (the steel makers) would look after it".

The effects in general post Poulson were that. all gifts, even seasonal gifts, from suppliers were regarded as suspect and some companies 'pooled' all incoming gifts and had a share out to avoid the accusation of preferential treatment, but in a short time the attitude settled down to the idea that a

gift was OK if it reflected the friendship that usually developed between the representatives of supplier and purchaser, for example a bottle of whiskey or wine.

CHAPTER SEVEN

STARTING AND BUILDING A BUSINESS
TECHNICAL SERVICE TALES
FOR ME A CHANGE IN DIRECTION

The ways of establishing, or expanding a business are more numerous than building a better a mousetrap and waiting for the World to beat a path to your door. Dr. Simon's basic formula for starting up was that you needed two persons, one to be a good chemist and the other to be good at selling, then which ever one has the best suit goes to the bank to borrow the money. Apart from this, do it all your self. You can of course become a Licensee using your experience of the local market place to exploit the knowledge of the originator, which is supplied in return for a fee; where there is an existing strong Trade Mark this might also be used under licence.

There is Franchise where the originator lays down hard and fast rules regarding trade names, formulae, suppliers of raw materials, geographical area of activity, advertising support, again all in return for a fee. There is Joint Venture, where both the originator and the license have a financial share in the business, which is usually set up as a separate company. Whilst the originator might still insist on a licence (and fee), his main aim is to share in the profits of the venture.

Of course, there can also be out and out purchase of a Company that has established an interesting business proposition. Evode had started the first real expansion of its product range by 'inward' licensing of adhesive technology from Angiers in the U.S.A.

As soon as he could after the Allied victory, Dr. Simon began to re-establish his former European business contacts. It is an interesting reflection made frequently by people in a particular industry that it is 'incestuous' meaning that exhibitions, product range, promotion and marketing ideas tend to be shared by the same few participants, who, if they ever move Jobs seem to do it on a circular tour around their industry. This applies to the international scene as well and who knows, perhaps

this inherent stability in a particular area of wealth generation contributes to world order and stability as well.

However, Adolf Axelrath turned up again. He had established a business in the U.S.A. making cloths impregnated with ingredients that could supply 'anti-mist' cloths, 'polishing cloths' for furniture, 'cleaning cloths' for brass and silver, etc. He had organised his business across the U.S.A. via a series of agents who bought the products from him and sold them on in their allotted territory. One of Adolf's first post war acts was to licence his product range to a German company which came to the attention of Dr. Simon, who was still anxious to see the Polish Company English Waxes, grow in line with the other parts of the business.

This was my first experience of inward licensing and exposed me to all the problems of sourcing raw materials, finding out if the products worked in our market area and, if not, adjusting them. These impregnated cloths were based on a cotton 'duster' fabric with the nap raised on one, sometimes both sides. We sourced the cloth from a small family business in Manchester, when that town was still weaving cotton. The owner of the business was also their salesman and visited us three or four times a year. He was an inveterate business luncher. "The brazen doors of the temple have just clanged open" he'd say and off we'd go. He regarded us as a good customer, because we more or less accepted his reasoning on prices, even though the volumes we bought were not great. He told us that his father had often negotiated prices to a 64th (i.e. arguing about a 1/64th of a penny per square yard) and that he himself still had to argue about 32nd's but us he quoted to a 16th and we took it.

For me the most astounding incident in supplier purchaser relations also arose from the purchase of fabrics, this time a woven Jute fibre fabric that we used in our roof waterproofing system. Mr. John Forman was the director in charge of administration of the "Contracts Department" and he showed a letter to me that had arrived from our supplier and addressed to Dr. Simon. This told us that they were no longer prepared to supply us and that had they known from the start that Dr. Simon was a Jew, they would never have supplied us at all. There you are, Anti-Semitism was not limited to the Nazis.

Dr. Simon had, as soon as conditions allowed, started to travel again to Germany and he told me that on an early visit to Hamburg, where hardly one brick stood on another, he went for a boat trip round the dockyards. As the trip progressed the guide waxed lyrical about the habits of the British and American Air Forces. He swore at the British in the strongest terms, whilst pointing out the damage caused by air raids. As Hermann said "During that trip I did not dare to speak one word of English", - another little quirk of International relations.

Dr. Simon was very proud of his British Citizenship, but he had been raised in Germany and lived there for 38 years, something you can never discard. He was therefore a German very often in his first reactions to a situation -"in Germany we used to do this , in Germany we used to do that" - often you could persuade him that the reasons for working that way were valid in Germany at the time when they were using them and that time had brought new machinery and new materials, but a lot of times he seemed unconvinced. He had a simplistic, but effective attitude.

One time when discussing a candidate for employment, I mentioned that his experience was not in our field and that I doubted if he knew what Linseed Oil was. "Pah" says H.S. "If I didn't know what Linseed Oil was I'd go out and buy a pint". An attitude worth remembering because it emphasises that knowledge comes by questioning and that sometimes knowledge comes from unexpected quarters.

Having been afflicted with angina I got into the habit of a daily two mile walk and had mapped out several 2-3 mile walks in the local countryside and our dog and I used them in rotation. On one an extension was being added to a cottage. The builder was an elderly man and when I saw him lining the inside of the chimney flue with mortar (pargeing) I asked him what he was using because of Company interest in cement products. It was an ordinary mortar but showing an interest sparked a little torrent of information. He'd been a builder since leaving school joining his father who's experience took us back into the 19th century. He said that when they built in the country the first job was to set up the brick making kiln and that this had still been the case even in the first years of his own

working life. The fish pond or 'gravel pit' often found near a country house was the result of the marl pit originally dug to win the clay for the brick making.

Anyway with pargeing in those days they made the mortar by mixing in some fresh cow dung as this gave a very smooth and adhesive mix. Pargeing not only gives a smooth surface that discourages the lodging of deposits of powdery soot, a fire hazard, but also defends the mortar in the brickwork from the attack by the tarry deposits from the smoke. Many solid fuels contained sulphur and the acids from this would cause the mortar to swell. Often an old tall stack would develop a bend which made it look as if the prevailing wind was bending it but the windward side of the stack was cooler so the acids condensed more readily and the attack and swelling was greater, so indirectly the wind was causing the bend.

Anyway, I thought that it might be worthwhile to try cow dung as a mortar additive and if spectacular look at it scientifically. A protesting laboratory technician was sent to a nearby field to scoop up a canful. Under test the 'additive' did impart to the mortar a very easy to work consistency that spread over and stuck to the brickwork beautifully but all the samples appeared very weak when set. We suspected that the active ingredient was a partially hydrolysed cellulose but as the results showed no promise over existing products, forgot about it. But the cow dung didn't forget us! Sealed in its can, it fermented and provided a spectacular finale by blowing its top, the result being tempered fortunately by being in an area that was easy to clean up.

Dr. Simon also caused some amusement to uninitiated newcomers by going from department to department in the factory weighing himself on each of the large scales. Sometimes he would walk over to the Foreman and say "Mr. So and So, why is it that I weigh 68 kilos in your department and 70 kilos in all the others?" This kept Mr. So and So on his toes with regard to housekeeping in his section.

1956-1960 saw the move to the "New Site" being accomplished for the principal manufacturing activities and new off ices and laboratories followed on. During this time one of the first acquisitions came along.

Lotus had had for many years a small Company - VIK Supplies Ltd - who manufactured simple adhesives and other shoe components and sold them not only to Lotus Shoe Factories but to some other shoe manufacturers as well. They were not alone. Bostick and Dunlop did a similar thing for the U.K. Shoe Industry was in those days, a large consumer of adhesives and other 'chemical' items, such as lacquers and impregnated fabrics used to stiffen and keep the shape of toes and heels. Some of these things were used in fancy leather goods, as well (remember Joshua Jackson?) such as handbags and travel goods.

However Lotus decided that they wanted to concentrate on shoe production only and therefore offered VIK Supplies to us. As the money to be used for this conflicted with some other development ambitions, Hermann called all his Senior Managers together to explain it. To some extent, he said, a pistol was being held at our head. Lotus had offered VIK to us. If we didn't buy it, they were certainly going to sell it and no doubt Dunlop or Bostik would step in. As VIK represented an established sales channel for Evode's own adhesives as well as into an important sector of industry there was really no option.

The plan was that the VIK activities would all be brought onto the "New Site " and a factory would be added to those on the plan to accommodate production. We were still struggling to clear the old town centre site at Glover Street, by building a new adhesives factory - a two storey one - using for the first time a well known 'name' Ove Aarup and Partners, as engineers.

Not long after the VIK purchase their old premises near Lotus were destroyed by fire. An earlier fire at Glover Street had led to the refurbishing of the laboratory. No fire is welcome but maybe this one encouraged the integration of the activities on one site. In the 1960's and 1970's there never seemed to be a time without some major building programme going on. The original new site at Common Road had been a brickyard and to accommodate the second adhesives factory the land immediately next door was purchased. Paint manufacture was established in the old' adhesives factory at Common Road and thus Glover Street was

vacated with a period of a lot of to-ing and fro-ing, until the office accommodation was completed.

It was during this period that I met Mr. Clipstone. Elias Peak came to me one day full of concern and simply said "Clipstone's back". This didn't mean anything to me but Elias was always (slightly) alarmed if, without warning, it seemed that somebody was going to be pushed into the production hierarchy that he had so carefully built up.

It transpired that there had been a moment of glory for Mr. Clipstone when he had been Managing Director of Evode during the time when Dr. Simon and Mr. Forman were detained under the 18b Regulations. Hence the concern of Elias, but he needn't have bothered for as far as I could find out Mr. Clipstone was close to retirement and some place needed to be found where he could work out the close of his career and I suspect that he was used to put into order the administration of English Waxes prior to the necessary sale of that business which barely broke even, necessary that is to the best interests of a Public Flotation of the rest of Evode Limited.

When anyone with experience longer than mine, which was 10 years to date, joined the business, I tried to strike up an acquaintance, no matter what field they were in. Sometimes I was able to ease their transition into Evode but on the Dr. Johnson principle that a man is always prepared to talk about himself, I learned a lot about the behaviour and history of different segments of industry.

In the case of Mr. Clipstone, he told me that he had been 'personal private secretary to H.J. Bostock' but what that meant in day to day terms I don't know. H. J. B. was the principal architect of the shape of the early Lotus enterprise. Mr. C's main claim to fame was his part played in the reconciliation of Dr. Simon and Mr. James Bostock in the post war years. It seems that at the beginning of the 1939/45 War some people made snide remarks about an associate of the Bostocks who was a GERMAN using one of their factories in the CENTRE of town where HIGHLY INFLAMMABLE compounds were stored etc. etc. and some of this (with hindsight) ill-will soured things so that the Bostock brothers disassociated themselves from Dr. Simon even to the extent of no longer speaking to

him. Mr. C claimed to have broken this deadlock by arranging that they should come face to face when both happened to be at the Lotus factory when, in his presence, they could not for shame keep up the silence. Anyway that was his tale.

H.J. Bostock was, as far as he could be a 'Man 0' the people' riding to work on his bike each day. The time came when his family thought that he ought to use the car but he was stubborn, so it was the family who instructed the chauffeur to attend him on the way to work, hence Stafford had the view of the elderly H.J. cycling to work, followed at a respectable distance by his chauffeur in the Rolls Royce. Mr. C thought that only in very bad weather did H.J. give in and ride in the car.

A sign of the times tit bit from Mr C was his remark to me that in the 1930's Lotus shops offered a service to ladies getting a new evening dress where they would provide a same day supply of a matching pair of shoes and an evening bag. His question to me in 1960 was 'How much did I think that cost?' The answer was 7/6d (37 and a half p)!

The acquisition of VIK must have been a bit of a blow to some of their staff as there had been a tendency to look down a bit on little Evode whilst they worked in the shelter of the large Lotus organisation. But suddenly this went and they were part of and dependant on, little Evode. The reaction of people trying to maintain their sense of identity was a lesson in industrial society. But now the structure of Evode management settled down (for a while), Mr. Peak was Production Manager, I was responsible for development, quality control and technical service in the areas of Building Chemicals, Surface Coatings, Sealants and Roof Waterproofing products.

For a time, when Elias became 100% involved in production management I took over his role of Chief Inspector responsible for testing of all products, but especially those ordered by Government Departments where Release Note procedures had to be followed. The Company Inspector was effectively delegated by the Department concerned to act on their behalf. This later, in a curious twist, came round to occupy most of my working life. All these things were not done by me personally of course, there had

been a considerable increase in technical staff compared to just a few years previously.

We had established a wide network of licensees for the Adhesive products and quite quickly many of them developed an interest in sealants, particularly those used in modern building methods, like Curtain Walling. This was still a time of expansion for British Industry and enquiries from the licences, plus enquiries from our own sales force kept us busy.

Most of the products generated by solving customer's problems tended, if they sold at all, to stay specific to that customer and sometimes they continued to buy loyally for years. In addition to this I had a general programme of research using every new polymer that came along, in every type of product that we had established, whether or not it seemed sensible at first sight. When I say 'new' polymer don't forget that in the 1950's and 1960's some polymers that had been known in the 1930's were only just being manufactured in amounts sufficient to satisfy several markets, especially in Europe and so could be considered for use in applications outside the original purpose.

Early building sealants were made from materials like Linseed Oil that were wet and sticky when fresh, but hardened on exposure to air, often to a hard brittle mass right through. This was fine for the older types of buildings where unit sizes and heights were small but the pressure on land space and the resulting climb skywards in 'high rise' buildings took these older sealants outside their scope of performance. Take a 6 foot by 4 foot window frame at ground floor level, surrounded by water absorbent brickwork, that's one thing, but stick it up in the air 100 feet and surround it with non absorbent metal panels, then the movements from wind pressure and the volume of rainwater running down the buildings are of a different order of magnitude and the tiniest deficiency in adhesion or flexibility allowed water to penetrate in amounts that prevented the proper use of the building.

Nobody seems to have really forecast the change in behaviour with change in building dimension and many drawings could be found in this era, where a most difficult juncture of different building components had been

dealt with by the draughtsman drawing an arrow pointing to it with the words 'seal with Mastic'. This was one of those cases where 'market forces' worked against us, the pressure to get developments under way led to poor designs being released with inadequate materials. All this is with some hindsight of course.

The components of high rise buildings were made more water resistant than those used at low level and the eventual better fit and sealing did away with the natural ventilation (draughts) found in the older tower buildings with the 'result' that steam and vapour produced from baths, washing, cooking etc. now started an epidemic of condensation. But that's another and later story.

The point at present is that the construction of modern buildings could produce by movement and shrinkage many unintentional cracks and slits that needed sealing. As polymers became cheaper we ran as one of our speculative 'What If?' research programmes an investigation of blending them with bitumen. Some people might have thought this daft because bitumen is black, dirty, sticky and messy but polymers are clean, light coloured and smart, but we used a lot of bitumen in roofing, in paints and in primitive sealants, so who knows?

One polymer with which we got a useful product was polyethylene. These two don't have a natural tendency to mix and the blend falls apart when the mixer is stopped, but we found a way to stabilise the blend and were able to convert a sticky and runny (but waterproof) bitumen into a flexible self adhesive plastic mass which when extruded in the form of strips or tapes found use in sealing compression joints between pre-cast concrete panels and the like.

I had a report about a customer who was using this strip as a 'washer' to seal around bolts that were left in concrete structures made by the process called 'climbing shuttering'. The client wanted to know if we could stamp out ready made washers. He had tried it on one of his own stamping machines but being something that was tacky on both sides the strip soon unravelled itself as a gunged up mass. When I got back to the lab. the only idea I had was to stick aluminium foil onto one side of the strip in the hope

that this would reduce the tendency to block together and still leave one side of the 'washer' free to stick to and seal the surface. And we did just that, at first on a laboratory bench where we laid out a length of the bituminous sealing strip, 3 inches wide I think, and pressed onto it a length of aluminium foil of the same width.

It was one of those things. As soon as we had done it so many uses for it occurred to us, particularly where there was a need to seal a long crack or narrow slit, that its original purpose was forgotten and never referred to again. This was the product that was given the trade name 'FLASHBAND'. A 'flashing' being a strip of something that is used to exclude water from a junction in a building. This name eventually became well known around the World and also became the monster to my Frankenstein.

This product and its associated Patent activities originated about 1963 and I suppose about 7 years later a colleague and oo-director of Evode Ltd and I were discussing a meeting that we had just had with a director of Albright and Wilson of Oldbury whose business was built around phosphorus chemistry. The man we had met had originated the investigation of poly-phosphates as components of detergents and had it seemed spent all his career on this one product CALCON. I said in some surprise to my colleague (Vasek Vohralik) 'Is that all he's done?' 'Hang on a bit' said VV 'It is one of their bigger products and in time the same thing may be said about you and FLASHBAND'. Too true, as various licensees took up an interest, their questions came back to me of course as the 'expert'.

We expanded our marketing department in 1968 and on looking around they found 'FLASHBAND' as something new that they could exploit. The product built up into a multi-million pound sales and although then my colleagues in the laboratory and works were as expert as I in the various aspects of the product, things often came back to me for the final say-so. Thus I seemed never rid of it for years and yet for me it was in the past-been there, done that! - let's move on to something new. And eventually something new did come along but not quite in the way that I expected.

FLASHBAND came about because of a Technical Service visit but it wasn't the only memorable event. Such visits usually involved our local salesperson and/or his management, if the potential of the client warranted it. Thus with one or two people from the client's side as well, one had a mini tutorial on the technical background to whatever was being discussed as well as some discussion of the technical capabilities of both parties. If a complaint about product performance had prompted the visit then one rapidly learned about the commercial downside of such failures and also when to keep one's mouth shut.

There were some total surprises as well, one came about on a visit to Ford Motor Co. at Dagenham during 1959 where I was much impressed by notices festooned around the production area urging the need for Quality and how the customer was king etc... Our meeting was interrupted by a messenger with the worst possible news - the line had stopped by a strike action. Shortly we learned that it had been prompted by the discovery of a rail wagon of carpets for the Consul line that had been spoiled and rotted by rainwater and the men on the line had refused to fit them. Great! I thought, those notices are really working. But it transpired that the real cause of refusal was that they couldn't stand the smell and this, not the damage to the carpets, was the prime cause of the stoppage! Still, the effect for the customer was the same and I've no doubt that Ford amended their inspection procedure to stop it happening again.

Eventually my contention became that there were only three questions that the successful Technical Director need know. He didn't need to know the answers, only the questions. One came from Dr. Simon who told me that when dealing with a German manufacturer who was claiming great things for his product the question to ask was " Has it been tested and approved by the German State Railways?" Because of their huge inventory of buildings, permanent way and rolling stock, railways have the need to use damn near every product under the Sun, both in new work and in maintenance and they usually end up doing their own testing to find the best price/performance ratio from competing materials. So the question probably applies to any country with a national rail network. Certainly the question had its effect in Germany, even as late as 1990. Visiting a roofing felt maker in Bremen I recalled the question and over lunch dropped it into

the conversation. I wasn't looking directly at our hosts at the time but my colleague, Les Wilmore, was, and he told me later that a look of utter consternation crossed their faces. After a hurried consultation they replied not yet but they expected a successful report when it was tested.

The second question was given to me by a colleague in the roof waterproofing companies of Evode Group who told me that a lot could be learned when discussing a building by asking the question "What absorbs the lateral thrust?" In other words, what opposes the forces that tend to cause a building to fall down. A good chance to use this came on a visit to the Engineers Department of the East Midlands section of the National Coal Board. I was at the time technical Director of Allweather Evode Paints Ltd during part of my time and was supporting the Sales Director who I think regarded me as a poor substitute for the regular technical service person who was on holiday, I don't think that he considered me long on field application experience of paints even if I knew a lot about their chemistry. At the time the proposal to sink a pit in the Vale of Belvoir was generating a lot of discussion and to avoid over disturbance of the location and idea was under consideration to sink one shaft only and take everything, men, services, coal, up and down that one shaft. We had put in a specification for painting the steelwork in this shaft and we were discussing its probable durability. As one engineer said, it was one thing painting an empty shaft, but quite another to maintain it when "full of furniture"; I knew what he meant but I could see from the look on the Sales Director's face that he thought they were going to fill it with tables and chairs. It seemed to me that when the pit cages moved up and down this shaft, they would be perilously close to hitting or abrading our painted surfaces. So really, without thinking I asked, pointing to the drawing, 'These cages, when they're raised or lowered, what absorbs the lateral thrust?' Ha! Nail on the head. The cages had wheels to guide them which would run in contact with some of our painted surfaces. Discussion then on the best material for the tyres on the wheels, tests that they and we might do on abrasion and estimating intervals between maintenance and so on. Thus we laid a plan of action and parted on terms of mutual esteem. A couple of months later I met the Sales Director, 'Remember that visit to the NCB engineers? I called again the other day and they remembered you and said how impressed they had been with your technical knowledge' I

could see from the look on his face that he wondered what I had done to deserve such an accolade.

The third crucial question was one that I had devised for myself in the search for definition of the customer's needs and it was, 'What mode of failure would you prefer?' Now all building materials fail in time, sometimes gradually by erosion, sometimes more suddenly but in most events the mode of failure can be anticipated and plans made to deal with the consequences but only if the topic is brought out and discussed at the design stage.

Nothing upsets a salesman more than talking about failure of his own products even though ease of maintenance and repair might be one of its big selling points. I often got involved in this sort of situation but one that sticks in mind to illustrate the third question was when we were involved in the roofing of a new shopping mall somewhere in Tyne and Wear. The contractor was Willet who had an office in Croydon and their engineer, Mr Bielous, had been trying to get information on how long our materials would be likely to last. The situation between him and our men in the field reached mutual bafflement and I was sent to try to re-establish confidence in the company with one of our local salespersons. After the usual introductory pleasantries our client explained the problem. The difficulty of getting information on durability and performance. So I asked my 'mode of failure' question to home in on the central issue and heard a gasp of dismay from our rep. beside me. He didn't want to talk about failure!, but often enough the client doesn't want to either, he wants to talk about maintenance cycles, methods of repair, estimated costs. He also likes to have documentary evidence of case histories. He can then in turn re-assure his client on the wisdom of the choice of your materials in the first place.

The gestation period between getting your stuff specified on the drawing and actually being on site fixing it can be considerable, sometimes years and you cannot be sure of your share of the loot until you've got the order clutched in your hot little hand. So constant contact with the client is needed to learn of and counteract any extra technical or commercial claims being made by the competition. Without the order it is an 'if' situation - "If we get this order..." but as Jack Linnel, once Financial

Director of Evode Holdings used to say "you can't invoice 'ifs'-. Hence the need for good technical support and nurture of an enquiry.

This meld of laboratory work, selling and marketing that comprises technical service is that part of a business where a young person can learn quickly much of the background to business management. It was on such a visit in September 1967 to a potential supplier near Bristol, that I had a phone message to tell me that Sid Jackson had died. There are events when you feel that the World has stopped and then slowly stutters back into action again. This was one of them. The period from 1954 onwards had allowed us to pick up again more or less from where we'd left off in 1939 except that this time it was a tale of my generation.

Between 1946 and 1952 I had completed my University studies, married Barbara and we had started to establish future generations with daughter Terry Ann. When I moved to work in Stafford we stayed with my father in his house in Lichfield whilst we completed via 'self build' our new home in Stafford which took until February 1954. By then it seemed natural to go on living together as a family so we all moved to the new bungalow. We seemed to have lost contact with the Jackson side of the family during the War years.

Barbara was born in Aberarth, a coastal village a few miles away from Llanon where we had located one of our home built caravans. We seemed to have lost contact with my mother's side of the family even before she died in 1949. By then we had resumed the pre-war habit of making our main holidays in Wales which eventually brought us a whole new set of relatives 'in law'.

Some of Barbara's forbears had been mariners after the habit of lads from coastal villages in fact although it seems strange to credit it when visiting these villages today. Many of them, including Aberarth, were active in shipbuilding particularly small sailing ships used in coastal trade. Until the motor lorries came on the scene, the small coastal harbour was the easiest way to move goods in and out of a very wide belt of land behind the coast.

With so many people in Wales having the same surname a distinguishing feature was often tacked on derived from employment or a house name. Even in Stafford two of our early neighbours were Welsh 'Jones's', one became known as 'Prison' Jones for he was a Warder at the local gaol 'and the other an industrial chemist, was called 'Plastic' Jones because of the type of materials that he worked with.

One of Barbara's relatives, a retired sea captain was known as Uncle James 'Belmont', Belmont being the name of his house. He was of some age when I met him in the 1950's. He told me that his first command had been a sailing ship on a regular run from New York to San Francisco. Now this was before the days of the Panama canal and the trip took three months via the Horn, some trip, they were tough guys in those days. Even so, one of his lasting memories of those trips were the children in San Francisco who were keen to get their comics and boys' magazines from New York albeit three months behind the times. As he berthed his ship these youngsters would run along the quayside shouting the name of their favourite reading; "Have you brought the 'Boy's Own' Captain? Have you brought the 'Rover' Captain?", or whatever the titles were, I can't remember the names he gave them. He kept his sea Captain's voice to the end apparently for in the latter part of his life he needed to attend hospital in Aberystwyth and on one such trip went missing in the grounds. The story is that the nurses found him by following the bellowed curses - he'd fallen over and couldn't get up unaided.

Not all the sea captains were lucky enough to survive the perils of their job. Barbara's grandfather Capt. Charles Lampshire was lost at sea on a voyage aboard the sailing ship 'Cape Wrath' (2140 tons) from Callao, Peru to Portland Oregon which is 123 miles up the River Columbia. On that day, 16th January 1901 a severe Pacific hurricane caught the ship as she entered the river. Conditions were so bad that the steam tug that normally assisted sail over the bar into the river could not come out and being unable to turn and make for the open sea 'Cape Wrath' foundered with all hands and is recorded as a wreck by the U.S. Coastguard at the entrance to the Columbia River. Capt. Ieuan Lampshire-Jones, grandson, also a Master Mariner researched this mishap during his own voyages in command of M. V. Eastern Sakura' and other ships.

Just by going back 50 years there is a different world in most areas of technology, not unrecognisable, but different and by meeting and listening to people two generations removed from oneself, dramatic extension of comprehension of those differences is collected. It took a long time for fuelling places to be established strategically so that steam powered ocean voyages became the norm and until surprisingly recently the use of natural power by sail was the only reliable self sufficiency at sea.

Whilst Barbara's Mother was living in Aberarth it was natural to use Llanon as a centre for some of our holidays and her house 'Oralto' in any case served as a nucleus for the family until marriages dispersed it. So eventually we decided to use the caravan for touring holidays and not having a car powerful enough to pull it, I bought the old Lanchester tourer and with that got as far afield as Anglesey, Brighton and Devon.

This home built van was based on a former commercial trailer chassis and because of shortages of normal materials was actually clad with very thin mild steel sheet normally used as wrapping for delivery of heavier gauge steel products. We did once put the van over a public weighbridge out of curiosity and to our horror found that it was just over one and a half tons - but by then we had towed it successfully several times.

To go to the southwest counties was a tedious journey then when even a by-pass was a rarity and every town along the way had to be taken through the centre. Gloucester and Exeter had by-passes but in the holiday season these were jammed with traffic and tail-backs miles long were common for in the late 1950's Britain was getting back into the holiday habit - mostly in the U.K., as for some years getting a ferry booking in the 'season' was very difficult.

Holidays were limited to two or three weeks a year and there was the understanding that one or even two of these would be taken to coincide with Works shutdowns. Caravanning in those days, especially touring, was not a widespread habit. Sites were much less frequent than today and some could be rather primitive in their services.

Caravanning clubs gave access to reliable site information but we never were inclined to join in with any of the social or rally activities. We simply used the caravan as a home on wheels to give us independence of accommodation away from the crowded resorts. In those years road speed limits for some classes of vehicle were severe, a heavy lorry to 30mph anywhere, a lorry and trailer to 20mph and a caravan outfit to 30mph anywhere. Although these were gradually raised as engines and brakes became more powerful the 30mph limit certainly added to the tedium of the journey.

The Lanchester made easy work of towing anywhere but it was not a very comfortable car compared to modern vehicles, but our heavy van was too much for touring on a regular basis with a smaller car such as a Hillman 'Minx' and this prompted us to go for one of the lighter commercial vans then becoming available, eventually moving to a 14 foot 'Sprite Musketeer'; one of the earliest vans with independent suspension and smooth towing habits. This is still a current model name but the ownership of the makers has gone through a few changes since then.

Then came an increase in the road width allowed, and a corresponding increase in the size of caravans. So in 1965 we bought one of the first to take advantage of this which was the 'Bluebird' Europe III, a caravan which so well met our requirements that we used it for 22 years.

There was more than leisure interest for me in caravans for when we started to make sealants at Evode our commercial introduction to them was through John Briant who had been involved with a sealants and adhesives company 'Rainbow Adhesives' in the west country. Some of his sales of sealants had been to caravan manufacturers and one of our first sales persons employed especially to handle sealants established a strong connection with the then 'Bluebird Caravan Company' and they became a regular customer of ours, bringing us into contact with some of the special needs of vehicle builders with regard to resisting flexing whilst on the move as well as long term weather resistance.

The 'rep' in question, a Mr. David (I think) Hartley-Brown had established friendship with one of the girls in the office at Bluebird's HQ in all

innocence at first I believe, of her other situation, which was daughter and only child of the founder and owner of the business. Flatters between them progressed to engagement and marriage and at one point Hartley-Brown was supplied with a Rolls-Royce by his prospective father in law. Using this to carry on with his job selling sealant specifications he was on site in London with our commercial manager and as they were walking back to the car park with the client's representative a question about the 'spec.' arose. 'Just a minute' says our man, dragging the drawings out of his case and spreading them over the bonnet of the nearest car, the Rolls. 'Hey' said the client's man, nervously, 'what if the owner's watching us?' 'He is' says Hartley-Brown, 'It's mine!' He also had an interesting way of finding a parking space in the streets, when he found a space that was a bit small for his car (a Mercedes then, not the Roller) he would get bumper to bumper with one of the cars adjacent to the space and push it along until he could get in. This was before parking meters etc. and he seemed to feel that it was quite the normal thing to do.

It took some time before smaller companies like Evode supplied their reps with a company car as a matter of course. Reps joining a firm would supply their own, sometimes, exotic transport particularly a London based rep who felt that he had to impress his clients, usually architects with a National practice. I suppose that in those days when the business lunch was still an important tool you couldn't take a client out in something that was too ragged.

One of my first visits to an architect was in support of John Forman over a Roofing specification for export use in about 1956. The client took us to the restaurant in his car which was a 20/25 four light Rolls Royce of about 1937 vintage, still a very nice car to have for daily use even in the 1950's. I expressed my envy and he told me that he had gone into the local Volkswagen dealer to buy a new VW (in those days about 700 pounds) when he spotted this car in a corner of the showroom. It proved to be for sale at roughly the same price as the VW so he bought it - as he said, probably the only man in history to set off to buy a VW and come back with a Rolls.

