D.J.B. 2014

What follows is a transcript taped interview of Dennis Blackwell in 2014 by his daughter *Susan* with her mother *Grace Anne* in attendance. Words spoken by them on the recording are coloured correspondingly in this transcript.

Susan (and mother) were seeking to elicit from Dennis interesting and possibly important moments in his working life and put them within the context of the early computing years.

It has been a while since I read it all but I recollect that parts may not be fully covered because Susan was unaware of them at the time of the interview, whereas, I was still living at or closer to home in his later career years (and later, his retirement years) and was privy to some tales and musings Dennis shared with me which Susan could not have known about and so she may not have asked the relevant questions. I think this hole may cover some of his involvement in:

- the politics of his job as ICL got the Texas Instruments(?) MD and his position as Director of QA;
- his roles at BETA, BABT, the BCS and its royal charter and the Data Protection creation and legislation

Richard Blackwell 2/Nov/2020

The transcript has now been tidied up, with spelling of some of the company names corrected, and footnotes added, based on my knowledge of events. I have also added page numbering and an index.

I have left the words as spoken, in Dennis' conversational style, with all the umm's and err's. Any additional references and corrections of factual errors are in the footnotes, preserving the spoken recollections in the main text.

This version maintains the original timing notes alongside the transcript.

Michael Robinson 12/Dec/2020

Dad, How and why did you change from working for Limmer and Trinidad to COMPUTERS?

Well its along story and perhaps we ought to start at the beginning.

My name is Dennis Julian Blackwell. I was born 3rd March 1929 the only son of James Edward Blackwell who married my mother after her husband Albert Blackwell had died, leaving a son Ted, who is 5 years older than me.

I attended Wolverhampton Tettenhall C of E school at the bottom of the rock on the north side of Wolverhampton. I passed my 11+ equivalent school scholarship exam at 10 in March 1939 just past my 10th birthday, which was rather young. Apparently I did rather well, because people who took scholarship exams were offered the possibility of going to various Grammar Schools, and Wolverhampton Grammar School was undoubtedly the best to go to.

And I remember my mother taking me to Warren Derry, who vetted all potential new boys into the school. And I remember one of the questions he asked. "To define what is meant by supine and prostrate." which I thought was quite a difficult question for a 10 year old boy.

However I entered the school in September 1939 in the Remove A class which was the one which normally did School Certificate in 4 years, but I was very immature and I also didn't spell very well. I remember causing some consternation by spelling Z formation, a geometric term, with 's h u n'.

I was pushed down to Remove B which meant that I would be taking 5 years to get to School Certificate. And eventually I progressed up the school to take my School Certificate at the age of 15, which again was fairly young. I failed the first time because I failed English, but I did very well in my Maths – I got a distinction and a credit in my advanced Maths which was also quite unusual, and I was allowed into the 6th form to Mathematics before I had passed my School Certificate!! which I did in the Christmas term.

I enjoyed my 3 years in the 6th form doing Maths; and in the third year it was traditional for those who liked to go to University to go to sit for Scholarship Exams at Oxford or Cambridge.

Why did you do 3 years in the 6th form instead of just 2?

You did Higher Certificate after two years and in the third year polished it up hopefully to get a place at Oxford or Cambridge.

I went and sat for the exams for Oxford in November 1946. This was a time when all the ex-servicemen were coming out of the forces and the College that I applied for accepted NO school children at all. NONE!I So I was not offered a place.

Did you Know that before you applied?

NO, NO. But the fact that there was a tremendous demand for University places for all the people who hadn't gone to University because of the war and they gave total preference to ex-servicemen.

And so I was thinking that I would be called up, because at that time following the war there was National Service. And I, err…, was likely to be called up. But on the advice of my Headmaster, I also applied for a place at Birmingham University in the summer, and since I already had very good qualifications – Advanced Pass in Mathematics and so on, they offered me a place straight away. So instead of being called up I went to Birmingham University in 1947.

Would you just like to tell me about your Air Cadet and work experience or first job, because that's before you went to University.

The School had for many years an Officer Training Corps and in the days when Public Schools and Grammar Schools supplied Officer/Officer Cadets Wolverhampton Grammar School had a very good

one. But also because of the war the school had formed an Air Training Corps unit with Tettenhall College which was an independent school not in the town but in Tettenhall, South Staffs. And I was, I don't know why, I joined the ATC as opposed to the OTC . And in fact before I left I was a sergeant!! Ha ha!

And how old were you then?

I must have been 17-18.

What age did you join that?

Oh, in the 6th form, I think, about 15 onwards. I don't think anybody in the training corps was under the age of 16 years.

So were you always a year younger that your academic year?

Oh yes.

So by the time you had done 3 years in the 6th form you were 18

(nodding) Yes.

And your first employment was....

Well during this year, it must have been this year, I worked for vocational employment in the Inland Revenue. Looking at tax returns and clerical work[1]. *(laughs!)*

Can you remember what particular criteria made you go for that particular job?

Oh well it was available and an occupation for students who were reasonably bright and I was mathematic and competent.

One of the things that sticks in my mind was this. One of my school friends, his Godfather happened to be a very significant Industrialist in the Black Country and during the war he was the local Inspector of Military development s and equipment . And he said to his Godson "Would you like to come round with me on one of my trips round the Black Country to see the firms I'm seeing?" And I tagged along. And we were going to look at a Gun Shield, which I thought was a bit odd, because my idea of a gun shield was what I had in my toys. And we went into some part of the Black Country - Heavy Engineering – huge place with trains and overhead cranes and so forth. And this Gun Shield was actually for the Cross Channel Dover Guns and was about 30 foot high and bigger than an ordinary house!! with ladders inside and made of 3inch or 6 inch steel. Quite a thing. How on earth they got it to Dover I don't quite know!! When you talk about a Gun Shield I think “Ahh yes - I've seen a REAL one!!”.

However, at University I found the Honours Maths course, the first year, quite a bit of pure maths I'd already covered in some extent and so it was very easy going. I lived at home because Birmingham University had very, very few residential places and any case I didn't have the means to be in residence. I had a £50, I think £50 per year, award from the Local Authority to go to Birmingham University, and since my father worked for the railway I was able to travel fairly cheaply on a season ticket from Wolverhampton to Birmingham and back every day. A quick journey, only 20 minutes on the train, and I had to catch a tram out to Edgbaston