I asked him if he'd ever had any trouble with it and it seemed only once and that was a remarkable story. He'd been down to Italy on holiday and on the way back he gave a lift to a man who was carrying a small tool bag and a rolled up overall but tidily dressed. As they were descending the pass on the Northern side, some trouble developed with the brakes binding and getting alarmingly hot. "Pull over" said his passenger and got out with his tool case. He slid under the car, there were a couple of hammer blows, then he reappeared and said "You're OK now, drive on". It transpired that by an amazing chance he had given a lift to a Rolls-Royce service engineer who had just been to attend to a car in Italy. As usual with such travellers they tried to make a bit out of the 'exec' by thumbing the way home if time allowed and he had been very comforted when of all things a Rolls drew up to offer a lift. His 'service' report in this case was that this particular model showed this problem under prolonged braking on rare occasions, but if you knew just where to tap the mechanism as he had done, then it would probably never recur. And it hadn't up to then.

Anyway back to our caravanning. As the coastal centres came under increasing use we decided to try inland and also northwards. The numbers of static 'mobile home' type of caravan on popular sites were increasing, they were after all lucrative for the site owner, and this meant that during the school holiday period in particular the comparative quiet and solitude got lost in the crowd. We first turned to Lancashire and Yorkshire and used Britain's first Motorway, the 116 Preston by-pass in the year that it opened. Prior to the (eventual) M6/A74M route, the AA recommended route to Scotland from Stafford was A51 through Nantwich Joining A49 at Tarporley through Warrington and Wigan to Preston and the A6 over Shap to Carlisle then A74 (single carriageway) into Scotland. Even with the lighter traffic density of the times 30mph plus going through the centre of each town meant a very long journey time and we got into the habit of using 'half way houses', starting on the Friday evening and stopping at either Kirkby Lonsdale or Plumpton Wall (just north of Penrith).

Shap fell was the killer in those pre-motorway days and one prayed that there would be no slow moving traffic on the steeper bits to cause stop/start conditions in a queue of traffic following. We soon found a way of dodging Shap by going from Kirkby via Sedbergh and Appleby. The

motorway gradually extended as far as Lancaster and so free flowing was motorway traffic compared to 'Trunk' roads that as soon as you hit the M6 at Lancaster heading South you felt as if you were already home!

The North Yorkshire Moors were a happy find for us first staying on a farm site at Balk near Thirsk where there were perhaps a dozen tourers in all (1959) yet ten years later the expansion in caravanning had filled almost all his fields and I think had totally displaced farming as the land use.

We used to get puzzled looks when we told people that we had been to Yorkshire for a holiday. Yorkshire?!? But we found it full of interest and excitement, Roman York, the then pioneering York museum, Captain Cook, Whitby, stone built villages with wide village greens. Who could forget their first glimpse of Fountains approached from Studeley Roger, or the Roman road with its paving striding across the moor at Snape, or the church at Lastingham where you tread the stones where the very Saints of the Church stood and worshipped.

Sid Jackson used to come along with us and he said that for him the discovery of this new wealth of experience had come too late (he was 60 at the time) but by researching the places that we visited beforehand we managed to pack a lot in. We had read a bit about the Whisky industry before visiting the Highlands and Dad, whilst never a regular drinker bought a single malt-TALISKER- in Inverness and while camped at Loch Ness used it in a blindfold test against BELLS. Whether it says little for my Whisky palate or a lot for BELLS I don't know, but I couldn't tell them apart. Dad could every time, picking out TALISKER as for him the more tasteful dram.

Early on in caravanning I had started to use automatic gears on the towcar because of my memories of towing with the Wilson box on the Lanchester. The fluid coupling took a lot of strain out of stop/start conditions in traffic and when starting on an incline, a much more restful experience for the driver.

After Sid Jackson died in 1967 we continued with touring holidays but life in general was changing at this time, for our daughter Terry was a young adult with interests of her own and in a few years a family of her own also.

We were then liberated from the discipline of having to fit in with School holidays so we were able to make our journeys outside the season and so once again find the quiet and seclusion that we happened to prefer. Very often we would take some other member of the family with us and on one occasion we had three adults, including our daughter, two grandchildren, one still needing a full size cot and three dogs. We got 'em all in that old Bluebird and it didn't seem to cramp our style.

The amount of leisure time increased during my working life, in fact this is one of the biggest changes; at the start we had two weeks but thirty years later this had expanded to six weeks. So some form of low cost accommodation was the best way of making full use of it. Mind you, when we started, a site rental of 1-1.25 pounds per week was commonplace but now charges have tended to become per person rather than per 'van. It is often the case to have a site rental of 40 pounds per week, but it has to be admitted that the amenities provided for this have changed beyond recognition for we are now seen as genuine holiday makers, part of the tourist industry and not carrying the slight 'gypsy' image of the early days.

Today a caravan can be plugged into a mains electricity supply at most sites and at some, hooked up to a water supply as well. In addition to cooking and refrigeration a modern 'van can carry its own shower room, central heating, plus, if needed the ubiquitous T.V. set. Sometimes it seems the closest approach to the outdoor life is when a Bar-B-Que is set up outside the 'van! How did I get from starting a business and markets to our caravan tours? Well, some of our new products were sealants vital to caravan manufacture - as a family we had even built a couple of caravans and there was an interlock of occupation and pastime. As I've said, its an incestuous business.

CHAPTER EIGHT

MORE ON COMPANY DEVELOPMENT
INTELLECTUAL PROPERTY
FIRST FLIGHTS
THE BEGINNINGS OF EVODE ROOFING

Sid Jackson lived long enough to see me promoted to the Board of Evode Ltd in 1967. By then expansion of the business was beginning to take it a little out of control and things were in a state of change. In the 1950's on a technical service visit with the 'Doctor' to a very important customer in Nottingham H.S. described this client as a 'good customer' because not only did he order on a regular basis but 'he always told us when he couldn't afford to pay'. I suppose that by this he meant that the customer didn't leave you guessing about payment, there was never a question of non-payment it was sometimes a matter of 'when'. On this Journey I asked H.S if he ever intended to retire and after a little thought his answer was that as long as a few pennies kept coming in, he would keep coming to the office.

Although not old by business standards, at 67, I suspect that there were some rumblings behind the scenes about a man of his age 'carrying all the burdens' etc. including the major overseas tours. He was by then a widower with a grown up family and I'm sure that he enjoyed the opportunity to meet and stay with what were an international circle of friends, businessmen having success and achievement similar to his own.

On the reconstituted Board of 1967 all the different activities of the Group were represented by the senior managers responsible. The 'Old Man' would listen to all our views on a subject in turn then he would say "Well chentlemen, I have listened to you all; now this is what I have decided that we are going to do". He always retained a slight German accent, hence the 'chentlemen'.

When he came to Britain he took exercises in speech training but his tutor told him that the finer details of the shape and usage of the vocal apparatus was fixed around the demands of the language of birth at an early age and that he would always keep some traces of his origin.

We once had a bloke called Sullhofer trying to flog us a waterproofing agent for cement. Apparently Sullhofer had been a U-boat Officer and on principle, H.S. only used English when speaking to him but he was peeved when Sullhofer was not only able to spot that he was of German origin but also pinpointed the town of his birth! During these negotiations, John Forman went to inspect the Sullhofer business in Germany and found that he was indeed prospering, and that he had built his house so that the cellar was entered via a replica of a conning tower once down in the cellar you found that it was shaped, lit and painted like interior of a sub but was laid out for use as a cocktail lounge.

The product we were interested in was branded 'Sullo' and was a waterproofing agent for mortars and renderings. We already sold a lot of these for use in areas of the country where exposure to wind driven rain was severe, like Scotland and Cornwall and plain brick or blockwork could be penetrated. Our products were based on materials that formed water repellant compounds as the cement set and under favourable conditions water could actually be seen standing in droplets on surface. I'd had a quick look at the 'Sullo' and could not detect anything special, nothing really reactive at all. However some admixtures worked inspite of themselves , as it were. The properties of sand/cement mortar depend very much on how well these two ingredients are mixed together so if after the standard mixing time you tell the mixer man to chuck in 200 grams of "x" (which can be almost anything) and carry on mixing for a further 3 or 4 minutes the extra dispersion of the cement will give, on test, improved properties compared to the 'normal' mix. Herr Sullhofer came in person to demonstrate his mix having asked in advance for a 'badly made brick tank' to be constructed. By this he meant one with plenty of gaps in the mortar between the bricks so that there was no way in which it could be watertight. It would take 'Sullo' to make it watertight 'absolutiche Wasserdicht' as he put it. I asked our technician to build two such tanks and when Herr Sullhofer asked why, I told him that I was going to do one test myself. His claim was that a cement mortar plus 'Sullo' applied as a rendering to the inside of the tank would after 24 hours be waterproof and allow the tank to be filled with water, and not leak. His mortar was very rich in cement and I knew that with or without 'Sullo' it would be water

resistant in 24 hours. So he made his mix and I made mine and we rendered our little tanks and next day in the presence of H.S. Herr Sullhofer filled his tank with tapwater and "So! - absolutische Wasserdicht", which it was. Then we filled my tank which as expected didn't leak either, whereupon I waved a hand towards it "So! - absolutische Wasserdicht" says I. Later H.S. told me that Herr Sullhofer had complained bitterly at what he thought was a bit of under hand work on my part. Funny thing was that he wouldn't take our word for it about the water resistance of plain cement mortar so we had to demonstrate it. I had hoped that he would then fight back with the reasons why 'Sullo' would give the better performance in the long run but he didn't. So we sank him even if the Navy hadn't.

From 1967 things plodded on career-wise with 'Flashband' occupying a lot of my time in support of the Marketing activities. We had just established a formally organised Marketing Department and the new Manager on looking around the product range for something new to develop with the usual marketing techniques found 'Flashband' and set to work. It had performed well when being sold only by the 'Evomastics' sales force and we had been kept busy answering technical queries about potential uses and working some improvements in manufacture to overcome the few problems experienced with it. Once Marketing had established it in retail/merchant outlets it really took off and ended up as a multi- million pound product which along the way established self adhesive flashings as a recognised construction material. Because it was effective.

An amusing instance I've seen is at the outfall of the Llyn Brianne reservoir in Mid Wales where there is a very expensive looking device, a water meter chamber I think, built out of stainless steel and must have cost a fortune. It looks as though they had a problem sealing it into the surrounding concrete casing and behold a strip of Flashband has been applied over the Junction of the concrete and the steel. I'd bet the engineer didn't specify that originally! But there have been many cases where Flashband was about the only thing that would seal an awkward leak that showed up AFTER construction.

At first only the self finished aluminium version was available which because of the very slow rate of corrosion of aluminium in normal atmosphere performed its duty very well but from the Marketing point of view something less obtrusive than bright aluminium was preferable in many applications and a protective coating might extend its lifetime in service.

All in all it was felt that a dull grey 'lead like' appearance would be best, the problem being how to get this without a disproportionate increase in cost as most effective coating systems comprise several layers. Iron oxides (rust) tend to scale away from the steel substrate because they are not a good molecular 'fit' to the metal and the adhesion is low whereas aluminium oxide has a good adhesion to the metal and if anything retards further weathering attack. Good long term adhesion of the coating to the oxide layer is still required plus colour retention, all in a simple to apply product that didn't put the price up too much.

This is where one of those strange little coincidences arose. In reading around the problem, I came across a research paper on the subject of promoting adhesion to aluminium by interaction with the electron array at the metal surface (to put it simply) which is much what happens with the natural oxide film. One of the co-authors was a chap called Stan Werren who I'd never heard of but later we ended up working together at Allweather Evode Paints Ltd. Anyway the data in this paper allowed us to make a choice of polymer for the coating which when tested in natural and accelerated weathering conditions gave us the answer to all our perceived problems. This grey coloured finish really established the acceptance of the product. This phase of the Flashband story was completed during 1972.

It was the first product which we submitted to the British Board of Agreement which was one of the members of an international concept for testing and reporting on the performance of new products and processes intended for use in the building and construction industry. This favourable report did a lot to support the efforts of our salesmen in getting widely established sales for the product. Alongside this, work on a series of other sealing compounds and cement based products had progressed, much of it

based on the exploration of new polymers as they became available, especially in blends with existing resinous materials to obtain the balance of good adhesion and flexibility that was increasingly important in the construction industry.

I was still involved in the roof waterproofing activities, particularly manufacture and development of materials. The size of the contracts department plus direct sales to other users had increased considerably and demands of other parts of the business had drawn Dr. Simon away from it and I was in the position of recognised expert - most of the time!

On one occasion when Hermann was away overseas our bitumen product plant ground to a halt. So all hands to the pump, we found that the composition of the bitumen we used had been changed in a small, but for us significant manner - we could still make an emulsion but none of the downstream processes would work. In our own laboratories we identified the change as an increase in acid value, which was confirmed by the supplier. They had made this change for the benefit of the asphalter, not realising that we bought this grade of bitumen for emulsification. They had swapped over the whole of their production and could not in the short term supply our needs but we found another U.K. refinery who was making the grade we needed and ordered some.

Next problem was to clear at least one of the holding tanks so that we could run some through our process. There proved to be two products that could be made with the 'dud' emulsion but there was no great call for them so I guess we put about a years stock of each in store to get a tank clear. This emergency started on a Monday and by Friday of the same week we were back on stream and we had arranged methods of financial compensation with our supplier and had agreed that as we had solved the problem and for the time being they couldn't supply anyway, there was little point in a technical service visit by them. Hermann was returning on the Saturday. I put the problem of financial compensation over to our cost accountants initially and left a report on the affair for H.S. on his desk.

Come Monday, my first port of call was the factory to make sure all was still well when there was a message to go to Herman 's office. I went

cheerfully, expecting that he would say well done, but did he hell! He tore in to me, wanting to know mainly, why some big-wig from the supplier hadn't been dragged up to Stafford. Having had all his questions answered it slowly dawned on him that all was under control.

It gradually emerged that the executive from Royal Dutch Shell who had assisted in his escape from Nazi Germany was now the boss of the whole shooting match, Hermann had maintained contact with him and therefore if he had been here the wires would have really hummed etc, etc. A little later Herman rang me to say that he had 'phoned Holland and spoken to Mr. Van der whatever and the top technical man from Shell in London was catching the next train to Stafford. When the poor blighter turned up he clearly had the expression of a man who had experienced the Managing Directorial boot up his backside and was glad to find his feet about to touch ground again. There was not much to talk about as all the practical things were already in hand. He did say one dangerous thing - he couldn't understand why there was so much fuss over an account that only took 1000 tons a year, small by bitumen standards, but I told him 'HUSH' and remember that when he met Hermann he was before the man who knew his boss' boss' boss' boss from years back.

Anyway Hermann was as nice as pie, he'd had time to reflect on things and in any case his long range influence had been demonstrated and we all parted friends. It goes to show that when in trouble and meeting an aggrieved party, try to learn a bit of the background and the relative importance of the matter to him. You never know who knows who, so stick to the demonstrable truth - but knowing the background helps you to avoid presenting the truth as an inadvertent insult. Have a word with your local rep., he should know the ins and outs, if he doesn't, sack him.

By 1972, John Forman who was responsible for the administration of the roof waterproofing contracts department was looking to retire. As befitted the case of the founder director a great deal of fuss was lavished by all levels of the organisation as 'Johnny' was known to everyone and in the early days had been 'hands on' in getting orders out to the customers. A great timber stage was built in the car park at Common Road so that everyone would get a good view. It reminded me of the kind of scaffold

that Charles First had stepped onto from the Banqueting Hall. Fortunately it was a fine day and all the speeches, presentations and jollities went off without hitch. Johnny was always the gentleman and always inclined to be helpful first and critical second. In the run up to his retirement a new Manager of the roof contracts had been recruited and I was somehow persuaded to take over the administration of our Trade Marks - these property rules had their own discipline. It became a very interesting addon part of my career path which brought me into involvement with all sectors the Company.

To some extent the outcome of a Trade Mark application could be predictable if you could devise a commercially useful name that, seemingly paradoxically, was 'non-descriptive'. For example it would be unlikely that the Mark 'Bacon and Eggs' would get onto the Register as the name of a pre-packed meal based on bacon and eggs. This because registration is a title to monopoly use and clearly the public at large already have the right to use 'bacon' and 'eggs' without hindrance. However, if you felt that it met your marketing needs you could probably get 'Baykun 'N Eggs' or 'Bay Konneggs' as these include made up words where no existing public use can exist. This is why a made up name like 'EVODE' is so valuable because it is non-descriptive and can be used to brand any product under the Sun. The exciting bit was trying to argue your way out of any objections from other Trade Mark holders. Before being confirmed on the register your application would be advertised by the Trade Mark Office so that interested parties could object to its use if they felt that it would trespass on their existing rights. Very often these would turn up at the last minute just when you thought you were in the clear.

For example, some prat might surface with the Mark 'Bayko Noggs' already in use in the same food sector and argue that your Mark would cause confusion in the mind of the purchaser because of the close similarity, there are only two letters different. It didn't matter if the two products were different in composition. In some ways that would make the results of confusion worse. From then on it was a matter that if you didn't want to change your Mark, some sort of deal could be attempted with the owner of the Mark that was blocking yours. For Trade Marks are just like

other forms of property, they can be bought, sold or rented out via a licence agreement.

At Evode we didn't have many of these problems because of the basic strength of the 'Evode' derived Marks but later with other companies we had trouble. Take Hyflex for instance, to get the use of this word as a Registered Mark was at one time blocked because the Trade Mark Examiner in the case argued that Hyflex could be regarded as descriptive of a flexible roofing material and therefore not sufficiently distinctive to be included on the Register, ie. to give us monopoly of its use. Some years later after use of the Mark unregistered without any objections from others in that sector of industry we were able to re-apply and get registration.

So in the early 1970's the shape of the Company management and my work in it were beginning to change, a process that was accelerated by the employment of a group of consultants from the Manchester Business School headed up by a Professor Channon. The outcome of their deliberations was that the Company should be restructured so that each commercial activity became a separately managed company and that the directors of each company should include someone with long term experience of that activity so that some continuity of the founding attitudes and policies would be assured.

In this way, in 1973 Evode Waterproofing Systems Ltd was established with myself as a director responsible for technical operations and the recently appointed Contracts Manager Mr J.R.(Roger) Willetts became director responsible for field operations. Roger was well versed in civil construction contracts, being a Member of the Institute of Civil Engineers and an M.Sc. in highway engineering. If this seems a bit strange for a roofing company it needs to be remembered that before the founding of the Institute of Roofing there was no professional recognition for the roofer. The Managing Director was Mr. A.A.R. Cobbold, formerly Sales Director of Evode Group and with considerable experience in sales. Anthony was one of the newcomers who could be regarded as raising the tone of the place. Educated at Marlborough he then served in the Wiltshire Regiment before Cambridge University. His first Job was with W & T Avery, makers of weighing and other industrial measuring machines

spending some time in East Africa, later moving to W.D. & H.O. Wills becoming Sales Manager for Scotland until Joining Evode in 1971. This was certainly a broader background experience of sales and sales management than most of us.

My role in research continued as Director of Research for the Group, a post reporting to the Holdings Company giving me a roving commission to assist all the companies in the Group in the search for new products. During these reorganisations of Group I left the Board of Evode Ltd early in 1974 as by then it had lost its central role and was effectively just another subsidiary of the Group. Even so I found it a sad occasion for up to then the Board of Evode Ltd had been the height of success. A few years before, Hermann had 'phoned to tell me that one of our competitors in the cement admixture field, a very well known name, was for sale. "They made a profit of 125,000 last year" says he "how much do you think they are asking?" "About 900,000" I said. "That's right, why don't you buy them?" "I haven't got a million quid" I replied. " Go to the Bank, tell them you are a Director of Evode and they'll lend you the money". And he meant it, such was the reputation of the Company.

The Holdings Company had funded a new Research Laboratory staffed by scientists with experience in the principal activities of the Group Companies. Amongst other things we attempted to forecast trends in the activities of our customers and in our raw material suppliers and then, conferring with the Group Companies to meld this information to arrive at ideas for product range extension. Plus to work on any way-out ideas of our own, if we had them - is a repeat of the Flashband experience. We had quite a flurry of activity for a couple of years and several novel and patentable products came out of it but none caught the imagination of the Marketing Departments as big time products. Of course at the same time these marketeers had the problem of expanding the sales of the existing product range and in the long run the resources were not available to do everything.

As has been discovered by companies a lot bigger than Evode during the slumps of 1987 and 1992 there can be too many mouths to feed and some have to be sold off or strangled at birth. So the Research Department was

disbanded in 1977 its members being reabsorbed into other technical activities. My responsibilities were now concentrated on roofing, sealants and paints becoming Technical Director of Allweather Evode paints Ltd from 1976 onwards. The Evode Trade Mark had been used increasingly in the Marketing of household products sold via ironmongers, DIY stores and builders merchants. The range eventually included timber finishing products like varnishes and wood stains and the original paint production shop at Common Road Stafford site was given over to the production of these items.

The original interest in protective paints based on chlorinated rubber, epoxy resins and other chemical resistant materials was continued and consolidated by the purchase of Allweather Paints Ltd, a private company with a factory in Gillingham, Kent. Allweather, now to be known as Allweather-Evode Paints was a company founded on the principle expounded by Dr. Simon that what was needed to found a successful business was a good chemist and a good salesman, in this case a Mr. Jack Cardy, a 'natural' salesman and Mr Max Heilbron a paints chemist.

Much post war industrial activity involved the use of steel structures working in corrosive atmospheres - chemical manufacturing plants - container handling systems at ports in a saline atmosphere plus salt water spray - British Rail electrification while diesel and steam could still be sharing the same track, bathing the supporting gantries in corrosive smoke from the burnt fuel. Factory production of dairy and meat products as well as the older brewing industry brought problems with the older types of paints towards which animal fats and some by-products like acetic acid and lactic acid proved astonishingly aggressive so there was an increasing market to be exploited by proper formulation and marketing.

Unfortunately Mr. Heilbron did not live long to enjoy the success of the Company and until the purchase by Evode Ltd the technical side of Allweather was lead by Mrs. Betty Wells who was a fount of knowledge on the topic of paints and could hold her own in argument with scientists from both our suppliers and our customers. Sadly, there seemed to be some chauvinistic doubts about the ability of a woman to contribute an

effective all round technical support in this industry. Partly because of this I was appointed Technical Director of Allweather in 1976.

To be successful in the introduction of new products a small company has to have a distinct element of luck. The Founder may devise a formulation that is genuinely "the World's First" and works so well that it truly sells itself. Examples are to be found in the drug and dyestuff industries where one man or a very small team made a product with unprecedented purity and constancy of action or, like Pasteur, discover a novel understanding of the causes of disease and combatative methods.

When a product is brought in ready made from another country, as Evode did, the luck lies in the fact that the product performs well when transplanted into its new market without the need for expensive development work. Many have failed because they just didn't work here. The most needed luck is that the profit margins are great enough to allow investment in marketing and that one gets a clear run of the field to establish as the premier brand before the competition catches on.

To raise a product to a new level of performance in real terms means a painstaking slog from clue to clue and eventually calls for part of the company team to work on this full time. A company has to have realised a cushioning and secure core business before it can divert funds into developments prompted by reasonably certain Market pull let alone indulge in speculative research. This was Allweathers problem in my opinion, although it was a nice little business for the founders, there were not enough funds to feed all the needed developments in new market areas, new products and sale force training.

We were in a market where product performance is in the hands of the applicator almost entirely, an applicator who is perhaps clinging to a safety harness 60 feet up in the air and when on the ground trying to contend with the pressures of the construction industry; trying to work in co-operation with other contractors, meeting completion dates fitting in with changes in specification or changes in schedule. As a result, problems were dealt with 'on the run' and often left to be argued about after

'completion' giving a running sore on executive time and the profits of the company sometimes not dried up for years.

Industrial painting carried out under factory conditions were known but in construction only a limited prepainting of structural steelwork could be carried out. In the 1970's all paints that had good weathering or chemical resistance contained a high proportion of solvents, maybe 40/45% and these evaporated during the drying process taking with them into the factory environment their unpleasant properties like flammability and toxicity. Initially health and safety regulations made it necessary to control these at least to the extent of collecting the fumes from the workplace and blowing them outside the factory.

Quite quickly, really, general environmental concerns put pressure on finding ways and means of avoiding the use of solvents altogether, or as a compromise, collecting and burning the fumes in a useful manner such as preheating the air in the paint drying tunnels. Attempts were made to dispense with the use of solvents altogether by using specially developed water based resins but their performance was poor under 'normal' corrosive atmosphere conditions; what was good for the environment was bad for steel protection.

Another approach was to make paints in powder form from raw materials that could be fused into a film then ground into a very fine powder. These are used mainly in factory production of so-called 'white goods' - fridges, washing machines etc - the powdered paint is 'dusted' onto the metal by one method or another and then when the metal is heated the powder fuses into a continuous protective coating. Paint films are very thin and to be competitive in usage with liquid paints the powder needs to be very finely ground and at the time production equipment was undergoing much change to get even finer particle size so that the powder could be applied at competitive coverages.

This need for investment in up to the minute plant and to establish a trained sales force meant that it could not be a short term development for Allweather. In the event Evode bought an established company in the field - Postans Paints - in Nechells Birmingham and perhaps founded as was

Joshua Jackson's little factory to serve the needs of paint users in the immediate locality. As a result, because of the demand from such a varied industrial mix of the type that few places other than 'Brummagem' can supply Postans had developed a wide product range, not all of them good earners. And the same circumstances gave them the opportunity to exploit powder coatings, often into existing customers making architectural products like metal windows, door frames and partitions. In the end Allweather Paints were sold in 1982 to one of the major oil producers who in common with others at that time had 'downstream' subsidiaries using solvents and resins and chemicals of petroleum origin.

An interesting feature of Allweather had been its use of a strong 'made up' Trade Mark - PITAN - an anagram of 'paint' a mark which gave the useful root "PITA" - for use as a prefix. The activities involving Allweather paints ran concurrently with other events that affected me in the decade beginning 1974.

Commercially the biggest event was the consolidation of the Group's interests in construction industry related contract activities into separately operating companies. The largest of these was Evode Waterproofing Systems Ltd which took over and continued the affairs of the old 'contracts department ' of Evode Ltd plus the sales of roofing materials directly to other customers including other roofing contractors. The name of this company was changed after a year or two to the more understandable 'Evode Roofing Ltd'. The other main waterproofing activity applying joint sealants was given the equally pragmatic name of Evode Joint Sealing Ltd. The Managing Director of this chunk of the Group's business was Mr A.A.R. (Anthony) Cobbold an enthusiast with a strong grasp of the nuts and bolts of sales and marketing techniques.

It was unusual to apply these techniques in a full blown manner to a market area like roof waterproofing contracts especially when it involved something regarded as 'down market' like liquid coatings. However don't forget that this technique had been brought to us by Dr. Simon who was still on the scene and so we had some vital support from the top even though some of our proposals seemed expensive to realise.

At around this time the profitability of the rest of Evode took a bit of a nose dive and for a time Evode Roofing were a sizeable chunk of the whole and pro rata to Group turnover, our results looked very good and no doubt this helped our survival as well. Dr. Channon of the Manchester Business School, consultant during the reorganisation of the management of the business, had upon completion of the consultancy been elected to the Board of Evode Holdings Ltd at an AGM with me as the lone vote against. I thought it premature because we had up to then seen none of the benefits that were supposed to flow from what had been done. I believe that he came close to panic when he saw our cash flow situation during the winter months and tried to get us closed down - a move resisted by the more experienced Hermann. Dr. Channon had an office immediately opposite that of Dr. Simon where he survived for a few years before quitting the Company. During my several moves around the corridors of power I occupied this office for a time and stepping out one evening, came face to face with H.S. just leaving his office. He looked surprised. "I thought that was Dr. Channon's office" he says, "It was, but he's left the Company" I replied. Then, recalling my part in his election I added "I've seen 'em come and I've seen 'em go" H. S. smiled as we parted, he'd twigged the slight irony of the situation.

As Evode Roofing we bought as much of our raw material requirement as we could from Evode Ltd but clearly we had a remit to explore other methods of roof waterproofing, especially something to improve the wintertime cash flow problems. We were also looking for ways and means of increasing the value and profitability of the package that we had to offer. This package was based on our unique selling points as was a normal ploy in marketing. These were that we offered to the customer the comfort of dealing with a single source; we made the materials, we applied them with our own employed labour force and we gave a five year, no quibble guarantee. This guarantee may not sound much to the present reader but to get any sort of guarantee from a roofing contractor, let alone five years, was quite something in those days and we had already established a reputation for honouring it. We also played on our track record of success with the product. Put together as a package by Anthony and given our own sales force this package of selling a single sourced roof waterproofing contract was a formidable one at the time.

In the decade of the 70's other materials and specifications used in industrial flat roofing began to run into serious trouble and problems because of the increasing use of roof insulation. The waterproofing layer of roofing felt or whatever was applied directly over the insulation as a rule and not only did the insulation stop heat getting out of the building, it also stopped heat from sunshine getting in, thus making the top layers of the roof a lot hotter than they used to be when heat could flow more freely through the roof. This increased temperature caused the outer layers to expand and then contract as they cooled later more than ever before and this increased amount of flexing began to cause failure of insulated flat roof specifications at a depressingly early age. We at Evode Roofing didn't seem to have that problem and for a time this success gave us another 'edge' over the competition. Later, during our research to find improved systems of our own we discovered that our fabric reinforced emulsion coatings were astonishingly resistant to fatigue failure by flexing. Our roof waterproofing package was sold under the Trade Mark 'The Evode System'.

The biggest change wrought in my life by these changes in company organisation was an extension of the scope of business travel which up to then had been confined to Great Britain. To be frank, I had always been terrified at the thought of flying mainly because of the death rate which is 100%. In any other form of transport you feel that you've got a fighting chance in the event of a disaster but that ain't the case with air travel, when you go down, you're dead. I had been to our licensee E.H.F. I. in Alsace by ferry and road but that was all. On this trip, I'd bent down to pick up what I thought was a bottle top whilst walking in the forest and found it to be a five Franc piece which travelled everywhere with me as a luck penny after that.

Andrew Simon, son of the founder, had joined the Company as Corporate Planner after some time spent in the U.S.A. and at another manufacturing company in Stafford and I confessed my fears to him. His response was that Evode couldn't have a Director of Research who was afraid to fly. As part of my job I was expected to visit Evode Industries in Dublin and Andrew said that on his next need to visit there he would hold my hand

and we would go together by air. Which duly happened. I checked my pulse rate as we took off from Birmingham, it had risen to 120, it never went higher than that on subsequent flights and after a year or two settled down to mid 80's at take off. Shortly after take off there seemed to be a sudden sag in aircraft performance and panic surfaced, then things became uneventful again.

At the time the noise abatement at airports was just getting attention and whether it was something to do with that I don't know, it never happened on subsequent flights. As we drove away from Dublin airport I suddenly realised that I was looking forward to the return flight the next day which strangely enough gave me the worst landing that I ever experienced. For some reason the aircraft rolled on landing approach and one could look along each wing alternately and, it seemed, be staring straight down at the ground which wasn't all that far away by then. Of course the next thing was to go 'solo' and as it happened this was also to Dublin, this time from Manchester and returning the same day. And then we were off! Although not frequent, my air travel was widespread and at one time Andrew Simon commented that for someone afraid of flying I was suddenly up and everywhere and that when he looked at some of my bills for overseas travel he began to wonder just what he'd started when he took me to Dublin.

With the increased emphasis on thermal insulation of flat roofs it was clear to us that to continue with our unique sales package theme we needed an insulation that we could call our own, preferably one with properties that made it different and superior to the competition. The Journals taken into our company library included German publications specific to roofing and through these we located a plastics foam insulation made in Frankfurt which was different because it was in roll form and carried a layer of waterproofing felt so that when it was stuck down it at once gave some protection to the plastics foam against rainfall.

An insulant in roll form may not seem all that novel but roof insulants were rigid lightweight materials supplied in panel form. Foams are very good insulants but suffer from an ability to absorb water and even a small amount of this can cause havoc when a watertight layer is fixed over it

because it cannot escape, is vapourised by the heat of the Sun under the felt layers, causing blisters and other defects to form which can reduce the performance of the waterproofing layer. Almost on the eve of departure I saw advertised yet another roll form rigid insulation named 'Tekurat', this was made in Hamburg and I set up a diversion to Hamburg on the return leg of our Journey and an appointment at the Tekurat factory.

Tekurat was an example of entrepreneurial activity which has stayed in the hands of the originator, something which seems to happen quite frequently in Germany, especially with construction industry products, the product being regarded to some extent as their 'baby'. Tekurat had been developed by a Mr. Herbert A. Prignitz who we duly met at his Company Offices, the name of the company being HAPri (another good made up name, notice).

I was accompanied by Mr. Roger Willetts who was the director responsible for contract activities and so we were in a position to make a decision about the product there and then if things looked favourable, which they did. Tekurat differed from other insulants in as much that it had a built in ventilation system which meant that any water which might get in during application or in service would automatically dry out. Mr. Prignitz, who had other people interested in his product, asked me if we had visited any other manufacturer in Germany and after a fractional hesitation I said yes, we had been to visit the makers of Vedapor in Frankfurt but that we considered it not as good as his product. I learned a year or two later that this straightforward answer had had a lot to do with the eventual decision by Mr. Prignitz to go with us. As it was, our usage of insulation at the time was great enough to allow us to order a container load of Tekurat on the spot for trial purposes. From which a whole lot of commercial enterprise developed.

The main thrust of the Marketing of Evode Roofing Ltd, masterminded by Anthony was to promote a pedigree of established respectability for the Company and its products. Coatings are an effective way of waterproofing a surface. After all, if you were going to waterproof your front door, you wouldn't dream of trying to glue a waterproof sheet all over it, you would instead reach for a brush and a can of coating material (paint) and brush on two or three coats, confident that you were thereby sealing every nook and

cranny against the weather. And so also on a roof, particularly one of complicated contour and shape. Because coatings are easy to apply people with a ladder and a brush but no knowledge of the basis of roof waterproofing would have a go at sealing a leaking roof and the failure that invariably resulted from this inexperienced activity gave roof coating technology a 'cowboy' image.

We had to establish for Evode Roofing Ltd the image of a serious contender in the industrial roof waterproofing field. We had the product and a good track record and now for the first time we were putting behind it a dedicated management team. An early action was to apply for full membership of the National organisation representing the interests of roofing contractors generally and who devoted time to technical and specification development in all aspects of roofing; slating, tiling, felting, Metal sheeting. Membership was then a symbol of acceptance in the industry and we felt that it was about time that coatings were included.

Evode Roofing was not the only Company that made its living from liquid coatings. Mr. Cobbold was instrumental in bringing these competitors together in an embryo trade association and I chaired the technical committee whose task was to arrive at a commonly acceptable specification for the effective application of liquid coatings. After some initial resistance from die hard slating elements of the NFRC (where a change of Presidency of the Federation from a slater to an industrial roofer helped our cause) our work was taken over by a newly formed Roof Coatings Committee. The embryo trade association ran parallel in its activities to strengthen the position of coatings and from 1980 was known as 'BRoCMA' the Bitumen Roof Coatings Manufacturers Association which in 1984 began to publish its own standards for individual products and complete waterproofing specifications. Evode Roofing also undertook tests of its own specifications by the British Board of Agreement. This agreement scheme was the beginning of international co-operation in testing new materials and processes in the Construction Industry and where there was no existing National Standard was the only way of obtaining an evaluation of a product that was accepted by the Regulatory authorities, an acceptance now built into the Building Regulations. The success in certification by the B.B.A. was another rung up the ladder of

ambition to be recognised for the worth of our activities. It is a strange thing but liquid coatings always seem to have been accepted in other countries but were slow to get recognised as 'serious' contenders for roof waterproofing in the U.K. Originally a bitumen based Association, BRoCMA had moved on to include other raw materials and countries under the name of 'ELRA' the European Liquid Roofing Association.

This greater use of coatings overseas was driven home to me on my next trip which was to the great annual German Building Exhibition 'Dach and Wand' which in 1977 was held in Karlsruhe. The flight was Air France to Strasbourg in a small jet, type unknown, but of the 'corporate jet ' size, about a 20 seater I guess. There were two American women among the passengers and I heard one say "Gee, what a small plane" and the other surmised that, because of that it could not fly very high and that "We'd get a good view of the ground". They must have been surprised to take off to normal jet operating height. I sat at the tail, right by the luggage compartment which was accessed from the inside of the plane through a large vertical trap door held closed by straps and large press studs. As we accelerated to take off these studs came adrift and the door fell down with an ear splitting crash right behind me and for a moment I thought that disaster had struck. The descent to Strasbourg was through fog which always makes me a bit twitchy and it seemed to persist right down to the deck. Certainly, as we touched concrete an amazing sight greeted us for standing in the mist just off the runway, on the grass, was a shepherd complete with smock and crook with his flock standing behind him. It seemed that he'd just cleared them off the runway for our landing. Considering the implications of the name Strasbourg for the E. U., the airport in those days was a bit underdeveloped and ahead of me the wife of (apparently) a British official who was to meet her in the lounge was exercising her best French on the single Customs Officer checking us off the flight, i.e. shouting at him in English. In those days it was virtually all one big area with no separate lounge but it seemed that she couldn't understand this. When it came my turn I noticed that the Customs man had given me two immigration forms to fill in so I said "Monsieur, vous avez me donne les deux". He seemed amazed to hear his native tongue off the London flight and putting his arm around my shoulders smiled and said "Pour la prochaine fois, Monsieur, pour la prochaine fois".

In addition to visiting Dach and Wand I intended to spend some time with our company EMFI located in Hagenau near Strasbourg and a colleague from there was waiting for me, "Your french must have improved" he said, "Not many people stop to chat with the Customs Officer." In fact with the acquisition of EMFI I had organised some lessons in French. For historical reasons we had plenty of German speakers but few in other languages and relatively few lessons revived our schoolboy French and got us used to listening out for things like use of the subjunctive. I had set aside two days for the EMFI work but no-one there had thought to tell me that one of them was a public holiday so I had an unexpected free day which was spent following "The Weine Route" through Alsace, sampling the wares on the way and making a modest purchase. The survival of the half-timbered buildings seems astonishing at first, but it seems that many are careful restorations of war damage, plus this style of building is still encouraged for new construction. For anyone interested in the picturesque, a visit to Alsace is strongly recommended.

Back to Dach and Wund which is held yearly in May, usually coinciding with a public holiday in part. The amazing contrast to a similar U.K. exhibition was the presence of roofers and Builders attending complete with families. Everybody keen to see what Daddy did and proud of it. I think it is that greater emphasis on training in Germany and its formal structure even (as we would say) in roofing.

The fully fledged German roofer even has a type of Masonic regalia so the cowboy aspect that anyone can do it is not as apparent. This training, on the job, in the proper use of all materials , accounts I think, for the attitude there which takes roof coatings seriously instead of just dismissing them. D & W at Karlsruhe was the first international exhibition where I saw Flashband featured as a main component of the EMFI stand. It was the first and only time that I met Dr. Simon overseas. I didn't visit EMFI again, events were soon to divert my attention to the German side of the border, but not before I had made my first long haul flight to Washington D. C. U.S.A.; more of roofing and the U.S.A. later.

Since my first visit to Tekurat (Hapriwerke) in Hamburg our trials of the product had continued and we now needed a further meeting of principles to move our interest forward. This took place in Hamburg, October 25th to 27th when I took Anthony Cobbold to meet Herbert Prignitz and visit sites where the product had been used. Here, he was able to get an understanding of the properties of the product that separated it from the other insulations on the market and so could contribute to the claim of Evode Waterproofing Systems to be offering a unique package in the industrial roofing industry.

It was during this visit to Hamburg that we learned more about the strength and vigour of the German economy. There were of course some very large companies, but there were a tremendous number of successful (comparatively) small entrepreneurs, such as Herbert Prignitz, who worked hard to spread the use of their product and it seemed that they were actively supported in this by German Government. They were of course sitting in the middle of a very large land mass whose National Markets could all be served without having to use sea travel. It also seemed that this generated wealth spread itself around more quickly and evenly than in the U.K. and the populace expected and got a high standard of eating out, entertainment, beers and wines, accommodation and so on. O.K. we were business visitors, potential customers, so perhaps we were introduced to the best on offer but it seemed a general high standard, equally available at a small cafe near a building site or a fast food street vendor and so on.

It was in 1977 that we employed at the Evode Canadian subsidiary a Russian Emigrant, Vadim Bytensky. He was sent to Britain to have training in the group products and during one of my chats with him he told me that when he arrived in Britain from Canada "he thought that he was back in Russia". This, from the appearance of the public buildings plus the dress and habits of the ordinary person. As I travelled a bit, I began to understand what he meant but I think that the contrast in the ability to enjoy life and the nature of that enjoyment appeared in that visit to Hamburg. Discussions between myself and Anthony Cobbold continued and laid plans for the expanded use of Tekurat. By the Company Conference in 1978 held at Peebles, it was well used enough to feature on

the Conference Menu cover and Anthony had entered it into the 1978 Buildings Innovations Awards, where to our delight it took one of the top awards which helped our publicity campaign. The prizes were presented at the Dorchester in January 1979 where we duly appeared to collect ours. Anthony, quite rightly, always believed in making the most of achievements of Evode Roofing both internally and externally. The internal 'feel good' message is typified by the menu dedicated to each Company Conference. Externally, our publicity material was always prepared professionally and so our sales representatives always knew that they were going to get good supporting adverts and literature.

In 1978 we had a film made showing our products and activities which was an interesting introduction to the trials and tribulations of getting things right during unrehearsed shooting on location. This film was made for use in a system known as 'Architects Newsreel' where several films of new products were screened at an Architectural practice and by this means grabbing the attention of a group of people who ordinarily may not be accessible to an individual manufacturer. It was claimed that by this means as many as 10,000 people across the whole country were exposed to our product. Plus of course we used the film as part of our sales pitch during our own sales activities.

We were probably the only roofing contractor confident enough to go out with this level of activity and the novelty got us attention where other publicity might have failed. During this filming, in July 1978, whilst on the roof of the Walls Ice Cream factory near Gloucester I asked if it was possible to get an ice cream as it was hot weather and we were after all at an ice cream factory. One of our supervisors pushed off to investigate and came back with one and the remark that I was the only bloke he knew that would have thought of doing that sort of thing. One of the 'stills' cameramen took a photograph of the event. 1978 was the year in which I joined the Evode '25' club and as one of the older companies in the Group, Evode Roofing had contributed a high proportion of the members. It was thought that this evidence of long term employment added a touch of respectability and we were photographed as a group wearing our badges.

About twelve months later we went through the same sort of filming exercise for Tekurat as we now had an agreement as U.K. agents. Whereas the Roofing film had been a 'talking heads' type of production the Tekurat film featured a professional presenter - Peter Fairley - who at the time was Science Editor for Independent Television News Ltd. He had been the person to present the awards at the Building Innovation event earlier in the year. 1979 was the year of my second visit to the U.S.A, this time to Texas primarily and later to Boston. The main purpose was to go to the annual convention and exhibition of the National Roofing Contractors Association of America where again we had become members to keep abreast of events in America. In 1979 the Convention was held in Houston, our U.S. associates had a stand there and Flashband was featured. 1978 and 1979 saw the beginning of the commercialisation of ROK - RAP, a development of the Research Department which basically was Portland Cement in a dry tape form which when soaked in water could be used as a surface wrap on insulated pipelines or as a surface repair to concrete structures. The water activated the cement which then set hard in the usual way and the use of a blend of polymers in the cement mix bound the cement onto a supporting fabric in the dry state and held the activated cement slurry onto the fabric when wet. When set, ROK-RAP could be painted, was fire and water resistant, eventually circumstances prevented me from following its later career as a product, but when launched it excited a lot of interest.

The interest in Tekurat continued as did negotiations towards a closer relationship between the companies. The product was getting well recognised and established as a part of Evode Roofing's activities. Usage had risen from only 2000 Main 1978 to 84000 Main 1980.

We were using a lot more of other types of roof insulants as well but the response to Tekurat plus the expansion of the concept of a unique package waterproofing and insulation prompted us to include in our medium range plans the manufacture of Tekurat in the U.K.

1980 saw another visit to Dach-U-Wand, this time in Hannover and on this occasion I went again with Roger Willetts, Contracts Director. We stayed at an hotel immediately opposite the railway station which of

course had one of the main taxi ranks. Next morning Roger and I breezed out to take a taxi to Dach-u-Wand. I hadn't a clue of the exact location but as D-u-W is a big affair and must have been drumming up a bit of business for the cab-drivers we just piled into a cab and said "To Dach-u-Wand please". Problem - "Where is it?" By asking around other taxis we found that it was at the Stadthalle but by now our taxi had lost its place in the queue for leaving the Bahnhof but, nothing daunted, our Gnadige Frau driver drove up the kerb onto the paved square of Ernst August Platz drove across it and bounced down onto the main road to the Stadthalle. "Who taught you to drive?" said Roger, "Rommel?"

Roger had previously noticed that the Flats was thronged with men dressed in lederhosen and bavarian hats and had wondered aloud why all these men were prancing around in fancy dress instead of working. Again it proved to be a National Holiday - in this case a religious holiday - Himmelfahrt. We were a little late arriving at the Stadthalle and our taxi, a white Mercedes, swept past the avenue of pleached Lime trees leading up to the main entrance and pulled up right at the front door. Some in the waiting crowd looked at us but at the very moment that we emerged from the taxi a German Military band struck up with its usual brassy clash and it seemed that all eyes swung in our direction to see who had turned up. What had happened, was that the local Mayor who was opening the show had stepped out onto a balcony over our heads as we arrived. That was the most memorable event at D & W Hanover.

CHAPTER NINE

IMPROVING THE STANDARDS
IN ROOF WATERPROOFING

Evode roofing were not alone with the problem of 'cowboy' image of roofing, the whole roofing contract industry suffered and were looked down upon by those others involved in construction like surveyors, architects, clerks of works, who had professional bodies intended to maintain training standards and who therefore looked upon roofers as 'unprofessional' with opinions that didn't count. To counter this it had been proposed by the Principal Trade Associations in co-operation, that an Institute of Roofing be established with objective of setting entry standards that called for evidence of established skills in the management of roofing contracts and of knowledge of the materials used. Young Cobbold, again keen to be in the thick of it with our Company got virtually all of our senior managers accepted as Founder Members. The Institute is and always was intended to give recognition to individuals for their experience so membership is a personal, not Company affair. One of the first tasks was to set up standards for the Institute's own examinations and to cause them to happen. The Institute is controlled by a Board of Governors and in 1982 when there were vacancies on the Board I was nominated and elected. The Board was structured as a set of sub committees dedicated to the main areas of administrative action and I ended up as a member of the Syllabus and Examinations Committee, during 1984. The original officers of the Institute were drawn from the "Grand Old Men" of roofing and having learned from my own experience that roofing is no mugs game and seeing how well they held their own in the cut and thrust of debate I felt honoured to be amongst them. I was quite surprised when I was proposed as the candidate for Vice Chairman at the annual election of Officers in 1986 and was elected as Vice to the Chairmanship of Ian Allan, a very charming Scot and like his race, down to earth, being outspoken but expecting straight talking in return. At one Board meeting I was banging on about something to do with training and others were nodding in agreement when he put in the comment "That is merely the opinion of an academic" bringing us back to concentrate on the needs of the persons faced with practical problems. Unfortunately halfway through his term of Office Ian died and the Chairmanship devolved upon

me early in 1988, being confirmed by election at the next AGM. Thus I saw office in the Chair for longer than usual. It is very pleasant being Chairman, you get some deference and everything is done or arranged for you at official functions, all you have to do is take your seat and control the Agenda. I had some years before been a member of a local Lodge of the Oddfellows and had "gone through the Chairs" there. They were a tough bunch with regard to order of proceedings in committee and Chairmanship had few fears for me after that. Also I had the benefit of serving on B. S.I and other committees thus having the chance to observe in action some very well known names in the Construction Industry. The Constitution of the Institute included the Office of President which had been held up to then by two of the Founder Members most active in the establishment of the Institute, these were Mr. Peter Grunger and Mr. Cyril Baker. During my term of office Sir Owen Aisher , the founder of the Marley Tile Company was President. He was still devoted to the well being of the industry in general and in particular to maintain this by attention to the knowledge and training of the man at the end of the line - the fixer. He was keen that a roofer should be able to achieve qualifications that would demonstrate his professionalism. The Institute had already established a regional structure to encourage better communication between members living remote from the Headquarters, and also to establish activities of local interest. Sir Owen initiated the idea of holding regular joint meetings of Regional and National Officers so that the chain of communication was complete. Sir Owen had known many of the British entrepreneur founders of some (now) large industries and was a most interesting man to talk to. In his own case he had in the early 20's heard of a machine for making concrete roof tiles that had been invented in Germany and sensed an opportunity in the rapidly developing South East. As he put it "I went with a chum in my old Austin tourer to Germany, bought one of these machines, loaded it onto the car, drove back and started making tiles." He had to educate the users in the proper ways of fixing and it became a matter of pride for a tiler to be an approved Marley Tile fixer. Also, Sir Owen's own Company could have confidence in the end result. In his day he held world records in ocean yachting and was keenly interested in wines from all areas of the World, but especially France and South Africa (where he had a factory) he used to delight in motoring across France mentally anticipating the fine wines that would

crop from the grape vines that he was passing. I once asked him if he had known Norman Grimshaw who had more or less founded the British synthetic upholstery foam industry and in reply I got yet another example of the working of the entrepreneur. It seems that on a visit to Africa Norman (son of a railway signalman) had come to the conclusion that the African, who was by now mobile with a bicycle, needed to have a comfortable flexible form of bedding that he could carry rolled around the cross bar of his bike. And from there, according to Sir 0. arose the beginning of volume demand for the flexible polyurethane foams. Anyway, I personally have Sir Owen to thank for his insistence that I should try South African wines. Since Chairmanship I have continued with involvement in the Institute's activities as a Governer, especially in the area of co-ordination of our Examination Regulations and Syllabus and the assessment of Examination candidates. In the U.K. we still seem to be a long way off encouraging and accepting the condition of "being trained" as a normal component of a career path. Government, employer and trainee too often regard it as a time waster. Beyond skill training, there is a need for a professional dimension of moral behaviour which is defined and disciplined by a Professional Body. Behaviour by some members of professions that we thought that we could rely on - medicine, law - shows that this isn't a sure fire way to protect the public but some sort of Registration Scheme for those offering to carry out construction work would at least give the ordinary person some measure of assessment of individual capability. Returning to the Tekurat story, this insulation product was 'launched' as a product of Evode Roofing in July 1978 and the sales force of that Company trained to sell it. Their efforts were re-inforced by the appointment of a Sales Manager for the product, a gent by the name of Andrew Beaumont-Markland. Initially our sales and marketing efforts were based on the methods used by the German originators of the product and used by their Marketing Manager Hans Henken. Hans provided another set of recollections on the state of Germany in the final stages of WW2. Commencing training for Naval service when he was first drafted, by the time this was complete German naval activity was more or less finished and Hans ended up in the army and in southern Germany. In the face of the Allied advance his troop seemed to be kept constantly on the move seemingly dodging engagement with the enemy. He said that afterwards he wondered if it had been the

Commanders intention to keep them safe by avoiding action as it was obvious that Germany was close to surrender. Walking through a village one day they were met by a Priest, pushing his bicycle, "Careful lads" he said "The Americans are just around the next corner" then, "Would you like me to try to negotiate a surrender?" He re-appeared later with an American officer and a few GI's to whom Hans and his comrades surrendered. When the unconditional surrender became known Hans was told he was 'free' to go home. How? Make your own way Buddy. So Hans walked, presumably scrounging food along the way, and was fortunate enough to be able to board a train for the last hundred miles. As he stepped off the train at his home station he found his parents waiting for him. How did they know? They didn't, but Hans's Mother had 'known' that he would come home and so every day they had waited at the station. Back to the product. Waterproofing a roof keeps liquid water out and adding insulation keeps heat in, but in the normal course of building use a lot of water as vapour is generated inside it as perspiration from us and as steam from bathing, cooking, washing etc. When this vapour hits a cold part of the building - like a window pane - it condenses back to the liquid form. Water vapour can also penetrate any porous material and if it then gets colder it condenses. Most insulants are porous being made from air or some other gas trapped in a matrix of fibres or plastics foam. It is the gas which provides the majority of the insulating effect and if replaced by absorbed water, which cannot escape through that layer of waterproofing above it, the value of the insulation is largely destroyed. In addition this "poultice" of water trapped in the structure can cause damage by corrosion of metals or the rotting of timbers. Hence an insulant which claimed to be self ventilating with regard to the removal of water vapour aroused a lot of interest. Not all in favour, some of our competitors were unable to believe, and said so. It was true that Tekurat did appear to go against some of the mathematically calculable properties of water vapour and its movement in ventilation channels. However, we know from direct experience that it worked, and that roofs that were wet became dry if covered with Tekurat. To find out how, we commissioned work by Professor Peter Burburry and Dr. K.M. Letterman both of the Department of Building Engineering at UMIST and this was eventually published by them during a symposium on Roofs and Roofing held at Brighton in 1987. The upshot of their work was that they discovered a previously unknown phenomenon that even on

an apparently still day there is across a roof surface a continuous fluctuation of air pressure so that small differences in atmospheric pressure occur between different locations on the roof. Although small, these could be shown by experiment to cause a sweeping out of the wet air from the ventilating channels. This caused a small loss of heat but compared to the loss through wet insulation it was negligible. The Marketing people in Germany had always worked on the idea that the water vapour was lost by diffusion but the maths were against this. The resistance to diffusion along a long narrow ventilation channel was too great to allow any realistic drying effect. On the other hand the viscosity of air is very low and only a little energy is needed to move air in bulk and by the expenditure of this energy the air plus its load of water vapour was removed from the insulation. The rising sales of Tekurat gave us cause for increased investment with the development of a separate company Tekurat Insulations Ltd. with its own Sales Force and product literature distinct from those of the original vendors

Evode Roofing Ltd. This all happened in 1981. The intention being to broaden the appeal of Tekurat to other roofing contractors, who naturally were reluctant to buy a product from a competitor, and establish it more strongly in the minds of potential specifiers as a product in its own right. Even at this stage we had in mind to manufacture the product in the U.K. Something that was going to happen sooner than we expected for on the very day that we were presenting the new sales literature to the public, the Hapri factory in Hamburg burned to the ground and production ceased. A week-end intervened before I learned this and during that time Anthony Cobbold had been frantically busy and managed to identify a potential source of manufacture in the U.K. This was in a small factory on a trading estate near Wem run by a Mr. Horbury and family. Tekurat as first made had been in the form of panels, the roll form came later, and for reasons which are now unknown Mr. Horbury had acquired a small scale polyurethane foam producing machine and a press in which the panels could be moulded - if we had the moulds. Because of his own activities he already had identified suppliers for the types of raw materials that we would need. So here we were having newly launched to the industry a product that we no longer had available! The originators of the product Hapri in Hamburg were sceptical of our ability to make the panels -

remember they had this complicated set of vent channels built in - and so were naturally reluctant to risk letting us, make their product and put its reputation in Jeopardy. There was no chance of getting metal moulds made in a hurry so Les Willmore and myself made some timber moulds in my garage at home, and then using the Horbury's Kit made a few panels which were an exact enough copy to show that we could, given the chance, keep some sort of production going. Les Willmore was Technical Service Manager of Evode Roofing and Tekurat at the time and a character in his own right, deserving a more detailed mention which he will get when the story allows. Mr. Cobbold took our panels to Hapri who were surprised at our capability and gave us the go-ahead so we needed to set up post haste a unit that could make thousands of square metres of the stuff. Here once again history now comes full circle in a way. The trading estate at Wem and one nearby at Bomere heath were the home of a lot of small engineering specialists with a flexible approach to the type of work that they did, in other words a lot like the works of Joshua Jackson embedded in Walsall of old. Nowadays many have moved into out of town industrial 'parks' under the pressure of redevelopment and these are usually the places to go if you want to have made a 'one off' of slightly unusual character. We also found in Ellesmere a fabricator of items from Aluminium and Stainless Steel from whom we managed to get useful quantities of moulds for our product in rather less than a month. Remember that as each panel of product was made individually we were talking about thousands of moulds if we wanted a reasonable rate of production. Les, ex R.N. and ex R.N. Special Services, of persuasive character was just the man to badger that supplier into giving us priority. In the mean time what stocks we held before the fire were diminishing and forward orders were accumulating and it soon became necessary to double the productive capacity held by Mr. Horbury if we were going to avoid a period with a total lack of product. On the estate there was an engineering firm capable of making the type of press that we needed to hold the moulds and could supply quickly. Also on the estate was a paper converter who made all our packaging requirements. Of course we had to duplicate all the plant used in the process, mixer head, pump, storage vessels, the lot and one of the younger Horburys and I cruised around the polyurethane 'mainland' which then comprised towns on the outskirts of Manchester and startled one or two salesmen by paying there and then for equipment on

the promise of delivery 'tomorrow'. Some of it was quite expensive and they weren't used to getting a sale without fairly protracted negotiations. In the meantime, Les was telling our harassed mould supplier that we now wanted twice as many as the number first thought of. And so the Horbury's Company, P&D Products Ltd and Les and myself got into production of Tekurat in sufficient quantity to stave off disaster until the Hapri factory was back in production, which was a period of about nine months. After a frenetic start, 1981 closed fairly calmly but not without an example of a 'Cobbold' morale booster. It had been a good year for Evode Roofing, we had already planned our Company Conference for November when out of the blue senior managers were called to attend a special conference at Windsor. When they tried to find out why, they only got evasive and shifty replies usually with the implication that something serious was afoot. On the morning of the conference Mr. Cobbold opened the proceedings with the words to the effect that circumstances called for a meeting of managers before the November Conference but that the full message would be delivered by Mr. Roger Willetts who rose and started a prepared speech from notes about Company performance and after 30 seconds or so threw the notes down on the floor and said "This is a waste of time - we might just as well go to the races gentlemen, and there are two coaches outside waiting to take us to Kempton Park". And so we did, a slightly bemused but relieved gathering climbed on board to the course. Willie Schumacher was riding that day and his wife was watching events from the balcony which ran in front of the Boxes, one of which had been reserved for our use. I stepped forward to get a good view of the course when I heard Roger's voice call from behind "Mrs Schumacher". When she turned he pointed to me and said "Have you met my father?" taking a snapshot to capture the event. He had got into the habit of using this form of introduction if I sauntered onto the scene at social gatherings but once at a restaurant in Berlin it led to a lot of puzzlement and too-ing and fro-ing of interpretation and I think that stopped him doing it. In our business area of roof waterproofing some significant changes had occured since the days when the increased use of high efficiency insulation had contributed to the early failure of the existing bitumen felt based materials for flat roof waterproofing. Felt manufacturers had not been idle and thinking that increased strength was the answer to the problem had started to use some of the high tensile strength synthetic fibres in the manufacture of the fabric

'carrier' that was coated with bitumen to make roofing felt. This culminated in a justly famous product developed by Brian Hulton of the Anderson felt company in Manchester and known as "Anderson's H. T. 350". Felt making and many other coated products required a base fabric that had more or less the same strength in all directions and was easy to slit to a wide variety of widths, either in the original state or after coating. A tissue built up from fibres laid in a random pattern across each other and then bonded at the cross over points was often the best way of getting these properties. In early tissue forms of fabric the bonding agent used was sensitive to water which wasn't the best thing to have in a roof waterproofing product and if the tissue was made so thick that the fibres were locked in place by simple frictional interaction then they were very difficult to impregnate completely with bitumen and the end product could contain trapped air pockets. These also made the end product vulnerable to deterioration on exposure to weathering. Andersons took advantage of what was then a new technique used by the makers of non-woven textiles which used a core of fibre such as a polyester coated with another easily flexible polymer such as Nylon. When a web of such fibres randomly laid is subjected to heat and pressure the Nylon fuses at all the cross over points and gives a finished fabric of unusually high uniformity of strength and of high water resistance. Andersons chose as their fabric one with a weight per square metre of 350 grams, hence the 350 bit of the name, and this weight of polyester gave an end product roofing felt that was very impressive in its obvious tactile properties. It could not be torn and was very resistant to puncture even by a sharp object. Stretched across an open frame a demonstrator could invite members of the audience to jump up and down on it like a trampoline without making a tear or a puncture. The introduction of such properties into roofing felt led to a revival of interest and confidence in that method of waterproofing and began to divert attention away from The Evode System in the marketplace. Felt makers had something new to offer, what had we got? In the normal course of our development work and in response to information gathered by technical service work we had looked at several possible improvements in liquid roof coatings systems including the inclusion of rubber and using different reinforcing fabrics, especially glass fibre based fabrics. Glass we went off, compared to Jute fibre because the woven fabrics, the only one's with sufficient 'drape' to bed down smoothly on a coatings system, tended to

behave like glass when subjected to strong rapidly applied forces. The nature of buildings is such that forces that build up due to, say, thermal expansion or changes in loading are resisted by frictional restraint initially and then relieved quite suddenly. These so called 'slip-stick' movements caused some building materials to behave in a puzzling fashion in service and in the case of glass fibre, in those parts of a roof construction that could allow such movement, say where the roof deck crossed a main supporting beam, a long, clear cut, crack through the waterproofing layer could appear. Thereafter we always included in our test programme a simulation of 'slip-stick' movement by modification of a device that had been devised originally for testing building sealants. Later on, it was realised that regular cyclic movements could be just as damaging, in the long run due to fatigue failure of the roofing membrane after repeated flexing. We had since the mid 1960's been experimenting with mixtures of bitumen and synthetic polymers in fact at one time or another we must have used damn near every polymer under the Sun. It was from this work that a number of saleable products matured - Flashband - Vertilast, which was a rubbery sealant for large vertical joints in buildings - an extruded strip to form compression seals between precast concrete building units - and it had also given us the capability of making liquid roof coatings with rubbery properties. Unfortunately these coatings were more expensive to manufacture than our traditional products and our tests showed that using the normal fabric reinforcements such as Jute there was not enough increase in performance to warrant increasing the guarantee period, which would have warranted an increase in the applied price. At around this time Les Willmore's son "Young Les" had, after completing research leading to a Ph.D., moved into the field of fibres, their conversion to fabrics and the end applications of those fabrics. In co-operation with "Young Les", whom we were fortunate to have in the family as it were, we carried out tests on roofs using fabrics of different fibre and construction. Some words on the use of Jute fibre are in order because in some respects it sounds 'old fashioned' 'low technology' or plain out of date. However the Jute fibre is derived from a natural polymer cellulose and had some properties not easily matched by synthetic polymer fibres. It has very good heat resistance and it stays flexible at low temperatures, most coatings will have good adhesion to it and the tensile strength, although lower than some synthetic fibres is more than adequate for roofing membranes. So

that in a number of important aspects of behaviour Jute was a hard act to follow in this area of use. There was room for improvement because the Polymer comprising Jute is subject to gradual degradation and loss of strength on exposure to weathering and this process carried on slowly even when the Jute was bedded in bitumen. Jute fabrics also tend to be of a high weight per square metre and thicker than competing synthetics to give the required strength and this means that for the complete impregnation and coating of the fabric a considerable volume of coating per square metre was required. This did not matter when the performance of the bitumen coatings themselves led to a slow erosion of thickness on exposure so that a generous initial thickness was needed to give an acceptable lifetime of the complete assembly. But the Evode System coupled with the 'image' of Jute and with a five year guarantee was beginning to look a bit dated during the late 1970's compared to the newer, stronger roofing felts incorporating modern synthetic polymer fabrics and giving a 10 year guarantee. In its day the Evode 5 year offer being unequivocal was a powerful sales advantage over the competition. It was not a guarantee of the product itself but effectively a 'free maintenance' offer to keep the roof waterproof by repair if necessary. At the end of the 5 year period a complete 'revival' specification (simpler than the original specification) could be supplied and this usually allowed the extension of the free maintenance period for a further five years. Our records showed that many customers had bought 'revival' time after time and some Evode roofs had given service for 25 or 30 years. But there comes a time when even loyal repeat business fails to fund expansion against the apparent properties of the new product and a straight 10 year guarantee. Our laboratory work had shown that the inclusions of certain synthetic rubbers into our liquid coatings greatly retarded the rate of breakdown on weathering and by a proper selection of coatings, the sequence in which they were applied and the reinforcing fabric a 10 year guarantee could be offered. This selection process was carried out against the challenge of real weathering on roofs of differing basic construction so that at the time when we were ready to 'launch' we actually had 10 years real weathering experience of the systems offered and so a complete confidence in our 10 year guarantee offer. The product was launched under the name of HYFLEX at the Company Conference in 1982 with emphasis in the supporting sales material on 'high performance' and its high strength

properties. By now the Building Research Establishment had arrived at a test method which clearly demonstrated the potential for longevity of the newer materials coming onto the market and we got Hyflex and the older Evode System tested by them, the results clearly showing why the older system had performed so well and why our expectations for Hyflex were realistic.

CHAPTER TEN

MORE NEW PRODUCTS FOR EVODE ROOFING,
NEW STANDARDS B.S. 5750/ ISO 9000
SALE OF THE COMPANY - TARMAC TAKES OVER

We always had the ambition of setting up manufacture of Tekurat in the U.K. and from 1985 began the search for suitable factory premises. This search disclosed the sad state of parts of British industry which have not improved during the succeeding decade. We were looking for a factory of considerable length to accommodate the production process which of necessity had to run in one straight line because we were making a rigid product in units of 10 metres length, and not until the very last operation could it be rolled up and turned aside to go into stores. We needed something not far short of 100 metres long in order to have room to bring services to the start and finish of the production line. Mr. Cobbold and I visited some potential locations in Flint, Coventry and West Midlands which offered the two types of buildings of that size, the one type was new-build and the other refurbishment of some of the older factories left vacant by the demise of Midland Industries, particularly the Motor Industry. It was very sad visiting these as they could have in them all the metal forming machines that had been their beating heart just as the last shift had left them. Veritable 'Marie Celestes'. Sometimes there was a sad little notice such as 'Curly Smith had the honour of striking the last pressing in this factory'. These old premises were being refitted to a very high standard and as some of the expenses had already been met - land, framework, services, access roads - they ended up a lot cheaper to rent than new build. Not many were really built on the modern transport network of motorways, o.k. some had a canal running alongside but a motorway connection could be a few miles away after some narrow but busy roads. Many new build factories were in 'estates near to a motorway junction and sometimes associated with a new town development with a Development Corporation usually on the site of former industrial prosperity now defunct. A new town meant that there was within easy distance a source of employees for the plant and on the occasion that someone had to be imported for spatial skills there was to hand modern attractive housing and modern shopping malls and leisure facilities. The time was very much a lessee's market and sometimes meetings with

potential lessors was embarrassing as they chopped the asking price perhaps two or three times during a meeting. They had property coming out of their ears with existing occupying businesses folding everyday, leaving them with even more on their hands. On one new estate near Wolverhampton, the day after our visit would see the roofs being lifted off new unlet buildings in order to avoid paying rates. Gradually we homed in on Telford which had the building and services that we needed. Then, organisations like Telford Development Corporation were offering reduced rentals for the first few years as well as a rates holiday for up to 10 years. These incentives served to make the new build properties competitive with a refurbished factory, and it was to Telford that we went, which of course was a very easy distance from Stafford, our factory being by coincidence in the area known as Stafford Park. With a factory location now settled there was an increase in to-ing & fro-ing between Stafford and our partners in Hamburg, their contribution being the manufacture of the machinery, supply of formulations and assistance in the training of key personnel. This commitment to full scale manufacture meant that sales through Evode Roofing alone would be unlikely to satisfy the growth ambitions of Tekurat Insulations Ltd and a separate sales force was set up by the Company with the aim of selling to other roofing contractors as well as Evode including freedom to compete for contracts. A class of contractors known as Participating Contractors was created who enjoyed some advantage such as sales support and special deals in return for loyalty to a specification once established. This was not an easy situation to hold because the supply of building components was then intensely competetive. The architect advising the building owner may be satisfied with the merits of Tekurat and specify its use, but with a job of any size or prestige the salesmen of other insulation manufacturers were going to do their best to 'switch sell' getting their product substituted for Tekurat in the specification or at the least getting their product in as a separate competing specification. Thus our sales force could not rest on their laurels, every job where Tekurat was specified had to be defended until the order was placed. Participating Contractors were invited to the annual Company Conference and expected to hear something new and good about the product such as a new approval by a National Authority like the British Board of Agreement or a technical solution to perceived problems of using it in conjunction with new types of roof waterproofing materials or roof

decking. The technical service support personnel were responsible for supplying this contribution to maintaining and increasing the confidence of the user in the claimed performance features of the product under all conditions. This of course is particularly important for what was , in the U.K. a new product. An attractive and famous venue was usually chosen mainly to act as a lever to get as many Participating Contractors along as possible. One of the first was at 'Gleneagles' where as an incentive to contractors the Tekurat Globe Trotters club was announced, whereby the amount of product a contractor fixed, was associated with a 'points' system with the chance to accumulate enough points to claim holidays in various parts of the World. At the Tekurat Conferences the emphasis was very much on sales and selling. At Evode Roofing there was more emphasis on the team work needed to manufacture, sell and supply the Company's products and so these meetings were always known as Company Conferences and the working sessions included presentations on all aspects of the team and any workshop sessions would have teams made up so that all parts of the business were represented. With Evode Roofing there was always an element of reward for a years work well done, targets achieved etc. and the degree of liberality varied a bit depending on just how good things had been. Evode Roofing reached its pinnacle of conference ambition in 1983 with a trip to Jersey where the meeting was held at the Pomme d'Or Hotel in St. Helier and at times the proceedings were given a distinctly Gallic air as, for example, when it was Roger Willett's turn to speak he was wearing a beret and a striped polo neck jumper and rode into the auditorium on an ancient bike festooned with strings of onions. Of course this was a Company conference once again, and the task of transporting everyone overseas was delegated to the travel firm Page and Moy who did a perfect Job of it without losing anyone along the way. Les Willmore had been delegated to take all the hardware needed by ferry in a Company van and he and I took advantage of this and the free day that was built into the schedule and did our own day trip around the island's coastal scenery. There is only one registration letter for cars in Jersey, the letter 'J', and apart from visitors all cars had a J number. We were told that the numbers were recycled as vehicles were scrapped so that the use of the solitary 'J' as the registration letter could be maintained. Not to be outdone, Tekurat Insulations Ltd. held their 1985 Sales Conference on Guernsey in the St Pierre Park Hotel at St. Peter Port.

Again the Gallic atmosphere was in evidence with a French theme dinner as the main diversion followed by play in casino facilities specially provided for the conference and its guests. The years '83-'85 saw an increasing load of activity on the product development scene. Evode Roofing did not employ its own research and development facilities. We had a laboratory which was used for technical service support work and the testing of new products but we only had as direct employees, myself, Les Willmore, Technical Service Manager and one laboratory assistant. It was up to me as Technical Director to scan the technical press for new product information on the one hand and on the other to organise a follow up of any ideas of our own. The first source of new products involved visits to the manufacturers and assessment of their quality systems plus visits to sites where the product had been applied and assess its likely performance. If things looked promising it was then a case of tentative negotiations to get an idea of the terms and conditions under which we could use it and if things looked promising in commercial terms, to arrange some trial applications in the U. K. For our own ideas we had to find a suitable sub-contractor to undertake the laboratory work and eventual manufacture. For historical reasons our first port of call as sub-contractor was Evode Ltd, especially for liquid coatings. Another source of new ideas was of course feedback from our own sales force and contracts teams. Any criticisms they brought to us were investigated as sources of product improvement. The bulk of this work in management terms fell to the lot of Lee as far as amendments to existing products were concerned. There was no shortage of resource through the services of potential suppliers and the 'know how' obtainable through institutional and Trade Association membership. The problem was to bring it together into a commercial package on the time scale needed for the product to be new or at least topical when launched. When you bear in mind that at this time I was involved with the following companies in the roofing field as technical director - Evode Roofing Ltd, Tekurat Insulations Ltd, Stafford Roofing, Evode Joint Sealing Ltd, British Roof Mart, which between them covered every aspect of the business from the merchanting of materials through to slating and tiling there was no way that an ordinary company could fund direct research into all the topics of interest, it was a matter of informed selection from what was already going on. Fortunately our association with the Evode name and our general business attitude

encouraged suppliers to take us seriously and when they discovered that we were the only roofing contractor in the U.K. that operated on a National basis and employed its own sales force they usually became very serious. British Roof Mart was an idea developed by Anthony Cobbold. We had from the days of Dr. Simon supplied our liquid coatings to other roofing contractors and as we developed a series of our own roofing depots around the U. K., usually on small industrial estates, it was natural for local roofing contractors to ask if they could buy from our depots instead of ordering from Stafford and then to ask if they could buy from us other bits and pieces, used by roofing contractors that we already stocked for our own use. Thus the concept of the 'Trade Counter' was born originally, run by existing local staff and open during limited hours at the start and finish of the working day. The break even point needed to employ a full time store keeper proved to be lower than we expected especially when it is considered that this person looked after the stock control and ordering for Evode Roofing as well, thus improving the quality of our own site supply. The existence of these full time Trade Counters was publicised by special events at their opening and at intervals subsequently but it became obvious that to realise their full potential a new name was required. Suppliers of other branded roofing products were naturally reluctant to have their materials distributed by an apparent competitor, Evode Roofing.

The name British Roof Mart was selected and after some struggle by Anthony, registered. Apparently some special conditions had to be met before a company trading in a particular field could have the monopoly of the word 'British' in its title. British Roof Mart became merchants of effectively the whole range of roof weathering materials and some associated roof furniture. In the other parts of the business our search was mainly for new ideas in liquid coatings, insulation products and the scope offered by the new roofing felt manufacturing methods. With insulation, the decision was made to locate the Tekurat factory in Telford, the plant being built and supplied by HAPRI in Hamburg and this was in full production early in 1985. The sale of Tekurat was initially associated with the Evode Waterproofing System but when Tekurat Insulations Ltd was formed we became more aware of the potential for high performance felt systems which virtually all the preferred contractors were using over

Tekurat. We began to make Tekurat HT where the layer of felt carried by the product was clearly a polyester based material and this counted towards and contributed to the effect of the subsequent coverings. Although HYFLEX had demonstrated that a liquid coatings product could have a performance competitive with other 'high performance' products it wasn't long before Evode Roofing, now deprived of its monopoly of Tekurat, started to complain of its perceived disadvantage in not being allowed to offer a 'pure' roofing felt system over Tekurat. The forward thinking of the time was not to limit the improvement of roofing felt to the effect of using stronger carrier fabrics alone but also to explore possibilities for increasing the durability of the bitumen used in felt manufacture. The factors which reduced the durability of bitumen were temperature and the ultra violet component of Solar radiation. Low temperature in particular causes bitumen to become very brittle so that when movement occurs it splits. High temperature can cause bitumen to soften until it flows sometimes enough to disrupt the waterproof layer. Ultra violet radiation is very energetic and promotes chemical reactions in the bitumen so that it hardens and breaks down into a dark brown powder so that the waterproofing can wear out due to gradual surface erosion. The performance of bitumen in this respect can be improved by blending it with certain polymers. We had done a lot of our own work on such blends as part of the background research for Flashband so we were in a good position to make a choice that would give the best chance of novelty for Evode Roofing. We chose to use a blend of styrene/ butadiene copolymer which even at very low temperature imparted tough rubbery characteristics to bitumen. Whilst Britain had been at the forefront of development in the use of polyester fibre carriers for felts it was other European countries that had explored polymer modification as well, notably Italy, Spain and Germany. Because of our position in the industry we had been on the calling list for several European manufacturers one being the Spanish felt manufacturers DANOSA whose export manager Senor Sal. Vivas had called on us in the mid 1970's, an acquaintance that was renewed by a chance meeting between Sal and myself at a Convention in Houston. We were by then needing a thick elastic underfelt to use in conjunction with HYFLEX and Sal in co-operation with Les was able to meet this need most efficiently. Later this contact developed into the supply of a product range which we branded 'COVERGUARD'.

Coverguard had for its time several features which have since become commonplace. It could be 'torched - on'- applied by softening the rear face of the felt with a gas torch - the hot rubberised bitumen showing excellent adhesion to most building surfaces. The weight of the polyester fabric in the upper layer was fixed at 250 gm/H2 compared to 350 which was common at the time. This change allowed the finishing layer to be applied much more deftly and securely into the awkward corners of a roof surface, the 'detail work' as it's called, and as most roof defects develop at the detail work the added reliability of Cove rguard could be developed in the 'sales pitch'. It is the sales pitch which has to grab the clients attention, it is developed later by more concrete evidence like visits to inspect roofs of some age to get direct evidence of performance but that first pitch has to have something which says 'new' and 'memorable' to the client. In the early days of Evode we used sales presentations 'in store' or at exhibitions with a demonstration of the product. There were and probably still are professional self-employed demonstrators who moved from product to product. The demonstrators pitch has the task of building up and keeping a crowd of punters so his message has to say 'interesting' and 'lets have a look' over the heads of the crowd that he's working to pull in the passers by. English Waxes used demonstrators at exhibitions such as Ideal Home and in later years the same guys would sell Evo-Stik Household adhesive. One used to come to me with ideas for new polish products and told me some of his methods. In front of his pitch he would have half-a-crown stuck to the floor with Evo-Stik and if a passing punter tried to pick it up it gave him the excuse to extol the virtues of the adhesive and start his crowd. Evo-Stik was then just over 2 shillings a tube (10p) and he had a long wooden paddle with the change for Half-a-crown (12+a half p) stuck to the end of it. When someone at the back of his little crowd offered half-a-crown to buy a tube he would put the tube on the paddle and hold it out to the punter saying 'Here's your change Sir' which would raise the laugh he needed to get wider attention and get things moving. With polishes he kept one or two old table legs which over the years had been brought to a perfect parina of 'real wax' shine and demonstrate the ease of use on these. He told me that on one occasion as he was getting into the stride of his 'spiel' a man on crutches with a heavily plastered leg started to push through the crowd. "Hey" he says "you know that non-slip polish you sold me" Pause. Pregnant pause is probably the word for it. "I want another tin,

it's marvellous". Apparently the damaged leg had nothing to do with floors, slippery or otherwise. So by 1986 we had our "own" branded system of polyester reinforced rubber modified roofing felt. Sourcing it from Spain gave us prices that were competitive and a delivery from a dedicated stock in Spain direct to any of our depots. 'Coverguard' was 'launched' at the Company conference in November 1986 when the promotional image used was that of a Guardsman and the meeting was entertained before and during the conference dinner by the band of the Welsh Guards complete with the Goat mascot. The launch was supported by hand-outs that reinforced the Guardsman image - toy soldiers and a linen cloth printed with a picture of a red coated guard. Marketing in all it's aspects had long been a strong point of the Evode companies and no-one embraced its potential more closely than Anthony Cobbold, every event such as the opening of a new branch of British Roof Mart was attended by a 'happening' that publicised its arrival. With B.R.M. these events were geared to the interests of the smaller units in the industry, usually the self-employed sub-contractor and for example at the opening of the Glasgow Trade Counter in 1987 the Darts Champion Jockey Wilson challenged all comers and another memorable and much beloved Roof Mart promotional item was the 'Real Ale' cans of which were given to Trade Counter customers. With the British Roof Mart roofers merchant concept established, we now had an outlet for other new products if we could find them. British manufacturers of roofing felts and liquid coatings were readily available in the normal course of business, as were roofing tiles, in fact the management of B.R.M. were encouraged to meet the stock requirements of its customers even if it meant competing (apparently) with other interests in the Evode Roofing companies and whilst B.R.M. still acted as the stockist for Evode Roofing it also sold other liquid coatings and roof insulation other than Tekurat. The main purpose of our attendance at overseas exhibitions and conventions was to seek potential new products. Through our association with HAPRI in Hamburg we could find out what products the stockists in Germany favoured and what products were liked by German roofers. Visits to Dach and Wand, the annual German roofing show gave us an overview of the whole European scene as it attracted exhibitors from all over. For me the impression from D&W was that liquid coatings received much more serious attention than they did in the U.K. and had a widespread presence. A memorable D&W

visit was the one by Les and myself to Berlin in 1983 in the days of the 'wall'. We were taken to Berlin by a German roofer Gunner Koepcke and owing to a misunderstanding between myself and the travel agent we did not have the permits to cross the border into the D.D.R. so we were detained by the border guards until that little problem was sorted out. Then off again threading our way through the Trabants but keeping strictly to the speed limit for it seemed that West German transgressors were regarded as a bountiful source of fines for the Eastern economy. There was still plenty of Russian Army presence in the D.D.R. at that time and we had close views of tanks and soldiers as we entered Berlin and drove through the suburbs. We were met by our associates from Hamburg who were exhibiting Tekurat at D&W, possibly because it was in the Old National capital, this seemed to me to be the most brilliant show of all the D&W's I'd been to. Brilliant both in the sense of festivity but also in the number and scope of the exhibitions. Possibly people were looking for the chance of cocking a snoot at the Russians. After a day at the exhibition hall we went into town for supper, and it was a fine evening in May and I was startled at the midnight activity of Berlin, street cafes still full of diners, street entertainers in full swing and a throng of people walking up and down the Kurfursten Damm a warm, well lit, unforgettable scene. I was with Hans Henken when the party split up and we started to walk back to our hotel which was not far off the Ku' Damn. I have suffered from angina since 1965 and I suppose the food and fatigue had their effect so I had to stop and said to Hans that I wanted to take a taxi. No, the walk would do us good, he said so I pressed a little further. 'It's no good, I must have a taxi', 'The walk will do you good', 'No, I'm in pain, I shall die'. Suddenly, in the voice of one who had been there and done that , Hans barked out, 'You WILL NOT DIE, THAT is an ORDER! HEIL HITLER!' getting a few startled looks from passers by. After that we got our taxi. From our contacts with German roofers at D&W and through Tekurat in Hamburg, we were able to form an opinion on the type of roofing that was favoured out of the modern high performance selection available. Strangely this proved to be one of Italian manufacture, a product known as VIAPOL, a blend of bitumen and a polypropylene polymer. Such products had begun to make a name for themselves in the U.K. and to have an 'own brand' one for B.R.M. would have been very nice. Of course you can never do anything at once and we often found that by the time we got in

contact with the makers of some of these products that were growing in popularity, it was already too late and they were well advanced with U.K. negotiations. This proved not to be the case with VETROASFALTO, the makers of VIAPOL and I went to visit them at their factory near Milan. It turned out that VIAPOL had been founded by a German in 1936 - a Herr Breitner - but more recently they had been the first to exploit some polymer technology that had originated in Italy and made available special versions of the polymer polypropylene that could be blended with bitumen. When processed into roofing felt it gave a product with much improved resistance to the effects of sunshine and VETRO exploited this product in the Eastern Mediterranean Countries which they thought were 'Naturals' as a market for something designed to resist sunshine. They were a bit surprised at our interest from Northern climes but similar products were getting a foothold in the U.K. because of the ability to apply them by fusing with a gas torch there being no need to have boilers full of molten bitumen on the roof to be used as an adhesive. They could understand the logic for us adding such a product to our range and a visit by them to Stafford was set up to further negotiations. This took place but there was a shadow looming over the Evode Roofing Companies that we were not aware of and which eventually terminated several interesting negotiations like this one. In the long run, the flight was the most memorable feature as it was the first time that I had flown over the Alps. The flight was with Midland Executive in a small twin turboprop craft, I suppose about 18 seater. During the evening return flight we were served with the finest in flight meal I can recall. The seating was arranged quite like a first class rail carriage with four around a table and conversation in several languages flowed freely and interestingly after a few glasses of wine. The hostess told me that most evenings were like this, Jolly occasions just like being the hostess of a private dinner party at home. It was June, and the surprise of some of my fellow travellers as they stepped into a June evening light drizzle at Birmingham after leaving their native Italy in warm sunshine, a couple of hours before, was loudly expressed. Earlier that year we had had a visit from Herr Alfred Ansorge the principal of a company named Anke Plast GmbH, manufacturers of roofing felt using bitumen blended with rubber or other modifiers, hence the interest to us. I was particularly interested in a product of their coded 'K5' (Ka-Funf) which was a very heavy duty 5mm thick torch-on roofing felt. Herr

Ansorge was making his first visit to England when he came to us and it transpired during our conversation that he had been nervous of the reception he might get because he came from an ex-enemy state. He had been too young to see regular war service but as a schoolboy cadet, had been required in the later stages of the conflict to assist local anti-aircraft and searchlight batteries. He told me that during the school day they were taught that the British were their cousins and then at night he would ponder the question, if those up there are my cousins, why are they dropping all this shit on me? His factory was at Gevelsburg, a town not too distant from Dusseldorf, about 25 miles. Les paid him a visit first of all and from this it became clear that his main interest was to supply complete felt making plants and his own felt making activities were to some extent a sideline which were useful in demonstrating that his felt making methods really worked. Because of our interest as users of felt both in roofing contracts and the manufacture of Tekurat (in 1984 we were already using something like 300,000 M9a year of felt for Tekurat alone) it was decided that I should visit Anke-Plast also, as a felt making plant could fit into a 'vertical integration' scheme. I was also interested in having a look at work carried out with K5 as well, as it was being offered as the ultimate one layer repair system for worn out felt roofs. The plant that Herr Ansorge used as his demonstration model was a complete and in some respects novel (by the standards of the time) production unit from receiving the molten bitumen from road tankers to palletising and shrink wrapping the finished rolls of felt. Bitumen tends to harden when heated in the presence of air so Alfred had arranged his main storage tanks to have a blanket of nitrogen in the space over the bitumen and what is more, his plant included the set-up needed to make the nitrogen from air by chemical removal of the oxygen. The inclusion of rubber in the bitumen coating meant that it stayed sticky and difficult to handle for a much longer time than a regular bitumen coating so to kill the adhesion problem, a thin film of polythene was applied to one face which then stayed on the product until it was applied when the use of the gas torch fused the polythene into the mass of felt. This in itself wasn't novel but the Ansorge plant was the first time that I had seen the polythene used for its waterproof properties as well, allowing rapid cooling of the product with water so that the production process overall could be speeded up in comparison to older types of plants. In fact Alfred had a speed meter built into his plant which

showed the progress of the felt through the plant in kilometres per hour. Thus driving home to the observer the capabilities of the plant in everyday measure. We visited a factory where K5 had been used to repair the roof of the main finished goods store. On the way, Alfred kept pointing out areas that had been 'destructed' by bombing during the war, it seemed that almost the whole of that industrial heartland had been flattened. One of the older buildings still prominent and standing, was a brewery so I pointed out to Alfred that as we had left the brewery standing, we could not be complete barbarians. Our site visit was a cigarette factory, mostly brand new because the original had been 'destructed'. We were to meet the chief engineer, he whose factory had been 'destructed', on the roof and as he stepped out of the stairhead Alfred said with a smile to me "Tell him you were in Bomber Command". As it happened, at that moment a light monoplane flew over and the engineer pointed to it. "Achtung Schpitfeuer" he shouted with an ironic humour that I found typically Germanic and well matched to the Black Country humour of my own background. The K5 on the roof was in my opinion not as great in sales appeal as I had hoped had we been trying to sell it alongside the Evode System, Coatings systems usually give a very smooth final finish free of prominent overlap seams and looking continuous. (Dr Simon used to use the expression 'monolithic'.) In contrast the 5mm thick K5 had very prominent overlaps which clearly marked out the black colour of the thickness of the bitumen mass. The prominence of the seams also caused rainwater to be ponded in areas of very low slope, and I felt that the average British architect would not have been much impressed by such a finish on a new roof that was costing his client a fairly high price per metre. The K5 opportunity wasn't followed up, but in the liquid coatings field we had a discovery that we did exploit. Mr. D . Winterbottom, then Financial Director of Evode plc, had visited Dutch State Mining (D.S.M.) in Holland over negotiations involving the supply of polyester resins for one of the Evode subsidiaries. During his visit roofing had been mentioned and this uncovered the existence of a product called Triflex, a liquid roof coating using a very flexible polyester resin made by D.S.M. This was a chemically cured system giving a very tough finished product which at a price overcame some of the problems inherent in other roof coatings. Although Triflex was made by a company outside D.S.M., the latter at the time had a joint interest in promoting the sales both of their resin and

Triflex. It seemed to me that Triflex was too close in properties and ideas to our Hyflex product to form a sensible addition to the product range of Evode Roofing but one of its uses was on balconies and walkways in multi-storey flats, being particularly suitable because it set rapidly and resisted traffic. Our joint sealing company handled many contracts for the re-sealing of this type of building where the seals around window frames or between the cladding panels had failed and I put it to them that balconies might be a natural add-on activity for them. They were also involved in sealing multi-storey car parks and Triflex could also be used for the overall waterproofing of such decks. In the event Evode Joint Sealing Ltd. did exploit the product even to the extent of getting involved in some real roof waterproofing jobs. Evode seemed very reluctant to come to a close relationship with the makers of Triflex and eventually Mike Parry who was manager of Evode Joint Sealing took the plunge and in co-operation with the manufacturers set up a separate venture - Triflex U.K.Ltd. There were some clouds forming just over the horizon, the implications of which were hidden from most of us in the short term. One which affected me personally was the sudden increase in interest in "Quality Management" in the 1980's and some insistence by purchasers that a supplier should generate proof of quality by means of a documented inspection procedure. Eventually this requirement for documented quality performance got down to the murky levels of the construction industry and even began to be heard of amongst roofing contractors. Not much was known about Quality Management as a separate art outside manufacturing industry and the usual response of a Board was to assume that it was something technical and therefore the province of the Technical Director. As there is usually only one Technical Director on the Board he is outvoted and gets the job, which is what happened in my case. Without getting too deep it is my own view the Marketing guy who most urgently needs consistent quality in operational terms and therefore needs the authority to audit for its provisions and get something done if it goes off the rails. Quality Management has to have that simple aim of satisfying the customers expectations and if it gets too complex at this crucial interface then it won't work. Anyway, I had to start documenting our working procedures so that they could be applied in an invariant fashion across the Company. This was to prove to be the start of a major change in my career. The construction industry is perhaps more than most a

hierarchy of subcontractors and historically the starting point of what became the British Standard. (BS 5750) for Quality Management, published in several parts, some advisory, the rest definitive, stating what would be the legal requirements of a Quality Management system when one was built into the contract conditions. B.S. 5750 was written around the perceived requirements of a large purchaser such as the Government placing orders on a manufacturing industry such as Warplanes and Munitions. The long term aim was to replace the existing systems of testing and approval by one universally applicable management system which ideally was simpler because it put the responsibility for getting things right firmly into the hands of the person doing the job and the responsibility for control into the hands of the purchaser via his procedure for selecting subcontractors. Of course all the existing systems of quality management were somebody's bread and butter and the tendency was therefore defensive and BS5750 where unavoidable was run alongside the existing systems thus being a cost increaser instead of the intended cost reducer. As systematic quality management was introduced into 'new' areas of industry and employment the first generation of consultants sprang up to explain the British Standard to a largely bewildered construction industry. Unfortunately many of them came from areas of industry with proud records of getting it wrong, the counteraction to this being overkill intensity of inspection of every component at every stage. O.K. there are some occasions like flying in a commercial jet when you like to feel that out of every 1000 rivets used in it at least 1010 have been tested and passed the spec. But the construction industry is based on well founded components and processes which like Portland cement, bricks, plates, pipes etc. formed the foundation of the Standards industry, so there were already manufacturers of these components to whom by proper wording of the order documentation manufacture to the British or other accepted standard could be legally subcontracted. So to encourage a management system which called for materials already tested to be tested in detail again on delivery and sometimes sampled and tested again after application was nonsensical. The industry had a plentiful supply of components method and fixers, what frequently was lacking was the communication methods needed to ensure that they all came together on a right first time basis. Quality Management was lacking, not the testing of properties used to define the performance of individual components. Many

of the earlier quality approval systems operated by Government purchasers had been subject to regular inspection for proper operation by inspectors employed by H.M. Government, as the tradition had grown up of not relying on a contractor to get things right through self motivation. The same philosophy spread to the BS5750 implementation and with Government encouragement Certifying Bodies were established ostensibly to certify on behalf of all third parties that a manufacturer was implementing the BS 5750 system on a regular and consistent basis. This of course should have removed from the purchaser the need and expense of carrying out his own assessment of his suppliers quality system. However this could put Jobs on the purchasers payroll at stake and in many cases the independent Certification was brushed aside and the purchaser insisted on doing his own assessment as well. During my time with Evode Ltd. I had for some years been Chief Inspector and Delegated Government Inspector which meant that I could on my own initiative sign the release of products for Government orders. This gave me some hands on experience of the administration of an inspection system but I felt that I needed a better understanding of the purpose of BS 5750 and attended training courses organised by BSI as well as discussion with them as potential assessors of our Evode Roofing Ltd Quality System once we had it written down. So I suppose that there were reasons over and above being Technical Director which made me a candidate for Quality System Manager. Anyway over the period 1984 to 1986 everything seemed to be going according to plan, new products had been identified and launched. Tekurat was in production from the U.K. factory in Telford, the distribution trade counters had been formalised as British Roof Hart. Coverguard the rubber modified torch on felt system from Spain had been launched at a Company Conference with the band and mascot of the Welsh Guards in attendance. Then came for me out of the blue a really unexpected career move. Anthony Cobbold told his co-directors in Evode Roofing that Evode Group PLC were in negotiation with TARMAC PLC for the sale of the Evode PLC roofing interests. This was an utter shock to me as it must be to anyone who is 'taken over'. I had been involved in the sale and purchase of companies (and people) in the past but never as intimately as this. When Anthony told us he gave the impression that it would be 'business as usual' with the existing management team continuing to run the business but now on behalf of Tarmac. I think that he

believed that this would be the case and I suspect that he was actually told that. It took some months for all to come to fruition but on 1st June 1987 the sale took place. I went along to the closing of the sale to sign some documents as director. This was supposed to be a 'rubber Stamp' exercise but it soon became clear that the Vendors were badly briefed on some questions still to be resolved with Tarmac and the meeting dragged on. I satisfied myself that I had played whatever part I could play and settled down to listen and fell asleep about midnight I suppose, an event for which I was ever remembered by the Tarmac negotiators present. Not in a bad sense, they seemed to think that it was the only sensible thing to do.It was about 4 a.m that all was settled and we staggered out into early daylight to catch the first train back to Stafford where, as is usual in these affairs, a meeting had been arranged with the new owners to set the plans for integration. Here I must admit that having worked with many of these folk before on Trade Associations, BSI committees or using them as suppliers I felt at home with them which gave me an advantage over my colleagues. I also found that I had a bigger reputation among them than I had known and they were just as pleased to acquire me as the Company! The meeting had been set up at Tillington Hall Hotel in Stafford and it was here that we and Anthony began to run into the truth. Seated at the table was Vincent Dempsey former Managing Director of R.M.Douglas Roofing and he was now to be our boss as Director and General Manager of Evode Roofing. This must have been the first of several sad blows to Anthony who suddenly found that he was no longer the Boss but was to serve in an ill defined and subordinate position. The second blow, to myself as well, was the start of the dismantling of the Companies that we had struggled to put together starting off with the forced divestment of Tekurat Insulations Ltd. into another part of Tarmac who some time before had purchased one of the larger U.K. manufacturers of polyurethane foam insulants. This company, Coolag Purlboard, had been founded in Glossop, Derbyshire by one of the 'characters' that the roofing industry throws up from time to time, Mr. Wheelan, whose initial interest was in the insulation of low temperature storage plant and later was attracted to the manufacture of flat insulation boards for roofs. The Company went through several changes of ownership before landing as part of Tarmac Building Products Ltd. although I believe that eventually Mr. Wheelan retained an interest in the low temperature part of the

business. This insulation manufacture was eventually sold on to owners outside Tarmac PL: and of course what was left of Tekurat went with it and eventually foundered there. We in Evode Roofing had resigned from Tekurat in the take over but the next day a personnel officer from our part of Tarmac asked me to sack a laboratory assistant we had employed the week before at Tekurat. I asked her on what authority I was to do this, sack an employee of a company with which I had no connection. She hadn't thought of this and tried mild brow beating so I said, you bring me the letter typed up for me to sign, showing the authority for that signature and I'll do it. I heard no more of the affair but it gave me the first inkling of the calibre of management skills in our new surroundings. For me the changes were relatively gentle in pace, I was still a Director of Evode Roofing Ltd. and had as a first task to secure continuity of supply of our branded materials. We had a limited time for the continued use of the name Evode Roofing Ltd, up to 12 months after the date of sale and Evode Ltd had agreed to supply all our material requirements up to the end of 1988. In the event the change of name was registered on the 5th May 1988. Vincent Dempsey was a nice man in the true sense of the word, was a professional manager, calm under difficulty and determined that if at all possible movement of negotiations towards commitment would only take place at a pace that suited our Company. I suspect that he took a lot of flak from some of his new colleagues because his methods were different to the old order and he represented the new order with all its unknown quantities. I didn't see the point in this, we had to a large measure retained our independence which we could keep if we could show that the Company was a good performer in its new surroundings. For this to happen, & at the same time for the new owners to feel that they had done something towards it, our new General Manager needed all the support that he asked for. It was unfortunate that even as he joined us Vincent was entering the final stages of the debilitating illness that would kill him eventually. For a start off we had to consider the change of name of the Company and after a lot of thought compared to the simplicity of the final change we decided to use the brand name of what was now the largest selling product as the Company name as well and Evode Roofing Ltd became Hyflex Roofing Ltd. We were a subsidiary of Briggs-Amasco Ltd, the roofing arm of Tarmac plc. I was allowed to retain the service of the Patent and Trade Mark Agent that I had worked with at Evode Roofing,

Mr. David Lishman and between us we were able to establish a set of registered Trade Marks that would replace the former Evode Marks. Vincent had located a sub-contractor to assist with the marketing aspects of literature design and Company logogram. We used a decorated version of the letter X in the Company and product names which all seemed to go through over the course of a few years (we were using them of course during this time) except for what proved to be unsustainable objections from a user of another 'flex' type trade mark and another from a user of a decorated 'x'. Trade Marks are of course highly specified, both by class and product type so marks from different companies can appear very similar in print and yet not be in conflict from the Registrars point of view. I think that when Evode as a manufacturing company saw the value of our product purchases in isolation, and therefore our value as a customer they were reluctant to lose us all together but by then we were under instruction to buy everything 'inhouse' from Tarmac companies which now included roofing felt manufacturers (some of whom had been our suppliers before) and manufacturers of liquid coatings (Aquaseal) and sealants (FEB) and so the bulk of 1988 was spent by Les and myself in getting satisfactory evidence that Aquaseal, in particular could meet our performance requirements. At the time of the sale intellectual property like formulations and manufacturing details had been transferred so ensuring equivalence was largely a matter of auditing the activities of Aquaseal with respect to our declared formulations. In the event complete transfer was achieved by the end of 1988 and the last cheques that I signed in favour of Evode Ltd for materials supplied to Hyflex Roofing were dated 23rd February 1989. Alongside the need for this continuity of material supplies I was also in the thick of establishing the Briggs-Amasco Quality Management System and the completion of the Hyflex Roofing System. Those of us in the Hyflex Technical Department benefited from the circumstances that Briggs-Amasco knew little about the formalities of Quality Management and very little about the specification and use of liquid coatings waterproofing systems. Quality Management and BS 5750 were much talked about in the construction industry and pressure was on the management of B.A. to achieve Third Party assessment and certification of their Quality System in order to enhance their standing as Europe's largest roof waterproofing Contractor. Hyflex roofing was by their standards an astonishingly profitable operation and they didn't want

to rock the boat. This meant that the technical staff and myself were left to follow our established lines of work without interruption and were, moreover rather flatteringly regarded as experts in our fields so there was no sudden and upsetting interference in our methods of working as well. In the last few months of 1987 and early 1988 I spent a lot of my time documenting the quality systems of Briggs-Amasco and Hyflex, this involved analysing the methods already in use and writing them down so that the different stages of the method and the people carrying out each stage were defined, and then agreed with the people interviewed during the original analysis. At that time B.A. comprised around 30 Branches grouped into geographic regions and these Branches stretched from Aberdeen down to Plymouth and Norwich across to Cork. The plan was to go for B.S. 5750 certification as Head Office which had some centralised corporate functions, Design, Marketing, Purchasing, Technical Service and separate assessments of the individual Regions with the Regional Directors being the quality management representatives in the field. With respect to B.A I was very well supported by their well respected Technical Director F.O. March and Technical Manager D.M. Roy. Mr. March in particular had the ambition that the methods documented should apply universally to all Branches. Briggs-Amasco had been agglomerated over the years from a blend of Briggs Roofing and Amalgamated Asphalt Company picking up along the way a few smaller companies in the asphalt roofing field some of which had enjoyed a very local business and stayed in business as the local Branch or Depot within the hierarchy of the Company. For example, Fylde Asphalt became Blackpool Depot although years later you still had to look for the Fylde Asphalt van when making a site visit. Anyway with this background and with an existing imposition of rule from the centre for some key activities it was not surprising to find that the sample of branches chosen for analysis used the same methodology for day to day branch operations. By August 1988 we were confident enough to present to all the Branches at Regional meetings, the Briggs-Amasco Quality Management System, its relationship to BS 5750 and the ambition of the Company to achieve Third Party assessment. On this latter point companies enabled to carry out assessment were few and far between in 1987/88. We of course carried out design work on roof structures and this activity brought us within the scope of Part 1 of BS 5750 (as then structured) and this seemed to give problems for some

assessors who found it difficult to credit that a mere sub contractor could be intelligent enough to be trusted with design work. Also some assessors were themselves organised on a regional basis and did not seem set up to deal coherently with a National Company operating through a multi site field organisation. In the end we found a good working relationship with Yarsley Quality Assured Firms Ltd and with them achieved certification of all the B.A. Branches by July 1998. Anyway in August 1988 the three of us F.O.M.. D.M.R. and self tramped all the regions implanting the documentation of the quality system and in the following six months I made a Branch by Branch audit of the system to satisfy ourselves that it would withstand third party assessment. Both this audit and the early stages of the assessment revealed some gaps that needed to be plugged, these being due to absence of documentation rather than the fact that the requirements of B.S. 5750 were not being met in practice. A problem with analysis of a system is that people interviewed might be doing some things 'out of habit' not recognising that a habit is a proceedure and so failing to include it in the documentation, a blank which shows up when an assessor is comparing step by step what he actually sees happening with the steps in the documentation. From this time on the maintenance of the Quality System by audit and corrective action became a major portion of my activities and involved me in a fairly high road mileage. Also there was an increase in the amount of time spent away from home as it was logical to deal with some of the Branches in groups rather than make a separate journey to each one, for example, Leeds, Hull, Newcastle made one subgroup and Edinburgh, Dundee, Aberdeen and Glasgow another. As a site visit was usually involved in the audit of Branch procedures time was often spent in following obscure instructions down obscure by-roads but in the main, the motoring went off without incident some 120,000 miles of it between 1988 and 1993. Motoring in the Republic provided the most interest. For a start off there was the ferry crossing to add a little spice. Fortunately only one was in bad weather - a force 8 gale - which made all of the bottles in the duty free shop chatter against each other as the ship seemed to shudder over a series of 'bumps' in the sea. Landing in Holyhead at just about midnight was the worst bit. There seems a dearth of hotels in Holyhead and again it was a case of diving down a country road to a nearby village Trearddir Bay where there is a delightful sea front hotel with excellent food, name regretfully forgotten and a nights rest before

going on to Stafford. The roads in Eire are very lightly trafficked and a duel carriage is a rareity. This is instead on what might be termed the Trunk Roads a type of hard shoulder somewhat rougher in finish than the main carriageway and one soon learned that slower moving traffic moved over temporarily onto this shoulder to give way to faster traffic. I drove from Dublin to Cork on a winters afternoon and noticed what seemed to be an extreme reluctance of the Irish driver to put on any lights at all even after sunset. I tried driving on side lights but after a time found that on a strange road I couldn't manage and I had a deadline to arrive at Cork Depot. I put on the headlights which I noticed didn't seem to bother the oncoming traffic. Our office was on what was for me the far side of Cork in a suburb and again armed with what looked like adequate instructions I found myself driving down narrow suburban roads going from pub to pub as landmarks. Next day I noticed that in daylight that part of Cork reminded me very much of the roads in Jersey. I was staying in a hotel at Blarney and our depot manager had suggested that we met in Christy's Bar. He had a squash session that night in the hotel leisure complex and we could meet after that. I didn't know what he looked like and realised that I could hardly walk into a crowded Irish Bar and ask if Paddy Murphy was there. However the bar tender knew him as a 'squash' regular and confirmed that he hadn't turned up in the bar up till then but that these sports sessions could go on pretty late. I went back to my room and shortly after 11 o'clock Paddy phoned clearly prepared to make a night of it but I was just on the point of getting into bed so cried off. B-A also had several activities in Ulster including a depot in Antrim. I was on my way to this when I was stopped by an armed patrol and required to produce I. D. I had always taken my passport to Ireland so was able to produce this. This was the first time in all my travels that I had to produce my passport to prove identity and that was in the U.K. I think that on this occasion I was driving rather slowly because I was looking for the turning to the depot and that might have aroused the suspicions of the patrol. Going North from Dublin I had got through the border post near Newry without problem but on the way back was stopped by an armed soldier who asked for I.D. (passport again) and as I was the only one stopped out of a long string of cars I asked him why he had chosen me.' "We usually stop all cars with foreign number plates" he says. So in a U.K. registered car with U.K. plates I was stopped in the U.K. because of my foreign number plates. just over the

border into Eire I was pulled over and examined for contraband. Apparently some goods, especially white goods were a lot cheaper in Ulster than Eire because of lower taxes and some people made a point of stocking up on a visit to Ulster. Hence the activity at this Customs post. I don't know if everyone was stopped but I suppose a Granada Estate car was a 'natural' for examination. My lifelong experience of the Irish people, since a little boy, is through their National pastime of murder from ambush so I never thought that I would say the following. In some indefinable way, when viewed from the longer Perspective of retrospect I recall Eire as the most enjoyable of all my visits. It is sufficiently different from the countries of the Union to make you feel that you are 'abroad' and yet the language and the rule of the road are the same. Also, it's the only place where you can get a decent pint of draught Guiness. Coming back to Quality Management and the writing of systems I had started the Hyflex documentation in the days of Evode Roofing Ltd and it was continuing parallel with the B-A work. We had chosen BSI Quality Assurance as our third party assessor, the thinking being that as none of the products of Evode Roofing were covered by British Standards, certification by BSI Quality Assurance would add some extra kudos to the event. It took a longer time for Evode/Hyflex to get certification. The system was O.K. but the various offices didn't do in practice what they said they did (although of course they intended to) and this kept showing up at assessment. The answer was to step up the rate of internal audit to once a month and this did the trick. Many of Hyflex roofing's area offices were in a similar location to those of B-A which saved a lot of extra travel on the routine audit visits. During the latter part of 1988 Tarmac/B-A became involved in a 'white k•nig.b t acquisition of the Ruberoid Company who were receiving unwelcome take over attention from, I think, a German company. Ruberoid also had a National contracts operation for roof waterproofing plus other contract activities, sprayed polyurethane insulation, R.I.S. at Wigan, Trilite at Cirencester who specialised in long span roofing design suitable for Sports Halls and the like and Ruberoid Architectural Cladding which designed and managed the supply of special features such as entrance halls, for otherwise dull and uninteresting buildings. Again the matter of Quality System documentation initially fell to my lot. Fortunately many of the Ruberoid office locations were near to existing B-A ones. In co-operation with the Ruberoid Technical manager,

David Lowe, we compiled the Ruberoid Quality Management system and introduced it to their branches. There was just one development idea that was followed up during this time. C.McF. Caseby B-A Regional Director for Scotland at a meeting with Vince Dempsey suggested that a very practical way of waterproofing a flat roof would be one avoiding overall use of adhesive using instead some method of fixing and waterproofing at the seams only. This idea was already used in part in the 'single-ply' type of waterproofing which involved a single layer of a rubber or plastic sheet either pre-fabricated to fit the roof or built into a single layer on the roof by welding or sticking the seams. The problem was how to hold it down on the roof. An adhesive of the 'Evo-Stik ' variety was a possibility but these need a dry surface and good weather conditions during application if problems of loss of adhesion in service were to be avoided. Hot bitumen as used in fixing roofing felt was incompatible with most plastics, usually because of the temperature at application and again a dry surface and conditions were needed. A method used to hold the sheet down was simply to load it with paving slabs or stone ballast but this put a considerable extra load on the building structure which if not designed to carry it had to be strengthened, the cost of which would be hardly worth it. The Caseby/Dempsey notion was to use a bitumen base sheet fixed at the edges only by 'mechanical fixings' these being large screws (and washers) to penetrate and give a secure hold to the roof deck. These fixings were to be sealed and the joint completed by 'torching' (heating the bitumen sheet with a gas flame), the adjacent sheet into position along the overlap seam then to use mechanical fixings doing the other edge and repeat the torch-on of the next sheet to be laid and so on. We still took a number of professional journals including some from overseas and in 1989 I noticed a paper about a German roofing product which seemed to do exactly the job visualised by us and so Les Willmore and myself, after an exchange of letters, visited the production plant which was in Bremen. The product was called ROWALIN and the makers were ROLAND-WERKE, just on the outskirts of Bremen. Les and I were impressed by the product and its application and we did our best to generate some interest in it back at the ranch. We did manage to get a small team of contracts personnel sent out there for training. We picked a couple of our more hardened cynics and they came back convinced of the usefulness of the material. Unfortunately Vincent Dempesy was now suffering from a progressive lung ailment

which caused Rowalin to be put on the 'back burner' whilst his proposed successor took over the levers of power. Hyflex Roofing was still the only company in this sector of Tarmac's business that was making a decent profit. Mr. Barrie Dyson was Vincent's successor, a stalwart personality well versed in roofing contract niceties and with priority number one to maintain the profit flow and initialy this was done on the basis of what we knew best already. It was during 1989 that I began to seriously doubt the capabilities of my main employer Briggs-Amasco Ltd. to manage a business. The company seemed to have no idea of managing integrated business activities so that a product was devised, promoted and sold at margins sufficient to sustain and grow the business. They also seemed to have adopted a ravenous acquisition program towards companies with some sort, any sort, of contract activity in the construction industry. Evode Roofing was one of these and one of the few that turned out to be any good. In buying a company, the price has to be right but also the purchaser just has to have his own expertise in the product area that he is buying into so that he can assess how good the prospects are for his prospective purchase. There seemed to be a policy at B-A to chase businesses that proved to be cheap because they were on the point of bankruptcy. Sometimes these were blazoned as leading us into new technology only to find that this new technology was long outdated or used in a way that gave a potential for serious and costly liabilities in service. We were buying companies where both the target company and the purchaser had no idea of the technical limitations inherent in the products supplied to the market. BA was also an arrogant company, they were biggest, best and knew what was best. For everyone. The result was that after the financial wizards had done their job with the minimum of preparation as far as investigating the cash generating processes of the target were concerned, we managers were left to open the box, sort out and categorise the nasties and do something about them. In the late 1980's the downturn in the volume of construction business available was an ever steepening dive. Without new buildings going up there was no call for new roofs. Certainly not on the scale needed to support the labour and equipment resources of companies like B-A and Ruberoid. Much of the work was repair and remodelling usually on a scale suited to the small roofing contractor, often a one man band, who always had been an ever-present competitor to the big boys. For this work involving roof repairs only the roofer was effectively the 'main contractor'

for he worked for the client and invoiced the client directly. Thus he didn't have to wait for his money to come through a client - main contractor - subcontractor chain. Evode (Hyflex) roofing had always been organised around this type of business as the bulk, usually more than 60% of its activities plus it had a sales force whose Job was to maintain a forward order bank. Most other contractors including B-A had nothing like this and unless enquiries dropped through the letterbox, came to times when they had nothing to look forward to. So at the time of the Ruberoid, Brodericks and other acquisitions Briggs-Amasco found themselves responsible for labour and office resources which effectively were over manned by virtue of the strong overlap of geographical location even before the collapse of their traditional market was put into the equation. All this could have been worked out before buying of course but usually grappled with after the original share holders had been glad to snatch what few marbles we offered them and disappeared up the road in a cloud of dust. So the acquisitions were followed by a sad and repeated pattern of dismissal of personnel and closure of premises. Hyflex Roofing, because of its operational structure, managed to survive in a profit making mode but the B-A management did their level best to destroy it. The Evode Roofing Companies had been built up as a mini conglomerate in the roofing/waterproofing market with eventually a Nationally operating roof waterproofing contractor making and selling its own branded products, Tekurat Insulations Ltd making and selling Nationally, a unique product especially useful in roof renovation, British Roof Mart acting as stockists to us and at the same time selling ours and other people's roofing products to roofers generally. The managers of that division of Tarmac which now owned the Evode Roofing Companies promptly set about dismantling them, largely due to total ignorance of how to manage a market sector. Things may have been different had Vince Dempsey been stronger in health but unfortunately he was beset by one physical problem after another as his health deteriorated, all borne cheerfully, astoundingly cheerfully, but restricting energy and mobility at a time when perhaps a policy of vigorous resistance and 'sitting on doorsteps' might have caused an awareness of alternative and more profitable management routes. His eventual successor, Mr Dyson was able to build on what had been salvaged by Vince's heroic efforts so that the original concepts of management both in philosophy and structure were maintained. Roofing at

the 'doing ' level on site is a vigorous and character forming activity, many roofers have the physique which says that they can 'look after themselves'. Mr. Dyson is blessed with a combined robustness of physical presence and character and I feel that Hyflex Roofing will prosper under his touch. In my own case a new career largely independent of the original Evode/Hyflex beginnings had opened up in the Quality Management field and I felt secure in that career. I also found it very satisfying to analyse and establish the Corporate quality system plus the need to broaden my own knowledge of roofing across all its aspects was also a challenge that I enjoyed. There were a number of factors operating against me. I was too old to really benefit from putting in the effort needed to bring Quality Management to the status of Main Board supported corporate management technique that it needs to be and not just regarded as an offshoot of Technical Service. There were also family health problems which made it difficult for me to travel the distances involved and be away from home. These included . the fact of my own angina diagnosed in 1965 which although not deeply restricting, did make it difficult to clamber about freely on buildings and made me want to avoid situations that might be difficult to control or in some other way bring about those subtle conditions known as 'stress' blamed as the origin of my diagnosis. So in 1990 at the age of 62 I raised the question of early retirement and I must say that Tarmac proved to be a generous and understanding employer in these negotiations. Because of the experience that I had particularly in Quality systems management, they were anxious that for a time I would be available as a consultant. I agreed with this on the understanding that this would not block the use of my accumulated expertise by other employers if the opportunity should arise. After retirement I was flattered to find how many companies in the industry were interested in my services and so for several years I operated as a self-employed consultant "Dr Barry Jackson". I was fortunate in being able to select a work load that was interesting and considerably less onerous than full employment. I had set myself the objective of acquiring work within a day's march of Stafford as far as possible. As the nineties progressed the growth of the recession caused the shedding of more and more of those employed in the Middle Layers of Technical Management and for a time it seemed that they all started up as consultants the day after dismissal. This increased competition diluted the amount of work available and meant that an increased amount of time had

to spent on selling and also the time of maturation of an initial selling activity into a firm order seemed to extend to years compared to a few months when I first set out. So gradually my original objective of two productive days per week was ended, I had to spend resources on non cash producing presentations at potential customers. I could tell that if I was prepared to work almost full time again then the selling expenses could be covered by the extra work available and the consultancy income maintained, but it would be hard graft for a one man band. So it was make your mind up time and I decided to go to full retirement in September 1994. By then all my clients were at a stage where they could fend for themselves and as a safeguard I was able to refer them to a colleague with similar experience to my own if needed. These few years gave me the experience of running my own business, sales, production accounts, the lot, and to run it happily in circumstances where it was not desperate for it to succeed financially. I am still a Governor of the Institute of Roofing serving on the sub-committee, responsible for syllabuses and examinations. Apart from the setting and marking of examination papers the introduction of the concept, well more than a concept, the reality of National Vocational Qualifications into the industry has meant the continuation of an interesting and satisfying work load for me.

CHAPTER ELEVEN

TRAVEL, SIGHT-SEEING AND PRODUCT SEEKING

All my travelling outside Britain has been for the benefit of one or the other of the companies that I worked for. Other than that I don't think I would have travelled as I am not a dedicated wanderer, finding the task of keeping on the move irksome. On top of that there is the question of cost. Apart from the 'packaged tour' to locations selected for their vacation potential the cost of transport and accommodation for Journeys where you like, when you like, are still expensive for the ordinary person even when travelling alone. The best way to travel is when someone else is picking up the bill. There is also the lack of detail that can be taken in, in ordinary travel. Even in Britain where we have revisited places time and time again, there are always new things to find and explore. I suppose that one big benefit that we have drawn from caravan holidays is low cost accommodation so that over the years we have been able to take advantage of every single holiday that came our way allowing so much exploration that a comfortable familiarity and even a sense of home coming developed around our favourite places. However, back to other travels. After short flights to Ireland, Alsace and Hamburg the opportunity came for the first long haul flight. Because of our membership of the National Roofing Contractors Association of America we were invited in a call for papers to offer a paper to be presented at an international symposium to be held in Washington D.C. There were other reasons why a visit to the U.S.A. made sense for some prime producers of materials used in liquid coatings and sealants had their homes on the East Coast as well as the US offshoot of Evode Group 'Evode Inc.' situated near Philadelphia. They were showing a great interest in the exploitation of Flashband in the U.S.A. and to include them in my itinery seemed appropriate. Liquid Coatings and their application has proved to be a combination of interest to compilers of Symposia programs several times and my paper was accepted by the NRCA for their event which was run jointly with the National Bureau of Standards based in Washington. So, Monday 19th September 1977 saw me getting on board a Boeing 747 at Heathrow. It wasn't my first wide body experience as by chance on our first visit to Tekurat we had flown from Frankfurt to Hamburg on the first commercial flight of the Eurobus in Lufthansa livery and I remember being staggered by the sheer size

compared to say, a Boeing 737 or a Viscount, it was like walking into a warehouse! There was a film crew on board to record the events of the flight and the pilot flew the craft with a determination that demonstrated the power, security and comfort of the aircraft. The flight to Washington gave me the impression that the 747 was a rather more ponderous beast than the Eurobus and like most of my flights in the seventies and eighties, the aircraft was by no means full. Mine was an Apex ticket bought some months in advance to get the lowest fare (out of interest it was 209 pounds return). I think it was a British Airways flight - certainly the menu was published by them - dedicated to the novelist Thomas Hardy with pictures illustrating his life, also summarized in a short article inside the menu. The main course was roast loin of veal with a choice of desserts and for once the cutlery was real instead of plastic. The destination was the John Foster Dulles airport where the link between the aircraft and the terminal building was via a 'bus where the bodywork could be raised on a pantograph type of mechanism to match the height of the aircraft door, lowered to allow a reasonable transit speed and then raised again to give access to the Terminal building. Why this complicated system was used I never found out. Perhaps the advent of aircraft the size of the 747 made close approach to the existing buildings risky or maybe it was just a smart idea that the architect fell for. After successful negotiation of customs I was on American soil at 5pm. A blue hatted 'Skycap' took my luggage from the custom hall and on asking the name of my hotel, led the way to a 'bus where I found that a fare was payable even though it was supposed to be a 'courtesy' ride to my destination, the Washington Hilton on Connecticut Avenue. I had stayed at American Hotel chains before in Germany and I soon found that the German insistence on good food spoiled me for the experience of American Hotel cuisine on its own turf. This I found to be large on quantity but low on flavour. In spite of several banquets during the course of the Symposium I can't recall a single outstanding meal. The bright exceptions were in the fast food area and fortunately the hotel ran a 24 hour food bar which I lived off during my stay. Because my camera was a rather bulky single lens reflex I had decided to buy one on arrival on the assumption that good quality pocket cameras would be much lower in price than the U.K. where in those days a 25% rate of VAT applied but I found that cameras with any degree of sophistication were quite expensive and in the end settled for my first 110

format of low specification which in the end served my purposes well. I bought this at a camera shop about two blocks from the hotel during a stroll on my first evening there.

The next day I spent time reading the notes for my presentation at the symposium and made my registration for it there being a dedicated Symposium desk at the hotel which assisted with all aspects of the delegate's stay. With 'Apex' travel the lowest fare depended on travelling on dates to suit the airline rather than the event being attended so there was often an odd day or two to spare at the beginning or end of a trip; such was the case in Washington and I used a day before the program started in sightseeing around the tourist centre of the City. I always buy a map of a place that I'm visiting so that I can plan my own itinery if I want to, trying to cover as much as possible on foot so that the detail and feel of a locality can be absorbed. My biggest surprise was the large number of well dressed confident and cheerful black people encountered in Washington, not that that should not be the case of course but early experience had only been second hand from colleagues who had visited the Southern States or South Africa and I had not expected to find such a high degree of easiness with each other as I did in my stay in Washington. I suppose that like most tourists on a time-table I didn't see the troubled spots but when the time came to leave via AMTRAK the cab driver taking me to Union Station warned me against wandering too far around some of the streets near the station and this just over half a mile from the U.S. Capital building.

But back to my walkabout in the City. Having dabbled in oil painting I was keen to view first hand some American art and was well rewarded at the National Art Gallery on Constitution Avenue bordering The Hall. This building is at least in part the gift of the Mellon family and like all the public buildings I saw, was of a quality well worthy of a capital city, also the collection on view was as broad in its scope as any in Europe, I did eventually find a gallery of U.S. art, whether I found it all or not I don't know but it seemed to me to occupy a small area compared to the potential that I had imagined to be there, given the scope of indiginous landscape and native art forms. The setting of the Gallery and other museums on the Mall with many famous and long heard of sites within, by U.K. standards, easy walking distance of each other gives an unforgettable day - the

Whitet3ouse - Capital Building, Washington, Lincoln and Jefferson memorial, all in a radius of about one mile. I was lucky to visit Washington, I met many Americans who had never been there. It is a must for any tourist with a feeling for human history, let alone American history being the locus of the administration of the first attempt ever to create a new nation by the combination of separate sovereign states. Although Washington seems a bit off centre compared to the modern United States it was, one imagines, well chosen for the purpose of pulling the original thirteen states together especially bearing in mind the importance of water transport in the early days of continental settlement. Washington is, I think, the best starting point for the Tourist visitor, in the "24 hours a day" life in the U.S.A. travel is easy and cheap (especially at off peak times) by European standards even over long distances.

Wednesday 21st September was day one of the Symposium and I caught the first bus from the hotel for the twenty-odd miles trip to the National Bureau of Standards Building at Gaithersburg. This is the first International Roofing Symposium to be held in the U.S.A. There were more than 700 delegates from 22 countries and papers to be presented by 31 experts, of which I was one. Many people express disappointment after attending symposia, training courses and the like usually commenting that they have 'learned nothing'. In my opinion at the best you can learn something new that is of interest in your own activities and speak first hand to the people presenting it and if at the worst you 'learn nothing' then at least you know that you are as up to date as you can be and might even find out that you're a bit ahead of most. But again the chance for discussion is there and maybe even the chance to set up some Joint development or mutual trading. One thing that was soon apparent was that the United States were not really ahead of the Old World as far as applied trade skills are concerned, certainly not as much as we often tend to give them credit for. Although always attracted by novelty, the size of their own continental market is so huge in distances that basically what is wanted in trade terms is something that has been proved to be reliable and understood in its application and performance so that it can be safely transplanted and franchised from one State to another with the expectation that it will perform equally well. So in the construction scene anything too new fangled can cause problems for the applicators; one of the traditional

ways of launching a new product is a 'roll-out' from State to State and this depends for success for the simultaneous 'roll-out' of good feeling for the product on the part of the applicator on the two most important fronts, reliable application and service and good profit margin.

My presentation caused no questions from the floor. Liquid coatings systems have their faithful adherents the world over but people are a bit shy of declaring their interest in them as they are often dismissed by the makers of roofing felts as being no better than temporary repair materials. So it was after my talk during the coffee break that people came up to me and we could speak about our mutual confidence in coatings systems and I discovered that the American experience was much the same as ours with a polarisation of attitude that was difficult to change. On the last afternoon of our stay we were taken to see some of the work of the National Bureau of Standards in the construction field particularly with safety equipment. One of the last demonstrations was in the testing of some sort of safety harness using man sized dummies of different weights and allowed to drop to test the holding power of the harness. This was at the beginning of political correctness and people, especially in Washington D.C., were just uncomfortably aware of the topic. At the front of the crowd was a group of us who had become friendly during the week and when the poor tester called the test dummy a 'mannikin' I started a muttering campaign amongst our group on the grounds that mannikin was sexist and it should be 'personkin'. This got loud enough to make the tester get uncomfortable in case we meant it and he changed the description to 'dummy'. By now someone behind us had caught on to what was going on and called out "who are you calling a dummy?" and the presentation drifted to a close amidst laughter. Rough roofers can be a tough audience. I closed my week in Washington with some sightseeing using Gray Line coach tours that I had booked earlier through the Symposium desk at the hotel. The American coaches were in all my experience of them remarkable for providing passenger car comfort compared to the (1977) U.K. variety. My first tour was the Washington City tour and apart from a slow drive past the Whitehouse and Capital Building gave us time to walk around the Lincoln and Jefferson Memorials and the John F Kennedy Centre for the performing arts which then was still a subject of dispute over the condition of the roof which leaked in parts. In fact it was necessary to erect inside

the building secondary roofs over the public areas to keep visitors dry. These presumably to be there until the dispute was settled by due process of law. From the Promenade Roof of the Kennedy Centre the site of Watergate could be seen, then notorious because of the President Nixon involvement. Next, across the Potomac River to Arlington National Cemetery where the Kennedy grave with its permanent flame lies within sight of the General Robert E Lee memorial, Arlington House. We were there at a time when we could witness the changing of the guard at the Tomb of the Unknown Warrior. Carried out with appropriate and impressive precision and solemnity , I couldn't help feeling that its sacramental element was diluted by the presence of the tourist on-lookers and that it probably only reached its true effect when the only audience was the participants. Then return to the bus depot via Georgetown where there are some of the older residential buildings in Washington.

It was now lunchtime and as I had an afternoon tour booked I decided to use the eating facilities at the depot which were supposed to be fully automatic. A selection of 'fast foods ' was available from a deep freeze dispenser and having selected a hamburger surmounted this hurdle and received a rock hard frozen burger which in theory could be cooked in a nearby microwave oven which took small change. I had none left, but no worry, U.S. ingenuity had provided a change giving machine which absorbed a dollar bill and issued change except it didn't work with my one and only dollar bill. It did say that it had to be a clean smooth note. It seemed to be lunch break for the whole depot with no-one in sight to ask for help but another passenger turned up and although he had a dollar that looked almost new it still wouldn't work. Going outside I found a convenient eatery almost opposite, it looked a little seedy like those places that used to be found near main line stations in London. But at least they sold food and featured an offer on Rose wine at 69 cents a glass. So I settled for a toasted tuna sandwich, a helping of pumpkin pie and a glass of Rose. When I asked for the wine the owner looked puzzled until we sorted out that I meant 'Rose' wine. He hooked a one gallon screw top demi John out of the fridge and poured into a straight sided glass what must have been at least a half pint of wine. Particularly after the struggle with the frozen burger all was delicious and when I said so , the owner seemed faintly surprised but pleased that someone should comment

favourably on his establishment. Back to the depot and on board for the afternoon tour to Mount Vernon, home of George Washington, the journey there took us through Alexandria, a town again with early residential survivals. The Washington presence at Mount Vernon dates back to the original land granted in 1674 to John Washington , Great Grandfather of George. Originally known as the Hunting Creek Plantation it was renamed 'Mount Vernon' by Lawrence Washington, half brother of George who had served under Admiral Vernon in the Caribbean. Inherited by George in 1752 he spent a few years fighting the French and the Indians taking up residence with his wife in IV59 when they lived the comfortable life of Southern planters for fifteen years. So by any country's standard Mount Vernon had a history before the revolution and Washington's involvement as Commander in Chief of the Continental Army and the founding of the United States. And yet for me it lacked a sense of history in keeping with the momentous contribution of its owner. No doubt because the events which changed the course of history did not take place there. Mount Vernon in all respects very much fits the style of a contemporary English Landed gentleman but one of lower rank and achievement. There is no blaze of pomp and grandeur about the place, it is essentially modest. Somewhat after the style of Squerryes Court at Westerham, Kent it is if anything no more impressive in design and architecture than the stable block of an English gentleman of similar accomplishment. There is an unassuming air about the whole place, of a man who could break his fellow countrymen free of a relationship which gave no hope of equality or understanding or generosity and yet after being elevated to the place of leader of their new Nation could follow the rules proposed for its governance and not stay on as Dictator but be peaceably replaced by a duly elected second president of the United States. So whilst there is not the bombast of porticos and pillars there is instead a sense of quiet privilege to walk the grounds that this American Gentleman planned and to sit in his summerhouse in the garden that he enjoyed after retirement from public life. The conclusion of this tour was a return to Washington via the Potomac on a riverboat which was boarded at the pier forming part of the Mount Vernon estate. The Potomac River is best part of a mile wide from here almost to the centre of Washington and the trip not only underlines the value of inland water travel but gives an idea of the vast scope of this continent. Even with a guide to point out interests a ride on a

mile wide river is a bit dull especially when a thoughtful government has cleared the surrounding scrub of Indians. The real high spot was Washington National Airport which as we sailed past seemed to be a constant, really constant, succession of take offs and landings of aircraft just like bees round a hive, and then to arrive at Washington viewed from the waterline.

Back to the hotel where that evening President Carter was addressing the Black Caucus of Congress so the place was pretty crowded and I sought refuge in a nearby diner. Next day, Sunday 25th September I took a cab to Washington Union Station, bought a first class Amtrak ticket to Philadelphia and engaged the services of a Red Cap to care for my luggage. He met me again at the platform at boarding time but meanwhile I had chance to explore the station. What a place. It appeared to be carpeted from entrance to platforms and in the entrance hall there was a huge array of visual display panels on which in total or in individual combinations was presented a sound and colour panorama of the United States. It was the first time I had seen such a display and it was a fitting exit to Washington. The Amtrak ride took us inland at first and across to Baltimore, the line then taking us within view of the inlets from Chesapeake Bay before turning inland again to Philadelphia. I was moving against the tide of the revolutionary struggles. 1976 had seen the bicentenary celebrations and there was still a lot of 1776 memorabilia around. At one street traders's stall in Washington I paused to buy a fish slice memento of the 1776-1976 celebrations and an American lady in front startled both me and the trader by asking if it was the bicentenary of the Civil War that was being celebrated. The trader was saddened by the question as he replied "No, Madame, the Revolution of the War of Independence". I was going from Washington DC, one outcome of the Revolution back towards Philadelphia, home of the Liberty Bell. Later I was to go to Boston where the Tea Party Incident sparked it off. The Amtrak ride was not as speedy as British Rail Intercity but it was smooth and comfortable with a good selection of food and drink served at one's seat. Baltimore was a town where in the outskirts, the older type of clapboarded houses could still be seen from the train with stone steps up from the sidewalk to the street doors and with the frontages painted in some deep intense blues or red-browns. I was going to start my visit to

Philadelphia exactly 200 years to the day after the British had captured and burned the town during the revolutionary struggle but it was in Baltimore that one of the most significant creations of the young Nation took place. After a series of squabbles over maritime trade, for the USA was rocked by the outer eddies of the Napoleonic War and the blockade of European ports by Britain, as well as disputes along the unsettled US/Canadian border, the two nations stumbled over a series of mishaps into the Anglo American War of 1812 to 1815. A land and water assault on Baltimore's Fort McHenry was intended on the 12th/13th September by what, if well organised, seemed to be overwhelming British Forces. The commander of the fort Major Armistead had asked for a flag "so large, the British will have no difficulty in seeing it from a distance". And he had on his flagstaff a flag measuring 42 feet by 30 with stripes 2 feet broad and stars two foot across. A young lawyer, Francis Scott Key had been engaged in negotiations with the British and anxiously scanned for the flag as day broke. This fight for Baltimore was a decider in the overall War. When Key saw the flag still flying and realised that the British Attack had failed, he could only express his emotions in verse jotting down on the back of a letter the first draft of the Star-Spangled Banner - "Oh! Say can you see, by the dawn's early light...." The Star-Spangled Banner still the symbol of Nationhood and displayed on buildings at every possible excuse. This war had given to America a National Character founded on a glory common to all. The people were more American, felt and acted more like a nation and the permanency of the Union given better security, for the national feeling given by the Revolution had gradually lessened. And so to Philly where I had my first hiccup with American organisation. The platform at the station was below street level and my efforts to get a Red Cap failed so I had to lug my belongings up the stairs myself. I was collected by Mr. Harvey Liss who was then managing the Evode output in the USA. 'Evode Inc' and with whom I swapped ideas on the extension of his product range. Harvey had established Evode Inc as an import agency and having had some experience of the sales of Flashband in the U.K. had more or less majored on this product in his sales program. I also had several projects on behalf of Evode connected with the use of sealants, the use of plastics in plumbing as well as taking the opportunity to visit the headquarters of several of our major suppliers. My hotel was the Sheraton in the Cherry Hill district of Camden County, New Jersey not far from

Harvey's house at Woodcrest in Cherry Hill which like many modern developments had its own Country Club to provide recreational facilities to the residents. It provided one of my slight surprises of the U.S., Harvey explained that he couldn't take me there to dine because it was 'exclusive' meaning that Jewish residents were excluded. However, spending the evening with his family was much more to my liking. When checking in at the hotel I got another slight surprise because some poor guy was trying to pay for his room with cash and the clerk was refusing to take it and insisting on a credit card. Fortunately he was with a colleague who offered a 'rubbing' of his card, given this the clerk then took his cash! I asked Harvey why this should be as to my simple mind cash on the nail seemed preferable but it seemed that the card established a credit status and gave a point of reference in case contact was needed after the stay. An address could be false but a valid card was reliable.

Evode Inc. were set up in an industrial area in the Somerdale district of Camden and after meeting the gang we went to a nearby Shopping Mall for lunch and a brief look round showed me that prices were generally on a level with the U.K. but consumer durables were cheaper. An easy friendly attitude of help and service towards the potential customer was almost universal, much different to the mood prevailing in Britain. I can't recall the food at the Mall but that evening we went to a local Chinese restaurant and that was my first meal in the U.S.A. with flavour. Many foods were disappointing. At the hotel one day there were some apples on offer in reception, the proceeds going to a local children's home. They were all beautifully uniform in size, colour gloss but unfortunately could have been turnips as far as flavour was concerned. It's amazing how much one can get through in a day, I went to New York with Harvey to meet a roofing magazine editor who had expressed an interest in an article from me, based on my Washington Symposium paper and perhaps get him to accept a technical paper majoring on Flashband which would help in publicity for Evode Inc. We parked on a lot somewhere south of Central Park, one of those lots where every inch is used and the cars are placed by an attendant in some sort of a relationship to the length of stay that you expect, all the keys were left with him and when you recovered your car he shuffled a few others around to create a passage for yours. Our meeting with the editor was over lunch which was in a restaurant with

distinguished timber appointments and eating booths rather club like in atmosphere. I was told that it was modelled on the 'English' style and it wasn't far off.. Well known for its fish dishes apparently. After lunch Harvey devoted a couple of hours to my education as a tourist. We took the subway to a point of departure of the ferry to Staen Island. The subway was different to the London Underground then because the collection and control of fares was largely automated, there was much grafitti on the coaches and the two stations that I saw were more like underground buildings than 'tubes'; many of our stations are simply swellings on the basic tube. The only London stations that I remember as similar are Mile End and St James' Park with similar large pillar supported spans. Although both of these might be close to being surface stations. The ferry took a route that gave a good view of the Statue Of Liberty and the Manhattan Skyline from water level. Both of these are New York 'musts'. On the way back I got into conversation with a faintly aggressive American who seemed to have the impression that a Socialist Britain was a Communist Britain. From there to the Pierre Hotel on Fifth Avenue where National Westminster Bank were holding a reception and cocktail party and Harvey had an invite. This was some hotel so I made a mental note to stay there sometime if I could. From the Pierre back to the parking lot, calling in for a walk around Bloomingdales on the way.

By now after dark I was able to see Times Square 'lit up' on our way out of town, this afternoon being an example of how much can be accomplished in the way of tourist memories in a very short time, given a guide who knows the way around. We were even accosted by a tout for a nearby brothel while walking near Bloomingdales - refused but had leaflets passed into our hands 'for de next time we were in town'. This establishment "The Harem" on 3rd Avenue proclaimed delights that not even King Farouk had experienced and all in air conditioned privacy and comfort.

Part of my job was to form an opinion on opportunities for other Evode D.I.Y. products in the U.S. and we visited an assortment of hardware, lumber, D.I.Y. and home improvement stores, all in the Camden/Philadelphia area. The owners or managers were usually clearly evident at the front desk or counter and were happy to talk about the

products and their potential once assured that I didn't intend to start up a store in competition a couple of blocks away. Flashband was on the shelves in two of these stores and otherwise I didn't really find any gaps that we could exploit by export from the U.K. I was surprised by the great range subdivision. Whereas at home we might have had one or two adhesives, each general purpose, featured for bonding wood, leather, glass, ceramics etc, the US scene featured the same formulation but broken down under a lot of specialist labels one product for wood, one product for ceramics etc. Likewise, driveway, patio and concrete cleaners no doubt identical in formulation were labelled up separately. Harvey ventured the opinion that it was because of the large number of people whose first language was not English so that if they wanted a driveway cleaner or an adhesive for fixing plastics on automobiles they could go into the store and find a can labelled just for that individual end use and not have to bother reading the small print on a general purpose can. In this cruise around the Philly area I took the opportunity to visit the National Historical Park and found myself still moving back along the original path of the American Revolution. Here is the home of the Liberty Bell which was rung on the first reading of the Declaration of Independence to the citizens assembled in Independence Square on July 8th 1776, the bell then being tolled from its original position in the State House, now Independence Hall. A crack in its early life caused it to be re-cast after delivery from England but it's reputed to have gotten its present crack when tolled during the funeral of Chief justice John Marshall; now at ground level in the Park its dedication around the crown "Proclaim Liberty throughout all the land...." is easily read.

Philly and the buildings in the park saw most of the legislative activity leading to the Declaration of Independence and the Union of the thirteen colonies as one Nation, the Americans. The constitution was drafted and ratified in Independence Hall (the County Courthouse). Here Washington was inaugurated for his second term and it was the scene of the peaceful handing over of the Presidential power to the second President John Adams. Because of local disturbances during the war the seat of central government wandered somewhat; Princetown, Annapolis and New York with Washington D.C. being founded by Act of Congress in 1790 and Congress met there for the first time in May 1808. The next day took me

to the State Capital of New Jersey, Trenton and the headquarters of one of our suppliers. I was not much impressed by the car that took me there but the return drive was so different that I asked the make of car which was Oldsmobile and I made the note that if I rented a car this would be the make. The local equivalent of 'Yellow Pages' listed an Oldsmobile hire agency and I phoned them to fix the hire of a motor which proved to be an Oldsmobile Cutlass Supreme. Harvey and I went to collect it next day, no hassle, and as his car was in for a service my first drive in the U.S. was following him to his service station, this meant remembering that U.S. cars usually have a foot operated parking brake, when I failed to find a handbrake. We then set off to visit the manufacturer of a resin used in the manufacture of plastics plumbing systems in which Evode had an interest at the time. I had seen the system featured quite strongly in the hardware and D. I.Y stores visited earlier. This took me on a journey of about 90 miles to Fairfield N.J. with a mixture of town and motorway driving. I noticed once that Harvey was crouched down in his seat muttering some prayer or incantation and eventually had to ask him what he was saying. It seems that I was driving too close to the cars parked at the side of the road for his liking and he had been muttering "too close, too close!" and bracing for a collision! He told me that the U.S insurance premiums can be punitive after a prang and most ordinary motorists gave each other a wide berth. The car was very easy to drive in spite of its bulk compared to the average U.K. car and on this first ride I learned some of the rules of the road. I knew already of things like the universal speed limit of 55mph out of town, the need to stop behind a school bus but soon began to pick up some local rules. Road markings and their meaning were the same as ours near enough. In most States, overtaking was permitted in any lane on the freeways and toll roads so that was something extra to watch out for. At junctions controlled by lights there were two differences compared to us, if it was safe you could filter against red as a matter of course and at some junctions out of peak hours the amber could be seen flashing continuously and apparently this converted the junction into our type of 'give way' junction. I did forget myself on the way home from Fairfield. Alongside Newark Airport the New Jersey Turnpike widened into 6 lanes in both directions and suddenly it seemed these extra lanes opened up before me, the two outside lanes being empty as far as the eye could see. My response was automatic, I pulled out from the Citizenry and accelerated and was

round to 90 mph before Harvey could remind me to slow down. The car could certainly go given a chance. I remember that a cab driver in Washington had complained bitterly about the fuel reduction policies of President Carter - "He's gonna rob us of our V8 's". He seemed inconsolable over this. I found mine not to be as big a gas-guzzler as the equivalent European car.

Early in my time at Evode Inc. Dryver Harrison a colleague of Harvey had taken me on a short trip into the older settlements of Pennsylvania, including the church of St. Davids, Radnor. The final decade of the 17th century saw Welsh colonists settled in this area and many towns surrounding underline the Welsh origin. Narbeth, Bryn Mawr, Berwyn. The church was built in the early 18th century and is surrounded by gravestones as ancient as any that can be easily found at home. At that time the surrounding country of the SCHUYLKILL Valley was near wilderness with scattered families and no convenient centre for worship. Ministers were obliged to go on circuit to preach the Word of God. The revolution brought churches of Anglican ancestry into disfavour and in 1788 the Rev Slator Clay became the first pastor of St.Davids under the American succession of the Protestant Episcopal Church of the United States. The continuity with Wales was maintained by the gift of a piece of original Caerbwdy stone work from St. David's Cathedral in Wales. This bears a copy of the ancient cross of St. David that is seen behind the Cathedral altar and is built into the wall above the main door. In 1876 Longfellow wrote of the place " Here I would stay, and let the world, With its distant thunder, roar and roll" I heard no Welsh spoken around it but the visitors book held many dedications in the old language.

This trip and the names on the signposts, Lancaster, Reading, Strasburg, Lampeter awoke nostalgia and as soon as I had my own wheels I determined to do some tourism. This proved to be a big industry and practically every site of any historic significance was developed. Out of town, the roads were quiet and only lightly trafficked. On the ordinary roads there were not many opportunities to stop and admire the view, I only found one lay-by, but the parking in the tourist areas was easy and free. Harvey had warned me not to take hitch-hikers on board in case of mugging and I guess it might not have been wise to stop in any desolate

places alone. I headed out into Pennsylvania to look for the Pennsylvania Railroad Museum. The roads were easy to follow and well signed. Roads seemed to penetrate into every part of these older states, it truly being the land of the automobile. There are repeater signs of the road numbers and as a Junction is approached, say between route 30 and route 73 this is heralded by the use of a Junction (JCT) sign coupled with both route numbers (JCP)(30)(73) well in advance and at the actual junction itself the compass direction e.g. (JCT)(30)(73 North) so that coupled with elementary map reading finding ones way was easy. The faintly disturbing thing was that in the mind was carried the picture of U.K. orientation, for example Lancaster is North of Reading so it was a bit strange when heading for Lancaster on route to the railway to find Reading signposted to the North. While nearby I went to Lampeter just for curiosity and found that the locals put a different emphasis on the syllables - Lam peter instead of our emphasis on the first Lam peter. The Railway Museum featured some of the early wood burners and the display of splendid locomotives and rolling stock were on view in a very impressive building. The nearby Strasburg rail road is a relic of the railway that opened up the valley of the Schuylkill around St Davids church and it is still operational and can be used as a feeder to the main line. So I went on Puffing Billy through rural Pennsylvania, the large wood built coaches with oil lamp illumination were very 'wild west' although we were far east. The Strasburg rail Road Station, line and rolling stock were reminiscent of the Crich tramway museum in Derby. The U.S tourist centres are very much like the U.K., the U.S. tourist seems rather solemn and subdued although it was easy enough to strike up a conversation and the railway buffs amongst them wore denims smothered in decals from other rail centres. The usual gifts and crafts on offer but as is often the case a high ratio of trash to good items. The rail road runs through Lancaster county's Amish Country and nearby was the Amish Village tourist feature. Driving to it took you through scenes of the active Amish life and I saw a horse plough in use as well as the horse buggies with their tall glass windshields and drivers in Amish "no frill" suits. In the village shop I bought a hickory smoked ham sandwich on home made bread and a slice of shoofly pie. For once, these local delicacies were very good. This is also the land of covered bridges and Hex signs - colourful tokens as good luck charms for use on house and barn doors on sale on decal form in the shop. A side-light on the U.S.A.

occurred for me at the Amish village, our guide had explained the living arrangements of the people, their Spartan attitude to life and its encumbrances and a desire to cut out of their artefacts any aspect that did not have practical usefulness. What was left could be decorated for example with embroidery, I suppose to give some outlet to the instinct to pretty things up. Anyway, having seen the single pot-bellied stove downstairs, the sole source of heating, we were upstairs having the simplicity of the furnishing pointed out to us when one of our party said "Say - how did they keep warm up here? I suppose the air-conditioning took care of that". A startled guide explained to him that the lonely stove downstairs was the only heat source and comfort elsewhere depended on clothing and will power. For a moment the startled eyes of a New Yorker looked out on a different planet.

I also had a hankering to get to the Atlantic Coast so that I could say that I had stood on both the East and West shores of that ocean so I headed for Long Beach Island, one of the chain that stretches along the whole of New Jersey Seaboard with what I suppose are sheltered lagoons and harbours behind them. I imagine that in the Summer months these sandy beaches are popular escapes, very quiet when I was there in September but damn near the whole population of the state would have to move to make them crowded. Long Beach was low lying almost all sand and houses in Surf city were raised on stilts no doubt to allow high tides to wash under them. At the Northern tip is the Barnegat Lighthouse, no longer in use as such but preserved as an historic monument in its own little State Park. The lighthouse is 172 feet high, 140 years old and unusual, probably rare, in being brick built. Returning to Camden I visited Batsto village in Staffordville for a touch of homesickness. Batsto is set in a State Forest in idyllic surroundings on the Mullica River which drains into a bay just south of Long Beach and is the site of iron and glass manufacture dating back to Colonial times, and when I visited was being restored as a 'Working Village' tourist attraction with Stage Coach rides through the forest. The sawmill was already back in working order powered by a water wheel and the landing stage complete with broad beamed barges showing how the considerable system of 'inland waterway' system of creeks and rivers going well in from the coast or the Delaware river must have assisted the early colonists of New Jersey.

One of the problems of travel is the need felt to share the experience. Once I was hit by this quite badly. My then son-in-law Pete Haycock had a record in the top ten with his band 'Climax Blues Band', number 2 it got to I think, and I was cruising along the Pennsylvania Turnpike when suddenly there it was, 'Couldn't Get It Right' announced and played and I badly wanted to share that moment, something which not long ago I had never dreamed could happen to me. I was scheduled to visit more of our U.S. suppliers. The reaction against adhesives and paints containing volatile organic solvents was gaining momentum and my visits to prominent resin manufacturers had this in mind. As far as paints were concerned the Allweather interest lay in industrial anti corrosion coatings which in Europe had in the main been based on chlorinated rubber, as a major component of the paint. It soon seemed that there was a divergence of U.S. practice where chlorinated rubber had for a long time been regarded as a diluent for alkyd resins and so the performance expectations from their C. R. paints was generally lower than ours because the chemical resistance of their 'chlorinated rubber' paint films was limited by the alkyd content. I had visited a maker of polymer emulsions sold for use in paints and had been puzzled then why it was that they compared their paints with alkyds in typical corrosion resistant circumstances such as painting tank farms and why they seemed so pleased when the water based polymer paints out performed the alkyds. Now I began to understand. At the time there was nothing that would fit 'ready made' into the Allweather philosophy and range. Visiting these companies meant driving across two state lines, New Jersey to Pennsylvania down to Delaware where I was visiting both Hercules Incorporated and E.I. Du Pont de Nemours & Co Inc. Hercules well known for resin based chemicals had originally been the earliest manufacturer of gun powder in what became the U.S.A. When I first knew them, they still called themselves the Hercules Powder Company. Much of this 'powder' was used in land clearance for farming by blowing the old pine tree stumps out of the ground. Pine had been known for ever as a source of sticky resin which on its own or blended with beeswax had been used as an adhesive and sealant when making weapons and tools or boat building. 'Primitive' man's technology was not so primitive except that when it came to something chemical based it lacked reproducibility because of lack of understanding of the composition

of matter. Where raw material of a consistent composition could be found then technology improved to give reproducible results and properties from it and because of this some localities and peoples acquired a reputation for making some products supremely well and these were traded all round the world or whatever was the 'world' at that particular spot. In the absence of detailed understanding of chemical processes many of the processes of this technology must have seemed to have elements of magic in them.

This began to change in the latter half of the 18th century because of the work of scientists (philosophers) like Lavoisier and Joseph Priestly. But I ramble on. Perhaps not. Priestly was man of liberal views and was eventually driven from this country by mob violence arising then (as now) from the reaction of established oppression to liberalism. Priestly went to America in 1794, where his sons had already gone. He settled on the banks of the Susquehanna, after declining a professorship in chemistry at Philadelphia and died there in 1804. Before this Priestly had been in communication with the scientists of Pennsylvania and referred to their experiments in his 'History of Electricity' where the following is noted about the efforts of Ben Franklin and the 'big science' of the day. (Franklin arrived in Philly as a penniless waif and went on to be one of the negotiators and architects of liberty and introduce to science the terms 'positive' and 'negative' electricity and prove the identity of lightning and electricity) "I shall conclude" says Priestly "with an account of the manner in which Dr. Franklin and his friends closed the year 1748. They put an end to them (their experiments) for that season, as the Doctor says, somewhat humourously, in a party of pleasure on the banks of the Schuylkill. First, spirits were fired by a spark sent from side to side through the river without any other conductor than water. A turkey was killed for their dinner by the electrical shock, and roasted by the electrical Jack, before a fire kindled by the electrical bottle, when the healths of all the famous electricians were drunk". So, not too much of a ramble after all for I had crossed the Ben Franklin bridge and the Schuylkill on the way to Wilmington and Hercules Powder. Having located them I parked up and wandered around Wilmington town centre which had been pedestrianised and was like an open air shopping mall. Compared to the shopping centres I was used to in the U.K. - Shrewsbury, Telford, Wolverhampton - there was nothing exceptional. Like many countries once you've knocked the 1

or 2 percent of glitzy off the top, the living habits of the great majority are much alike. I did find my first Woolworths store in America and walked around out of interest. The philosophy of product range and promotion seemed the same as at home.

Hercules seemed to have a grip on their market needs, but much U.S.A. oriented, as I had found elsewhere. The U. S. home market is so vast that it can provide a living to any company without stepping outside the borders so unless the company had a World class product that can enjoy a competition free situation for a time at good margins the overseas competition met by an Export Department can be tougher than at home. My other Wilmington call on Du Pont was on a company that had developed world class production in the areas of synthetic rubbers and synthetic textile fibres especially the first totally synthetic fibre Nylon. Du Pont's early business had involved paints and varnishes and these began to be sold into the automobile industry. The rapid increase in demand for cars meant that means of reducing the finishing time had to be found and paints that dried quickly to a tough weather resistance film were needed. This led to a new look at paint resins and their manipulation. The auto industry also used increasing quantities of fabrics, fibres and rubber, the latter not just in tyres but in wire insulation and body weatherproofing. Products with improved processing characteristics, fire and oil resistance were sought and hence companies like Du Pont got involved in synthetic polymers for paints, rubber products and fibres. Having had a meeting at their laboratory at Chestnut Run I motored into Wilmington, parked and went to the Du Pont office. One got vaguely the impression that when in Wilmington you did as Du Pont said. Up to then I had made a point of not driving in City or unfamiliar roads after dark for fear of missing any one way signs, direction signs and the like. I needn't have worried for experience showed that the straight forward layout of the road system, the absence of winding country lanes and the low density of traffic (in the sense that compared to the vast mileage of roadways there was just not enough cars to fill them). Anyway, when I got into the office I was asked where I had parked. "You'll have to move from there, it closes at six, move it into our garage, we'll arrange a space". I said I thought I'd be well away before 6 but no, a table for dinner had been fixed at Hotel Du Pont and one of their top men, whose name I've forgotten was coming to meet me., So I

moved my car into their covered garage and found that the attendant had held a space that seemed minute compared to the bulk of the car and worse, he clearly expected me to reverse into it. So after lining up, I shut my eyes and went for it. Fine, room to spare all round, felt quite proud. I had found at Du Pont that increased effort on waterbased paints had been met by moving people over from work on waterbased adhesives and it seemed to me that their management had not been changed and I got the impression that the technicians were trying to convert waterbased adhesives into waterbased paints instead of going back to basic paint technology and applying it to their polymers. Especially as they had paint factories and facilities all within shouting distances. I mentioned this over our dinner and it was taken in good part and in the following discussion the logic of the Du Pont approach to some topics became clearer but I think they took on board my comment on paints. Came the time to leave and I expressed worries about navigating a strange city after dark. Nothing could be simpler it seemed, take a left out of the garage, then first left again and I would be brought down straight onto the junction with the New Jersey Turnpike and sooner or later junction across to route 297 and the Cherry Hill Sheraton. During these manoeuvres I noticed that my local shopping mall was open, it was 11pm but this was the U.S.A., so emboldened by the success in finding home I called in to find out if I could get my first batch of films processed, yes, call back at 9am which I did and there they were.

Harvey had the ambition at the time to develop Flashband as his main product and he wanted us to meet several potential suppliers of machinery. These were typical U.S. small business with the boss, or in one case the boss's wife because the boss was out, sitting in the front office looking out onto the reception/front door so that all the comings and goings were known. The companies were supplying rubber and plastics processors and worked if necessary on a sale and return basis - if the project failed they would buy back the kit at a predetermined proportion of the selling price. I was impressed by the knowledge shown of the processing characteristics of a wide range of materials and the willingness to meld this and their knowledge of machinery. All their stock of returned machines looked a bit rough but as they said there was no point in refurbish until they knew what bits had to be put together for the next job. In our case we needed this

barrel here, the melter feeder from over there and the roll up mechanism from that unit in the corner. All cleaned up, assembled and resprayed in a fortnight with the cost and buy back deal quoted then and there. As Harvey had said, you can get anything you want in this country pretty well at the drop of a hat. We also visited the Civil Engineering Department at Drexell University where we met Dr. Koener who had been introduced to Flashband and Roc Rap by Harvey and his students had taken part in a local water sport event using a canoe built from Roc Rap. I was very impressed with the department and what seemed to be a keen and practical interest in the problems of industry. Dr. Koener talked about his latest problem which was a study of negative skin friction in piling operations where the piles tend to pull themselves further into soft ground instead of reaching a load supporting condition, Dr. Koener was very flattering, he said he'd wanted to meet the inventor of F.B. and R/R and that my inventions had the 'simplicity of genius'. The time given to this trip was drawing to a close. I had during my visit to Hercules been given the name of Karnak Corporation in Clark, N.J, said to be makers of bitumen waterproofing compounds and I fixed an appointment with their Technical Manager at their plant. This was my only visit to a plant with the same purpose as ours at Evode and it was interesting to find a similar layout. They only supplied the trade and did no application work themselves. The plant was about twice the size of the Evode bitumen plant and Judging by the number of tankers, lorries etc that came in and out during my short visit they had a vigorous and flourishing trade.

I had time for two more tourist trips , the first into the southern reaches of New Jersey, Cape May, which is billed as 'The Nations Oldest Seaside Resort' I went through egg Harbour City and called at the Renault winery nearby. Somehow you don't think of the eastern seaboard as being warm enough for wine making, especially when there are reports of blizzards and freeze-ups. But apperently long summer days and mild Atlantic breezes make for a gentle grape. So during the Civil War Louis Nicholas Renault came from France and started his winery which has flourished apart from the prohibition era. The buildings were entered from the car park under a covered way clad in a pale orange translucent plastic used so that whatever the weather the visitor had the impression of walking in sunshine. It certainly worked. Renault Wines covered a wide range of

types, for me their 'Sauterne' was not sweet enough but the Rose just right. Many of the wines were very fruity and others were blends unusual to European tastes _ Blueberry flavoured champagne, Blueberry Duck. A wine tasting was part of the tour and from this I bought a bottle of sparkling Burgundy and Blueberry Duck. Moving on through Mays Landing I stopped at the "County Store" at Frog Hollow with the ubiquitous "Stars and Stripes" outside. I bought some home baked donuts and honey cake at the store and on turning into a signposted leisure park a little further on found a picnic area where I had the donuts and cake washed down with the Burgundy. Chipmunks were there and curious enough to eat cake crumbs around my feet. This rest area was the first time that the toilets were as bad as British toilets. A little further on I saw a yard sale and bought a fine old leather suitcase for 3 dollars. I used it to get my accumulated papers and other items back to the U.K. and it gave good service for several years afterwards. So on to cape May, which lived up to its description of a Victorian atmosphere. There was a small boardwalk along the 'front' but otherwise similar to places like Barmouth. The apartment houses were well separated and of imposing residential appearance. You can see the ferry across the bay to Delaware State and nearby fisherman casting their lines from a few rocks near the Point. A short ship canal cuts across from the east side of cape May Point and opens into the bay. It is the southern-most part of an Intracoastal Waterway which allows passage of vessels between the mainland and offshore islands all the way from about 20 miles north of Barnegat Light and the canal allows passage into the Bay without need for venturing on the open sea. The beach at cape May was littered with banks of corpses of the Horshoe Crab with its long tailed prehistoric appearance. Those up on the beach had dried out pretty well so I picked up one of the best and brought it home to show our grandchildren. I found, as elsewhere, that the tourist items on sale equated more or less with the cheap goods on offer to day trippers at British resorts. The final tourist journey in these eastern states was to Buskill Falls in Pennsylvania. This due to the courtesy of the gang from the office of Evode Inc. These falls are billed as the 'Niagra of Pennsylvania' somewhat of an exaggeration, although well worth a visit, particularly in the Fall. There was heavy rain on the journey there but it cleared up and the sun shone for our trip round the falls. The Bushkill creek is one of the headwater tributaries of the Delaware River and there

are places on the trail that afford fine views down the valley. The general atmosphere was like that of the Hermitage at Dunkeld, Scotland plus the glory of the colours of the Autumn trees, especially the acers. Two of the routes were marked out 'For Hikers Only' with warnings of the tough going, but compared with something like the Devil's Bridge trail at Aberystwyth it's easy-peasy. The going is liberally assisted by handrails, well made steps and smoothed paths. However, the falls were very impressive. The chipmunks were in evidence and there were mature Pennsylvanian Black Bears, but in cages. There were plenty of covered picnic and barbeque places so you can picnic without getting wet. I contributed my bottle of Bluberry duck. The things in the gift shop were the usual doubtful items, I bought an Indian bead work belt pointed out as 'typically American' by my fellow hikers but on the inside it had stamped 'Made in Hong-Kong!' I bought a 'Davy Crocket' type of hat made, it said, on a Cherokee Reservation in North Carolina. This used the furs of rabbits raised for meat, it said, not wild animal skins.

Then time to get back to Washington for the return flight to Heathrow, flying Eastern Airline from Philly. In the departure lounge at Washington Dulles a gent with a voice like a town-crier sat behind a desk at the exit and as the services became ready he intoned the Airline, Flight number and destination and departure gate "...now leaving from Gate 12..." to alert the passenger. From here I had a view of the setting sun across the plains west of Washington, clutching a Pina Colado, it seemed a fitting end to this first U.S. adventure.

Membership of the National Roofing Contractors Association in America was intended to keep us up to date with the U.S. and International developments in roofing. The Annual Convention of the Association has an exhibition of products and processes from countries that would not always attend exhibitions in Europe and alongside the exhibition lectures were given on new processes/materials, new legislation and market trends all having an influence on roofing. Someone from Evode Roofing would usually make the trip especially if there was some other reason for a U.S. visit. February 1979 saw me bound for the NRCA Convention held at Houston, Texas, our flight from Heathrow was delayed to pick up passengers from an Air India flight that had 'broken down'. We were

completely full as a result not a seat vacant and that's quite an experience on a 747. It wasn't a direct flight, landing first at New York where our Indian 'guests' burst spontaneously into applause at touch down. Here we cleared customs at JFK and had a 2 & a half hr wait to re-board. We seemed to spand an inordinate amount of time taxi-ing before take-off and eventually the captain gave us a message "For anyone counting, yes that is the third time we've taxied round the airport but this time we have got a definite allocation in take-off queue". Once we had pulled up clear of the lights of New York we seemed to lose sight of land for I don't remember seeing the lights of any other city. The Intercontinental Airport at Houston is outside the city and at the time of landing, about llp.m it seemed like the middle of nowhere. Got to the hotel at 12.00 local time. It seemed that our convention was timed to coincide with the start of 'Texan Fortnight' and the main parade route went right past my hotel. Wagons that had taken part in a Trail Drive across part of the state were included in the parade along with bands and decorated floats. It rained heavily at times which took the edge off the occasion but didn't seem to damp the enthusiasm of the paraders. One is struck by the way that at street level at least, coloureds outnumbered whites and also the presence of Spanish speakers 'Hispanics' usually of Mexican mixed parentage. It is not uncommon to hear nothing but Spanish spoken around you at times. Texas was once a province of Mexico who had won her independence from Spain in 1821. The settlement and development of continental North America put pressure on the 'Frontiersman' to move ever forward and Americans of the southern states began to spill over the Mexican Border into Texas, which was almost uninhabited and at first the Mexican government welcomed these settlers on the tacit understanding that they would become Mexican citizens but as the bulk of the population was American the continuance of loyalty to Mexico was soon in doubt. Various goings on led to the Alamo and then a return match under the leadership of Sam Houston led to a declaration of Texas as an independant State, recognised by the U.S.A., with Sam Houston as President. Continued expansion of U.S. interests led ultimately to war with Mexico and the annexation of Texas within the Union. Part of this early history of settlement is expressed in the Sam Houston Memorial Park when some of the original buildings of 'Houston' have been moved lock stock and barrel to a landscaped setting under the dominance of the new soaring skyscrapers of Downtown. I think that it

was somewhere on this tour that I heard of the mildness of the Gulf climate and that in Texas 'every day was a growing day'. Walking back to the hotel I was struck by the general level of style and chic compared to the Northern States. Although the shopping facilities were excellent the goods and services on offer seemed more intended to cater for the needs of the coloured population. I was staying at the Lamar Hotel and this was the finest hotel I stayed at in the U.S. The food was excellent, Gulf prawns as big as bananas, and a wonderful selection of puddings and bakery items. Although there was a touch of the manna's about the Lamar as indeed there was about Houston itself, the service was complete and friendly. Things might not happen exactly the same twice running but the guest was really welcome and no snootiness in that welcome, just pure friendly. I met a property manager in the bar and had an interesting chat about slate, a lot of the older properties have slated roofs, the origin of the slate being Vermont but he complained that maintenance was now made difficult by supply of slate and fixers. I didn't come across the division between slating and tiling and the rest of roofing in the U.S.A. as we have it here in the U. K. Felt based and timber shingle roofing were mentioned frequently but I can't remember slating and tiling. I had settled on whisky sour as my tipple in the U.S.A and the Lamar was the only hotel where from evening to evening the bartender remembered my name and had a whisky sour lined up as I approached the bar. I had landed at Houston the weekend before the Convention and so set up a visit to Galveston and NASA Lyndon B. Johnson Space Centre.

At the port we saw one of the huge ships used to carry Japanese cars to their markets. The guide said that when they unloaded the effect was the same as a spiders nest hatching out and little cars scurrying off in their thousands, the ship itself looked like a floating multi-storey carpark. Having sampled the motel' car as built in America I had concluded and still hold that only the Americans can make REAL motor cars and I found the number of small cars like the Japanese in use to be beyond understanding. With petrol then about 60 cents a U.S. gallon, economy, unless it was an over reaction to Pres. Carters austerity, just could not have been the reason. In Texas the pick-up truck was much in evidence and what vehicles they were! running as quietly as the best of Europe and with passenger car comfort. The residential areas that we passed through on the

way to N.A.S.A were a surprise, many could only be described as hovels, broken down timber shacks. But many of them had oil wells in the back yard, the Christmas tree cappings showing little disturbance of the environment. N.A. S.A Mission Control at Houston left me a little cold as does the whole manned space venture. After all it's not like Columbus and the Americas, it isn't possible for ordinary adventurers to follow the pioneers. On the other hand it was a sobering experience to see artefacts that had been to the Moon or in orbit around it. I suppose that the lasting impression is the minute size of the vehicles compared to the enormity of the distance travelled and the size of the propulsion unit overwhelming that of the payload. The space shuttle in its shape and layout of the flight deck seemed the most normal and acceptable thing of the lot. Mission Control centre seemed a slightly dowdy and run down affair. The paintwork looked worn with bare patches on doors and floors and the instrumentation looked old fashioned compared to , say, an up to date p.c. station. Skylab looked if anything less robust than the other vehicles and the thought of being around in the vacuum of space in one of those space suits was distinctly creepy.

In spite of the overwhelming presence of the car, Houston in common with other U.S. cities is full of busy walkers bustling about the place. Quite a number of the major buildings are connected either by underground tunnels or 'skywalks' joining buildings 10 or more stories up. The tunnels also have shops and cafeterias along them. A cab driver told me that the objective was for all facilities to be under cover by the year 2000 so that you would never need to go outside for anything from birth to death. When complete, the tunnel/skywalk system would be supplied with moving pavements. Walking down Main I met John Bird and his wife a former colleague from Evode Roofing, his then company having an exhibition at the Convention. I was surprised at the number of people who knew me from the Washington Symposium when we met at the various activities of the Convention. While on Main I bought myself a Texan style cowboy hat of the style known, I was told, as "dress Texan". Texas tends to be windy a lot of the time and I asked two locals how they managed to keep their hats on. "With great difficulty" was the answer so I felt better when I had to keep clutching at mine. Walking through a park on the way to the Convention Centre I was stopped by a youth who with a companion

was engaged in what we would call 'Work Experience trimming the trees and generally tidying up. He admired my hat, asked to try it on, I said sure if I could try his so we swapped hats for a few minutes. The trees themselves had that weird familiar/strange appearance such as you might get on an alien planet so I asked my friend what kind they were and what they were called. He didn't know but after a moments thought said that if this was going to be his work he ought to find out, and he'd ask the supervisor, I mentioned that if the supervisor didn't know then it was going to be easier to become a supervisor then he thought; so hats exchanged again I pressed on to the centre where I met Harvey again as Evode Inc had a stand showing Flashband. There were a number of side events at the Convention, one being the Opening Luncheon at which the principal speaker was Governor John Connally. There was a huge line waiting to use the elevator up to the dining hall and right next to it was a staircase - empty - so I just walked past the line and up the staircase, so getting a good seat up front. Nobody followed me. Connally was a good speaker but of course the typical politician. After the speech I joined a small group of people who were walking up for a brief word and a handshake, so I can say that I shook the hand that had given a handshake to President Kennedy within one hour of his assassination. Whilst the general level of the exhibition was very good some of the technical presentations were not so hot. One that I chose to go to was a seminar on single ply roofing with rubber and plastics sheeting. This seemed to completely ignore the real difficulties facing a contractor when trying to apply a thin plastic sheet to a surface that rarely , if ever was finished so that it was capable of taking such a sheet fixed with a thin liquid adhesive. So I stood up in my Dress Texan hat and put in my ten cents worth on this topic of the problems of the contractor and drew thunderous applause. Later in the convention people came to me and "Say, were you the guy that spoke up at the single ply meeting?", then shook my hand and said that those things needed saying. Most people there were contractors but when faced with the expert they feel that their actual hands on experience is too humble to be worth airing at a 'technical' meeting. The art of asking the daft question is an important one. Whether the thoughts behind your question are right or wrong you learn something from the answer. People with an established reputation should use that reputation to shake understanding from a discussion and not stay silent to preserve whatever

good opinion the group may have. One of my early leaders was Sir Jack Drummond at Boots and at meetings where an outsider specialist had been invited to lecture to Boots' staff Jack would be in his element, sitting on the edge of a table swinging his legs; often during the lecture a forming question bursting to be asked could be sensed but the audience too shy to ask for fear of looking foolish. At the opening of the discussion after a little pause up would pipe Sir Jack with the very question thus unlocking all the 'silly' questions that the audience needed to ask to learn.

After registration at the Conference Centre and attending the Opening lunch there were no further organised activities on the first day so I went on a Gray Line bus to the San Jacinto Battleground. Here on April 21st 1836 in a battle lasting 18 minutes independence was won by the Texan army led by Sam Houston. The battleground is marked by a huge monument 570 feet high topped by a representation of the Lone Star symbol of Texas. The State of Texas was the first to rescue its namesake battleship the U.S.S TEXAS, now the only survivor of the dreadnought class and she was moored at the battleground on San Jacinto Day in 1948. A veteran of two world wars, the ship's grey bulk adds effectively a National monument to the State monument. For some reason I remember particularly the galley on the craft which was coal fired and ran almost the whole way across the beam. Still now, but more than anywhere on board one could conjure up the bustle of activity as hundreds of meals were cooked there several times a day - coal to be brought in to keep the ranges going, food to be cooked and taken to the mess and all this sometimes on a rolling sea, sometimes with the threat of battle but always with a hungry crew! The galley ranges were a massive version of those found in a large country house and helped to drive home the fact that this was a floating home as well as a battleship. The weather seemed very variable, thunder and showers when I arrived then a few days fine weather with broken cloud, just like a Scottish summer then suddenly back again to thunder, flash floods and tornado warnings. But Texas is sump 'n else. In the restaurant at the Lamar I overheard two oilmen talking about the purchase of oil rigs for use in the Gulf. One was saying that he was going to get them built in Central America as he could save between 18 to 20 million dollars per rig compared to U.S.A costs, and I don't think he was kidding, a number of people seemed to bandy these astronomical sums around like

small change. Also in the restaurant I was seated near an Argentinian rancher who had his granddaughter with him, she had dropped a biscuit on the floor and was fussing over it. Said the rancher "That's no problem my dear, this is Texas, - you drop one, you get two more!" At the time of my visit there was a book in the best seller paperbacks about an alleged attempted murder of the daughter of one Ashe Robinson, I had read this during the flight. Walking along Main on my first day in town holding my map, I was stopped by a citizen who asked if I was looking for anywhere in particular. He proved to be ex Air Force, Leo Freedman, now a lawyer. After a chat over coffee I mentioned this book which seemed to be a cause celebre there and we ended up in Harris County Court Room, the scene of some of the action in the book and watched a couple of cases in progress - just like the T.V/Movies, the proceedings verged on the informal and I was surprised how well rehearsed the witnesses seemed to be, the busiest guy in the whole scene seemed to be the court stenographer.

I had arranged to visit a company near Boston who made water based paints on behalf of Allweather, and flew there at the end of the week landing at Atlanta and Hartford on the way. The plane for the first leg to Atlanta was a Lockheed 1101, then a new model of aircraft in the wide body class. Very impressive, seeming powerful and manoeuvrable in the air and much less lumbering on the ground than a 747. We got a splendid view of the Gulf as we climbed to cruising height. Although there is not much difference in the time zone I felt surprisingly tired when I arrived at Boston and the hotel. I was staying at the Hyatt at Cambridge, rather up market, but for the first time it had been difficult to get accommodation when I phoned from Houston. I wasn't too impressed with the Hyatt or Boston, in my short stay there I thought that they were an unfriendly bunch with food of mediocre quality. Went for an evening stroll along the bank of the Charles River past Massachusetts Institute of technology and being passed by the evening joggers. I had two business appointments, one with K.J Quinn, a company with whom Evode were developing a relationship, and a company in nearby Danvers, with the name Waterlac that manufactured waterbased paints. During the weekend I made a foot tour of the "Boston Freedom Trails". Here lines had been painted on sidewalks and pathways which if followed led one from point of interest to point of interest on each of the various trails. The purpose of these trails

was to bring to life the latter days of colonisation and the early days of revolution and independance so I had picked up my American trail again having worked back from Washington to Boston and the 'tea party'. I started my trail at the GRANARY burial ground. As at St. David's church in Pennsylvania there is at once a feeling of familiarity and belonging from the appearance and wording of the tombstones which are just the same as contemporary graveyards in Britain. The Granary interments date from 1660, following the trail from there towards the North End takes you past the site of Ben Franklin's birthplace and on towards the Old State House, now a museum where the painted line of the freedom trail led to a door on the south side of the building and appeared underfoot again on stepping out of the door on the North side. Nearby is Faneuil Hall built for use as a public market house and town hall in 1742 being a gift to the town of Boston from Peter Faneuil, a wealthy merchant. The hall became important in the revolutionary movement from 1760 onwards being the centre of resistance against the policy of the distant British government to deny to the colonists any real semblance of self determination - the 'Cradle of Liberty'. The market is still alive in the lower floor of the Quincy Market, a fascinating general purpose retail market. After eating at one of the fast food stalls in Quincy I moved on to view Paul Revere's house a clapboard house; to get a photograph I moved back on to a small cobbled square nearby, walking backwards peering through the viewfinder, suddenly I wondered what on earth was underfoot and looking down discovered that this cobbled area must have been used as a "dogs rest room" for all the local pooches and it was almost impossible to put a foot down without being fouled up. Clearly whatever bye-laws existed about dog fouling didn't apply to this bit of Boston. I hope it wasn't as bad when Paul Revere made his ride out in April 1775 to warn the people of Massachusetts that the British Troops were on the march. There is an equestrian monument to Paul Revere's ride not far away in a tree lined mall leading up to the 'Old North' church and here it is possible to buy a caddy full of tea that commemorates the Boston Tea Party as well. Next I went to the 19th century commercial wharf now developed as marina and residential property, I had been recommended to view these by the same person who'd told me that I must view New York from sea level - that had been worthwhile but this wharf looked just like any of the rows of industrial buildings to be found in Britain's dying industrial centres, I

suppose that it must be viewed with American eyes, after all 1830 is not all that long after the founding of the Union.

At the wharf I took a taxi out to the Bunkers Hill monument trail, where the first decisive battle in the founding of the Union was fought. Surrounding Charletown had been fired by the British to subdue sniper activity and across Boston Bay Abigail Adams stood in her apple orchard watching the burn and listening to the gunfire with dread. Standing with her young son John who was to become the sixth President of the United states. Although the U.S. militia lost on points it was a decisive battle in their history because they had shown that they could withstand against a battle experienced regular army both in ingenuity in throwing defences and in valour. General Washington concluded from the battle that "The liberties of the country are safe". From the top of the monument there are views across Boston but a dull reward for the climb on my day of visit, and a history of the site and battle is on view in the lodge at the foot of the monument. I finished my freedom trail by walking down to the wharf where lies the oldest commissioned warship afloat in the world - the United States Ship constitution launched in 1797. However I got the impression that not much of the timber work is original. At the stern was a glass viewing port set in to allow inspection of the sternpost and I'm sure that this was because it was the only wholly original part of the structure. And so to bed. My visit to Waterlac Inc the paint makers was memorable because at lunch I had some genuine Boston Clam Chowder and like many local specialities it is a dish to remember when properly prepared. Waterlac had a nice little business on a par with Allweather paints but the bulk of the products were used in work where long term weathering or corrosion resistance didn't matter. As these latter points were the metier of the AEP at the time it proved impossible to get them to swing resources behind a type of paint inferior in performance to solvented materials and with somewhat doubtful benefits to an environment which was only just beginning to get attention. Then back to Britain on TWA and another Lockheed 1101. At cruising height we had severe turbulence and the laconic American captain got clearance to climb above it where it seems we picked up a tail wind, which took our effective speed up to just over 600 mph and blew us into Heathrow over an hour early.

By 1982 our interest in the manufacture of Tekurat as an objective was firmly established and I found myself USA bound again to explore the possibility of a USA interest in the product. This time to Los Angeles, a direct flight of 11 and a quarter hours duration; things get a bit boring towards the end of a flight of that duration, thankfully it was not full so it was easy enough to go for a walk every now and then. I had this time motored to Manchester and taken the shuttle to Heathrow where we left about 12.30 pm, arriving in Los Angeles 4pm local time to a friendly reception at customs etc. , the airport at sixes and sevens because of a massive rebuild programme and a lot of the facilities were in huge tent like structures. Got a skycap and through his services a cab whose driver explained that he was a Mexican (pirate) moonlighting. I told him that as long as he knew where the hotel was I didn't give a damn. The freeway was a snarl up as we got to downtown Los Angeles at about 6pm but as we turned to head east into downtown there was the compensation of viewing the pale blue topped circle of mountains inland of Los Angeles and behind us my first Pacific sunset. My hotel on this occasion was the Hyatt Regency at Hope Street. This was allocated to me from the Convention Programme for I had made a mental note not to stay at Hyatt after my first experience and again in my opinion we had a building designed to overawe the peasantry but not offering a warm helpful welcome. Still when stuck for last minute accommodation as I had been at Boston and was to be in the Big Apple New York it was usually a Hyatt that had a room to spare. Anyway my first night there I ordered from room service menu and got r what was in effect a cheeseburger but not as good as a 'Wimpy'. Big and generous but lacking flavour. Same at breakfast where I took a meal of pancakes which didn't agree with me, probably all my fault, then I went to the convention centre to sign on. This exhibition seemed to be well attended by companies from the U.K. and Europe and I was surprised how many people I knew. Harvey Liss was there and also senor Sal Vivas of the Spanish roofing felt manufacturer Danosa who were to supply us later with the major components of the Evode roofing (Coverguard) system. Insulation manufacturers were well represented at the Convention exhibition and on day one I lost my voice, literally, talking to them. There seemed at that time little general, (that is across the nation), appreciation of the part played by water vapour in the failure of thermal insulation and hence only a patchy support for the scientific principals of

controlling its movement. Apart from the general eagerness of the American to get involved with something new (I didn't sense) much opportunity for promoting Tekurat in the US on the basis of the sales platform used in the U. K. /Germany. As one would expect there is a large part of the market from re-roofing or upgrading insulation and here the method of dealing with existing wet insulation or roofing is to strip the whole lot and ref ix new materials so it would be an uphill struggle to sell the idea of the idea of leaving it in place and relying on Tekurat ventilation to dry it out. Still a reliable estimate of the total roofing market was a little over one billion square metres so even 0. 1 `6 of this would be worth having. This is the strength of the unified market in the U.S.A , for most common items of commerce it is so vast that even a ridiculously small percentage for a new idea can give someone a wealthy lifestyle. I went to the member breakfast at which the speaker was Art Linklater who was an amusing sort of guy but presented a side of American social attitudes that other countries with a greater social awareness might not like. His theme was poor kid makes good therefore anyone can do it but its one thing to bum from town to town when young and single but with a wife and two kids and unemployed is a different tale. Some sort of safety net is needed. The hotel has a shopping Plaza or Hall built into it at basement level which contained several multiple stores as well as individual shops. I noticed as in Houston that clothes seemed very expensive. The hotel also not far from the Downtown end of Wiltshire Boulevard. This was just along the block from the hotel and brought you into the thick of skyscraper L.A nearby are tall shiny cylinders of the buildings where the cinema 'OSCA' awards are presented, also near is Broadway and this is more like our idea of a street full of shops, many of which display a sign 'Spanish spoken here'. As I'd collected a whole lot of literature from the convention I needed an extra case and bought one at a travel goods shop; 'Samsonite' branded it was to me very cheap, thirteen dollars I think and it's proved tough and durable over the years. As I had a couple more business appointments in New york I stayed the week-end after the convention in Los Angeles and picked up a couple of the by now familiar Gray Line Coach tours the first one being aimed for TIJUANA so that I could at least say that I'd been to Mexico. My first stop on the way was at an early Spanish settlement the San Juan Capistrano Mission which contains the oldest building in California, the church used by the founder

Junipero Serra. Like most monastic establishments it was designed to be self supporting and trade with its surroundings and is equipped for leather making and metal working. At first sight it is just like one of our ancient monuments, largely ruinous but this is misleading for the building is modern, being started in 1797 and dedicated in 1806. It must have been very fine with its fountains, court yards and outer ranges and its general location near the Pacific shore. Unfortunately it was brought to its present ruinous state by earthquake just six years later. Not far away is the 'Trading Post' a store that for once had some excellent tourist trophies including turquoise in silver jewelry. Our journey then took us along the Scenic Pacific Coast route, so here it was, I'd made the Pacific and been from 'Sea to Shining Sea'. Next stop, San Diego, where there is a part of the original 'Old Town' the first settlement in California where some original buildings are preserved in a State Historical Park, one of the best and most sensitive preservations I have ever seen, some of the shops still carrying on their original trade, as was the tobacconist, and the Spanish Colonial style houses with elevated iron railed balconies, some draped with brightly coloured banners, well kept lawns with bright plantings of flowers and palm trees and some brightly coloured booths scattered through the park like surroundings. In contrast a spin around the modern harbour area was gloomy in spite of the glorious West Coast sunshine. Then out south again to the border with Mexico where we were able to pass with remarkably little formality. We had to de-bus then walk through the customs barrier in single file getting back on board at the other side of the border. Now south of the border and definitely down Mexico Way even if only just. It seems that for many Hispanic workers in Southern California Tijuana is a dormitory town and to cater for the rising ambitions of those contaminated by their rich Gringo neighbours a 'New Tijuana' is rapidly rising and spreading over adjacent lands. Our coach landed us in the main street, the buildings and the general activity being very much on the scale of small town America but very much Mexican in its atmosphere. It is one mass of tourist shops and to haggle on price seems to be an automatic 'must'. Even after haggling the prices are not a clear bargain compared to similar items in the USA but they are realistic and for example if native jewelry is being sought then a wider range would be hard to find. People get carried away - literally - you can't walk past a shop, someone will always come out and press gang you in but don't argue

too long if you keep saying no. I had seen a ring of a type that I wanted to buy and was trying to compare prices from shop to shop but it was impossible. As soon as you asked the price it began to fall and the slightest sign of doubt on your part such as looking at the item from different angles and um-ing and ha-ing a bit without a conscious effort of bargaining brought it down to half the ticket price and a little longer hesitation got it down further by the trader 'absorbing' the sales tax. For lower priced items like the gaily coloured paper flowers hawked by women in the street this didn't apply but even for a fifteen dollar shirt I got a five dollar reduction just by waving a hand and saying no thank you. Unfortunately as I was buying paper flowers from one of the street sellers some light fingered urchin stole the shirt which I had tucked under my arm in its wrapper, so gentle that I didn't miss it until walking back to the bus. Fellow passengers that I really only got to speak to on the journey home were Brian and Jan on holiday from Australia. Brian was in the air conditioning business. Once started, we seemed to have a lot to talk about bonded for the time perhaps by all being English speaking non-Americans. Over the rest of the week-end I took the Palm Springs tour which stopped on the way at a Western 'Movietown' set near Colton. This was laid out as a typical 'Wild West' town street, care taken to keep everything in 'period' and it could be seen that in spite of the nearness of the modern world it would be possible to be 'authentic'. There were a few actors around and a film crew but no-one that I recognised. The guns that the cowboys used made a hell of a noise when fired. Then on to Palm Springs across the desert. Its amazing how quickly the terrain changes from being reasonably green all around to pure sandy, rocky desert with a few cactus. We crossed a railway track occupied by one of those apparently endless slow moving freight trains. What a lonely line. Palm Springs is a general holiday resort with caravan sites as well as the homes of the stars. The prices for once seemed reasonable and I bought a leather southern style hat. I had in my travels been looking for a set of rules for the game of Rummikub as we'd heard that the most complete compilation was available in the U.S.A and surprisingly I found them on sale in a sports goods shop next to the golf course. We had the usual brief tour around the celebs quarter, seeing Bob Hope's house, the former house of Marilyn Monroe etc. I noticed that all the greenery had constant watering and the larger plants had their own individual pipes giving what seemed like a constant dribble of water

straight by the stem. Palm Springs was worth seeing but for me not worth staying even though the desert climate (in March) was dry and invigorating. The return trip included a halt at a 'Living Desert' nature reserve. This had the similar intention as one of our forest nature trails and allowed the visitor to wonder amongst and meet at close quarters desert flora and (caged) fauna. It truly was in the middle of the desert wherever you looked there was sand, low rocky hills and distant mountains relieved by a few cacti and low scrubby plants which did however carry some patches of flowers. All these stops were arranged where 'rest rooms' were available. The Americans seem reluctant to make any more direct reference to the needs of nature other than 'rest room' or 'bathroom'. The driver shepherds his little flock very thoroughly and although these trips took twelve hours each you felt relaxed and at ease. The coaches again had close to passenger car levels of comfort.

This is the Sunshine State. We drove through streets bordered by orange groves in fruit on our way out of Los Angeles but the Sun and the desert air did not seem to do me much good for a cold that had started earlier in the week progressed to the point where I felt obliged to cancel my final trip which would have been to Hollywood. I was surprised to find that in the land of Linus c. Pauling and vitamin C I could not get the drug in the effervescent form and had to make do with crunchy tablets nowhere near so pleasant to take. The main reason for taking a rest was that I still had two more business appointments in New York and to give me the most time in California had booked onto the overnight 'red eye' flight from L.A to New York so with my cold I was going to have a tiresome enough day without sightseeing as well. My travel agent had sent a message telling me that the hoped for booking for Monday night at the Pierre Hotel had not been confirmed so I had to make my own booking again by phone and once more the Hyatt came to my rescue this time the Grand Hyatt on 42nd and Lexington claimed as one of the showpiece hotels of New York. I had before finding a hotel asked the airline where this overnight flight landed and been given the astonishing (to me) reply that "It doesn't". When I expressed surprise, even slight alarm it was explained to me that it was a non-stop, the first time that I knew that 'landing' could mean an intermediate touch down. So it seemed that we were bound for John F Kennedy airport and we left Los Angeles at 9.50pm local time. On the

flight I sat near a guy named. Mike who claimed that he was a stuntman in the movie world. There was no reason to disbelieve him. He was going to New York to rejoin a girlfriend who he had met during her vacation in Los Angeles. She was going to meet him at the airport. We arrived at New York about 4.30 am local time, and an unforgettable part of that arrival was the appearance of the Moon, it seemed so huge and close that I thought at first it was some sort of illuminated advertising sign supported on a pylon. I've never seen it before or since on that apparent scale. Because of the time of day Mike had already offered me a lift into town on behalf of his girlfriend. Mike had just been wearing jeans and a t-shirt on the plane and to my surprise had nothing warmer to wear. After all it had been warm in California and New York was still in the same country wasn't it? I met several Americans who didn't have a very good understanding of their own country so no wonder their attitude to the rest of the World was a bit hazy! Mike started to complain about the cold as soon as he hit the cold night air of New York in March, his friend Lynn had called to collect him in a stretch Limo Cadillac complete with liveried chauffeur. The origins of this were never explained in my presence but for some reason Mike seemed put out by it. Maybe it contrasted too much with his more laid back California lifestyle.

I registered at the Hyatt which WAS a showpiece having an atrium and public area built on the scale of an Egyptian temple. After breakfast I made some phone calls following up a few items from the convention and confirming my appointments. With Olin, a company who was a potential supplier of raw materials for Tekurat, the other was the New York Branch of J. Walker Thompson, our recently appointed U.K advertising agents for Evode Roofing and Tekurat. Amongst my calls was one to the Thermal Insulation Manufacturers Association where their executive Director gave me information in an area which had been a bit vague up to then, namely how building standards were determined in the U.S.A. I had frequently seen the initials I. C. B.0 and S. B.C.C and these now proved to be the International Conference of Building Officials and the Southern Building Code Committee respectively. The conversation seemed to confirm that there was a place for Tekurat in the U.S designers portfolio. That afternoon I went for a walk round a leafless Central Park which even in this condition was memorable for the landscape has surprising undulations

giving a changing scene in all directions with the skyscrapers of Manhattan across the lake doing their job of scraping the sky; some large outcrops of rock in the park grounds and in the lake looked almost unreal somehow, the surroundings are so watery with Hudson River and Long Island Sound that for some reason I didn't expect to see rocks sticking up out of them but I suppose those skyscrapers need something better than clay to put their feet on. Compared to 5th Avenue the motor traffic in the park was light but walking seemed to come at the bottom of the list below roller skating and jogging. The American Museum of Natural History is nearly on Central Park West and on a weekday seemed uncrowded. The dinosaur halls were the most impressive but all the displays which included specimens from other continents and for once gave the feeling that there were places other than the U.S.A were well presented giving a good sense of the environment in which the critters lived. But walking in on the dinosaurs and staring up at that massive backbone is the lasting memory. The next day I moved hotels to the Pierre on 5th Avenue. This was a hotel that I'd always wanted to stay at since my first visit to New York with Harvey when we went to the National Westminster Bank reception held there. Very upper crust, large country house style of rooms with service that approached a large U.K hotel in standard, friendly but with ability to fade into the background. A bit like Gleneagles in its roominess but built up vertically instead of spread horizontally. And without the shooting. Of clays and birds that it. I called at Grand Central Station to get a ticket for the trip to New Haven and the Olin Company; was surprised to find that they didn't know which platform the train would leave from on the following day. This doesn't seem to be a constant feature of the timetable as it is in the U.K but varies in accordance with demands on arrivals and departures. Grand Central is certainly some place as railway stations go, vaguely resembling the interior of a cathedral. I had earlier walked to Cartier's on 5th Avenue during a snowstorm and bought some Eau de Parfum (which was about all I could afford) in 'Cinnabar' which at the time was not available at home. Quite a glitzy store with armed guards and all in evidence. Moved on then to the advertising agents on Lexington Avenue, this took me down a canyon of buildings into one with a large entrance hall, polished stonefaced, and elevators opening off it. Found my way to Soskin/Thompson office and had a lengthy exchange of information which left me with a good opinion of them and their

attitude. Unfortunately as told elsewhere events overtook any ambitions that we had for marketing our products in the USA. My final duty was to meet Olin Chemicals at New Haven going by train and catching a glimpse of the Yale University buildings as we drove from the station to the Olin Offices. It seemed that much of the USA work gave properties of polyurethane foam that would not translate easily into the U.K specification requirements. So back to New York and the John F Kennedy airport. I had an open ticket and was fortunate to get a seat on an evening flight and arrived in Manchester at about 8 a. m, stopping for breakfast at the Knutsford Services, by then feeling at home and on the right side of the road again. That was the end of my American adventures. After the first visit you want to tell everyone about it. I'VE been to America. But usually the first person that you boast to has just got back himself. I don't know if I would want to go again as I was able to 'bracket' the country pretty well on my few trips. If I did go, it would be to Texas.

CHAPTER TWELVE

TECHNICAL SERVICE; - SUPPORTING THE SALESFORCE

When a science based company starts from scratch as Evode did the founding scientist has to be prepared to turn his hand to anything. One activity which can have a profound effect on the survival and growth of the Company is Technical Service. In a small company it can perform at least part of the requirements of marketing and research departments without actually having them as separate entities. Technical Service can involve training a new customer in the proper use of an existing product. This is an aspect which can be left to the efforts of a trained salesman provided that the published specification for the product in question includes this use. This is the marketing part of the exercise, feeding back to a new customer information gained from existing customers and thus expanding the market base. When your technical service engineer is working with a customer to solve a new problem then this is interfacing with research and development. The new product or new process arising from this can, as far as confidentiality allows, be fed back to the market in general. There is to some extent a conflict of interest between increasing the sales and protecting the Company against liability for damages if the process fails to work. Behind this lies the need to establish clearly with the customer a specification of the results and performance to be achieved so that contracts for orders can be based on this specification. There is no such thing as free technical service in the sense that if provided without charge it carries, no liability for performance. All advice carries some liability for the outcome of performance and hence such advice needs to be precisely defined at the outset and many a company has folded because of advice given in a too off hand fashion. This need for precision in stating just what a product will or will not do, and sticking to it, is often a cause of friction between Sales and Technical Service personnel. Dr. Simon pointed out to me that in general if a salesman doesn't sell he doesn't eat hence his keenness to push the limits of use of a product as far as possible and of course if you are too stick in the mud then eventually you won't eat either. Very often before making a visit you have been hyped up by the salesman as the greatest living expert on the subject in question. The thought to cling to is that even greatest living experts don't know all the answers at the drop of a hat and often at a first visit all you can do is

gather facts on the problem that enable you to research it in a structured manner. Very often this inability to give an immediate answer can turn to good effect. A manager usually likes to be able to solve problems from within his own experience and may feel a bit of a failure if he needs to turn to outside help but to find that help has to go away and research an answer to the problem is reassuring. Maybe after all he wasn't supposed to know the answer automatically but now he's doing his job as a manager by getting an expert to find the answer for him. Getting the various application and performance requirements set down and agreed and a tentative time scale for progress gives the framework of professionalism that encourages the customer to stay with you. Sometimes you are faced with the statement that a salesman from a competitor has already claimed to be able to solve the problem. Never knock the competition it is said. All you can do is stick to your guns and by reiterating your reasons why you can't solve it immediately cause some doubts to form about the claims of the competitor. Sometimes of course those doubts appear when the customer starts doing his own tests with the competing product. Sometimes comparisons have already been made. In the days when Hermann was still doing his own technical service which include inspection of roof waterproofing works he made a visit in Cheshire to a site where wartime aircraft hangers were being waterproofed prior to being used as stores; as he stepped onto the roof he noticed that the hanger next door was being waterproofed by a competitor, but that competitor was the 'contracts' wing of the company that made and supplied us with roofing compounds, so the containers and contents were identical, only the labels had been changed to expensive than the opposition. Just then who should come climbing up the ladder but the client's site manager. This is one of the problems with construction sites, you never know who is going to come clambering up the ladder after you. In this case 'Ho' says the manager to Hermann "I see you've spotted that crowd over there - I'll never use them again! Their product is a load of rubbish compared to yours". At first it seems that he had mislead himself but no, the 'product' here (as in many cases) was not the stuff in the can but its finished state applied to the roof so the method of application influenced the final outcome. In Hermann's case he had made sure that his own 'hands on' experience of successful use had been translated into the activities of his roofing teams and their supervision. So in reality his product was the

better one. It was a time for silent agreement. Technical Service Department is usually involved in dealing with complaints. On the first visit it is always preferable for the local rep. to be involved as well. It gives the client a familiar face and by spreading the discussion gives the 'Head Office' guy a chance of some thinking time. In any case the Technical Service representative should never be left feeling alone; he or she should always know the limits beyond which a reference to 'higher authority' is needed. The chance to get an agreed 'breathing space' is often vital to allow frayed tempers to cool off a bit and entrenched attitudes to be pondered. Once we had a problem in Sheffield on a large construction site of such a magnitude that the client had insisted on the M.D of our company being present at the meeting. I tagged along as the 'expert' on the product in question which was a totally new type of sealant. It certainly wasn't performing according to expectations and all parties were stumped for an explanation. As is often the case with 'state of the art' products the state of the art is not sufficiently mapped out to allow accurate prediction of performance and explanations have to wait for science to complement art, but at the same time we were at a loss literally for the client was looking for recompense for the failure. Up to then this sordid topic had been skirted around by representatives of our company but now all eyes turned to Hermann, the man on the spot, the buck stops here, etc, for a statement on this question. I wondered what the hell he was going to say because to me it seemed that all delays had been exhausted. But no, "on a matter as serious as this," says he, "I must consult with my Board which I will do tomorrow". To this the client's party agreed and the immediate temper of the moment was defused. With many construction problems the interplay of contractual liability can be so complicated that you have to be very careful always of what you say and to whom. Initially, in contractual terms, everybody would be busy blaming everybody else for the failure and you needed to come up with a proof of your innocence that could be steered safely through the other people's explanations without collision and sinking. As the use of steel or reinforced concrete frames as a means of transmitting the load of a large building to the ground increased, the need for brick or masonry walls as load bearing parts of a structure vanished and the era of the Curtain Wall was ushered in. In it's early use in castles the curtain wall was a relatively light weight structure intended to keep the enemy out between the towers which were built solidly enough to

absorb and repel the full load of enemy assault. Similarly the curtain wall on a multi storey building was a lightweight composite of metal frame and glass hung from the main supporting frame of the building. This lightweight cladding had to put up with a lot of movement from wind forces and heating and cooling. The traditional idea of glass fixed more or less rigidly into a frame didn't work over such a large area and the introduction of double glazing made matters worse. Ordinary sealants hardened too quickly to give a long term answer. Although gasket systems were developed eventually the early efforts centred round holding the glass firmly but not rigidly in place in the frame by means of plastic 'spacers' set around the perimeter and the glass and spacers clamped in place by the frame components. In this way the sealant was only needed to waterproof the gaps between glass, frame, spacers etc and so could be very soft and non setting in character. At least that was the theory but getting it into practice caused a lot of head scratching. This was largely because the man doing it found it hard to believe that the spacers and frame held the glass in place and the sealant make little or no contribution. The result was that on most complaints of leakage in the structures the technical service engineer could ask for any leaking frame to be dismantled and low and behold compared to the drawing the number, size and location of the spacers would be found to be deficient. Thus in the presence of all, the blame was squarely placed on the glazing contractor. A colleague and I had just reached this state of affairs on a complaint about a new office block that faced into the prevailing winds across open ground. As we walked out of the meeting with the glazing contractor my colleague happened to say that in his view the design details were in any case right on the border of performance considering the exposure conditions. The contractor left us to make peace with the Architect. When we got to the gatehouse we were stopped and asked to return to the office where the glazier had pinned on my colleague's remark and presented it as criticism of the architects design implying some liability for the failure. So we were back in it again having pushed the contractor and architect back together against us. My colleague had to think on his feet but managed to convince the architect that what he had meant was that given the exposure conditions compliance with the design details was vital for success. And luckily with our fences mended we crept out again not so cockily as before. A technical service visit on a complaint is in the foothills of

litigation as everyone is exploring the reasons why they shouldn't pay anything. So having got a decision in your favour rest your case and keep your trap shut. In our case my colleague felt sorry for the contractor and was only trying to sympathise, but as we found there are no friends in business and fellow feeling should not divert attention from the possible penalty. So the technical service engineer has to wear several hats, supporting the salesman in new business, defending the company finances against complaints and if need be planning a strategic retreat; noting opportunities for new products and discussing them with research personnel. All this has to be based on the truth of a situation as perceived. If the company hopes to recover something from the wreckage of a complaint and get continued business then the impression left by technical service is of great importance. Sometimes a visit takes place because of a vague feeling on the part of the client that he 'wants to meet someone from Head Office'. One such visit took me to a manufacturer of precast concrete garages who was using one of our quick setter compositions to improve productivity. He had grumbled about what seemed to be a variable performance. I went through their manufacturing process and was pretty horrified. Being near the heart of the car industry they were using as reinforcement for their concrete panels scrap metal from the car factories. This was in the form of mild steel strip about 1/16 inch thick and 5 inches wide from which various shapes had been punched for use in making small car components. Normally in such panels the reinforcement would be in the form of a mild steel mesh to give the most uniform distribution of strength. Had the scrap strip been laid in the mould carefully to a pattern it might have been possible although by no means an ideal choice from the technical point of view. After my tour of the process I was bundled into the office of the Founder and Managing Director who fairly early on told me that they had used the Building Research Establishment as consultants and they had devised the best mix of the concrete ingredients used. Slapping the report in front of me - 'What did I think of it?'. The mixes reported were nothing like the ratios for normal concrete but complicated ones, like 10:22:31 that had clearly been fine tuned to the actual condition of the local supplies and not some national 'average'. I said that I couldn't comment on them without repeating some of the tests but that in my opinion the best way to improve the uniformity of his product would be to use proper reinforcement and not this scrap strip,

giving the reasons why. As I left one of his managers told me that they'd been saying that for years but 'he' wouldn't listen. Now strangely some fifteen years later this gentleman after suffering a heart attack was on the point of retirement and living in South Africa and he was making a tour of old business friends which included Hermann. Although we had not met since he must have asked after me and Hermann brought him to my office. Our visitor turned to H.S. and said "This man had the nerve to tell me that I was making a load of rubbish!" So he hadn't forgotten my visit. This was Mr. Robens, founder of Banbury Buildings. We had a brief but friendly chat while I reminded him that I had accused him of using rubbish reinforcement not making rubbish. An apposite remark by the 'man from Head Office' can be remembered for a duration well beyond its purpose so the selection and training of technical service personnel is a vital part of company development. Given good training and support literature the sales person is often capable of providing first line technical service but he or she is often under pressure to meet sales targets and so cannot afford to have too much time dedicated to one customer for 'non-selling' purposes but needs to move around and find new business. Hence the need to have time and people dedicated to technical service. In the days when work was fun the zone at the interface between a selling corporation and a buying corporation seemed to throw up a fair number of 'characters' of national and sometimes international repute. The 'character' usually being built on a recognition of the ability to work hard and produce the goods when needed plus the ability to relax and perhaps direct a beam of satire or cynicism at the problem when once its immediate hazards seem capable of solution. Sometimes the proverbs of counting ones chickens comes home to roost and relaxation is premature, as it was on one of my first 'concrete' technical service visits which involved the pumped storage hydro electric scheme in Wales near Blaenau Ffestiniog. McAlpines were the main contractors and (I think) Freeman, Fox and partners were the engineers. Anyway the scheme involved using off peak electricity to pump water from a lake to a high level reservoir, then at peak times this stored water was to be run back into the lake via a generating station. This effectively was a means of storing electricity in quantities large enough to be useful for domestic/industrial use. There was plenty of concrete used in producing the final form of the storage reservoir and associated works and of course this concrete needed to be watertight. Concrete properly mixed

and placed is watertight, this was the whole purpose of Portland cement to have a means of mortar jointing of stonework in canals, aqueducts, harbour works that would stay put under water and not allow leaks or collapse, but several companies had developed "admixtures" for concrete that improved the chances of the mix fully developing its inherent watertight character. This helped to insure against less than best mixing, placing and compacting and as there were many examples of 'leaky' concrete engineers could often be persuaded to go for the extra comfort of a 'waterproofer'. The visit in question took place around 1958. In those days such business dealing took place via London Offices. The engineers would have a London office as would main contractors and the suppliers of many building components would also have London representation, Evode for example had a London Office, originally in Victoria but later on the Edgeware Road. On this North Wales contract a waterproofer made by a competitor had been specified but of course there had been the usual "switchselling" activity and our sales team had persuaded the Contractor to consider using Evode's concrete waterproofer - "Mellitol". All this was covered by the usual form of specification which called for the use of "product X - or equal approved " i.e something of the same performance. A site visit to the contractor's office was called for and I went in the company of the local sales person Mr. Harry Toovey. The contractor threw all sorts of questions at us but I must have managed acceptable answers. On our literature at the time there was a photograph showing a batching box being used by two gents wearing corduroy trousers tied at the knee with string! Through the window one could see a huge modern batching plant built for use on this site and the engineer, at the end of the meeting, pointed to this and then at the photograph. "That's a bit old fashioned, isn't it?" said he. I replied that not all works were as massive as his but that the method of getting at the proper proportions for the mix were valid whatever the scale. Anyway the upshot was that at the end of the meeting we actually came away with the order, the largest order ever obtained for Mellitol - 35 tons. Harry was overjoyed and treated me to slap up lunch in the nearby town. Of course the supplier originally specified wasn't going to take this lying down and he reacted by showing to the Engineers documentary evidence that his product had been used in similar water retaining structures and , on the basis of "equal approval" could we do the same for Mellitol. Now Mellitol was a product brought to this

country by Dr. Simon and whilst it had been widely used in small scale Jobs in the U.K. there were no U.K. examples directly similar to the Job in question. After a frantic search around we found a dam in Austria where the product had been used in the 1930's and got copies of the original specification. Our sales manager Mr. Yudolph and I were sent to the London office of the Engineers to present this but the Partner in charge of our Job was 'too busy' to see us. The trouble was that he hadn't been involved in the change of product which had been a local affair with the contractor and so naturally felt, I suspect, very much on his dignity. Anyway, the original product specification was upheld and Mellitol withdrawn. As it happened we had by then got the order for the Mellitol and so as a result were able to negotiate a fee for its cancellation so all was not lost. This matter of attacking the product originally specified to switch it to something else was an ever present risk for a supplier who couldn't be sure of the situation until he held an order in his hot little hand. Providing evidence for the sales force to enable them to defend our own or attack competitors specifications was an aspect of life that kept technical services busy. The etiquette of site visit was soon learned - who to report to on site on arrival etc - and the limitations of the eagerness of some professionals to clamber over a building. A well known flooring contractor once told me that he envied us roofers because every architect was prepared to go on his hands and knees and peer at the smallest defect in a floor covering but not many were prepared to go clambering over a roof. In the days when health and safety was not so strictly controlled it was quite easy to make access to a building seem daunting to those of a nervous disposition. My longest lasting partnership (technical service) was with Les Willmore who eventually became Technical Service Manager for Evode Roofing and its associated companies. Les had spent some time as an industrial painter painting the steel framework and cladding of buildings. He had already learned to make use of the reluctance of the clients representative to climb in exposed places. Above a certain height the assurance that the rest of the work was all to the same spec was at times enough to get it signed off. Sometimes if time was getting short on a contract or costs a bit over the odds then known nervousness could be exploited by missing off an undercoat on the higher reaches of a job. As George Burns said of acting, what was needed was sincerity and once you'd learned how to fake that you'd got it made. But as Les used to say, if you were going to cheat you

had to cheat fair and this usually meant that whilst short cuts may be made later on you never skimped on the preparation and priming for this was the foundation of the whole job and governed the performance of whatever went on top of it. Les was from the Potteries and had a family background of several generations of small businesses associated with the making of 'china' including the milling of flint and glaze ingredients. Like many small to medium masters of the time as well as providing work, houses convenient to the factory were built for the employees the 'complex' included a shop and the owner's somewhat superior dwelling was built in as well. Like most successful traders they had a say in local government affairs Les's grandad being fire captain and gas superintendent on behalf of the Watch committee. His father, George came from South Staffordshire and after service as a sergeant Major in WW1 and marriage became a full time Fire Captain in Longton. Lies joined the Navy in 1941 and by all accounts had a 'good war' full of excitement in Combined Operations ending with the rank of Petty Officer. He intended the Navy as his career but was invalided out following a gunnery accident. After a spell supervising industrial painting contracts Les joined Evode in 1959 to provide a technical service back up for paints and surface coatings. His naval experience had forced development of his initiative in awkward situations and given him an air of authority well fitted to a career in technical service. His experience included one of those amazing wartime coincidences. Plymouth and other coastal towns was subjected to severe aerial bombardment, so severe that on many occasions the inhabitants would leave and camp out in the surrounding country until daylight. The effect of incendiary bomb raids was particularly severe. As some sort of counter measure groups of mobile fire fighting teams had been created to back up local forces when required and George was in control of one such group. During a very severe raid Les was ordered, his ship being in port, to take a Jeep and naval personnel to assist the local teams, reporting to the fire HQ at Ivybridge just outside Plymouth and putting out fires on the way. When he got to Ivybridge he found that he was reporting for duty to his own father. In the fullness of time Les became a father and his son 'Young Les' studied and researched Material Science at Bradford University ending up Ph.D. Young Les stayed in academia moving to what is now De Montford University in Leicester as Lecturer in Textiles. He suggested to one of his students seeking a research project as part of

the first degree the study of the use of textiles in roofing and this led to a deep relationship between Young Les and Evode Roofing which was especially useful in the development of novel polyester fabrics as part of what became known as the Hyflex System. This also gave us a contact with the academic 'grapevine' which proved particularly useful when tackling some difficult problems of analysis encountered in technical service. It was also of assistance to us in appreciating the potential material science benefits of films reinforced with woven fabrics and giving us greater confidence in approaching customers. Part of the task for Les and myself was seeking out potential new additions to our range of products. Here the boot is on the other foot because we are now trying to project ourselves as customers not suppliers. Questions about prices, payment and volumes and our ability to meet them now come into the picture. This is by nature a longer term relationship than with one client who has a problem; the supplier had to like us or at any rate it helps an awful lot if we can find common interests and establish a rapport. Because of his variety of experience Les was able to do this and set up relationships in Spain, Holland and Germany. Underlining once again that in a small company such as Evode Roofing one needs to turn a hand to several areas of business often calling for considerable skills as well as the ability to present and convince with scientific principles unfamiliar to the listener.

APPENDIX I

THE BENEFITS OF CHEMISTRY AS A FOUNDATION FOR SCIENTIFIC MANAGEMENT STAFF SELECTION AND DEVELOPMENT

A lengthy series of investigations had just been completed to assure compliance with the client's specifications for sections of the new Woolwich Urban Prison. I had acted in these audits in my role of Quality Assurance Manager for Briggs-Amasco and been accompanied by Allan McCoan , the manager responsible for quality on site. Our 'work package' in the contract meant that we had had to trace the origin of metallic components, paints and the processes of painting, galvanising welding, sheet metal forming and coating. We sat in my car outside the office of the lsat subcontractor visited and Allan turned to me and said "How do you do it , Barry?" Thinking that he was referring to an item discussed in this last visit I started to run through it again when he said "No, I mean how do YOU do it? You have spoken to all these specialists and I could tell from the way that they answered you that you knew what you were talking about, how do you manage to know everything?" This floored me, I really had to stop and think before replying. As experts we take our knowledge for granted and expect it of ourselves to get knowledge of an unfamiliar situation even if it's by asking questions 'on the fly' as it were, when ignorance intervenes. Dr. Johnson remarked that every man is willing to hold forth on the subject of his own work and over the years one can learn an awful lot about obscure, even arcane subjects. But faced with Allan's query I realised that there was something deeper and it suddenly dawned on me what a fine general education could stem from the study of chemistry. Take the metal Lead. In a study of chemistry you learn where it comes from in terms of geographical location as well as method of entraction. Its properties and uses in roofing and plumbing because it is durable and malleable. How it is used in 'anti-knock' additives for petrol; to make pigments for paints, Red Lead to resist corrosion and be used in making the Lead battery etc. etc. And so on through all the elements, their origin's history and impact on living. As everyday and everywhere contact is made with some aspect of applied chemistry the lessons tend to stick in the memory. When at Evode I became partly responsible for recruitment I became aware of another factor, that I had been exceedingly fortunate in

my mentors and professors who had shown me chemistry as a foundation for education and not just something to be learned by rote. I also realised that I had been fortunate in my University - Nottingham - although at the time I was a bit miffed in ending up there, as it had not reached its present glory being still a University College offering London External degrees. At the time of seeking a place competition was enormous and a school leaver was lucky to get anywhere versus demobbed ex-servicemen, there was nothing of University experience in my family background and the only graduates I met on a regular basis were my teachers, clergymen and the medical professions each of whom offered advice on his Alma Mater but in the end it was Nottingham with a slight sense of disappointment. Later when I was recruiting graduates and Ph D's from elsewhere I realised how generous an atmosphere had prevailed at Nottingham, we were to some extent free range students, especially post graduate, when we were encouraged to follow our hunches and use any apparatus or method that seemed to have some relevance to our problem. On the subject of our research topic we were kept within bounds but Could free range within these bounds, later I met Ph.D's who's methods had been dictated more or less letter by letter and had never used or even seen used pieces of apparatus which I considered commonplace. In my later years at Nottingham there was of course a tremendous increase in the number of University places available across the country. Bearing in mind that about one in a thousand school leavers went to University up until the Second World War there was not in our regular educational stream any general attempt to encourage the 'University going' mentality. Bright pupils, particularly bright boys would be encouraged but of course not all had a parental background of encouragement and support. Contributing to the family income was more important. So when I saw the vast increase in University places I wondered where we were going to find enough people of sufficient intellectual stature to yield in the increased output the same average 'graduate mentality' that came from 1 in a 1000. After all that 1 in a 1000 WANTED to go to university and would therefore strive. O.K. there may have been another 1 in a 1000 who wanted to go but couldn't, but beyond that a reformation of the system was needed. There were not many places where you contact everything from African History to Zen on the one campus, (there still aren't) and not everyone wants to be initiated into this level of intellectual activity. Some wanted to specialise very early

on particularly those inclined towards a craft catered for in the past by apprentice schemes. I only met one 'indentured' apprentice at Evode and that was Cyril Lawton who joined in 1938. Prior to service in the Royal Navy my father had spent some time in part time further education at 'Night School'. The economic burdens of continued full time education could not be met by the worker's family especially with several children and this has in truth continued to be the situation, certainly during my school years when children still ran barefoot in the streets of Lichfield. The bulk of men and women were only needed for labouring work and if they wanted to 'improve' themselves that was it, they had to do it themselves. Gradually the nature of work changed so that a better understanding of machinery methods and materials was needed, for the benefit of the employer of course, and so the scope of post school education was increased and greater access to it allowed at the expense of the employer in the form of daytime release, in this way the cost burden to the family was eased. Later Industry Training Boards were established, of which the Construction Industry Training Board (CITB) is the sole survivor, these collected a levy from an industrial sector and used it to support those employers who allowed access to training so that the burden on 'good' trainers was reduced. Anyway, back to selection of scientific staff. From the beginning of my experience at Evode we had a surprisingly high number of graduate staff for the size of company, there were six in all so the first recruitements tended to be at the laboratory assistant level. They were all encouraged to press on with further education and as the scope of course providers widened we had most of them graduate to High National Certificate level and a few even got as far as PhD using this 'part time' route. Early on I found that not many applicants could respond to technical problems or situations. With few exceptions, these were people who had failed to gain University entrance; at the time British Industry was expanding so there was a lot of competition between employers for available school leavers. I devised a lowest common denominator question to drag out hidden scraps of scientific knowledge. The question was: You are given a mixture of sand and salt. Describe in full detail the apparatus and method that you would use to separate them and produce a reasonably pure sample of dry salt and dry sand. It was amazing, disheartening, how few young people at this level could make an unhesitating attempt at an answer. And yet it is all elementary general science. Needless to say we

snapped up those who could unless another employer beat us to it. Compared to my day at University and as an employer the broader range of courses and course providers had 'meant a move to frequent assessments of progress along the way instead of the old idea of a sudden death examination at the end of a 3 year course. The arrival of the European Community with the ambition of allowing, perhaps encouraging, people of equivalent qualification to work in any member state has led to measurement of 'equivalence' and putting that into Community Law. This was easy for degrees awarded by Chartered Institutions but for those who had to learn in the 'University of Life' the U.K. had no uniform method of measurement and assessment. Since 1987 a system for this has been developed by a National Council for Vocational Qualifications so that competence in work activities can be recognised however and whenever it is required. These assessments are at a pace to suit the candidate and quite small chunks of acquired knowledge can be assessed at a time being totted up until gradually a recognised professional status is achieved.

APPENDIX II

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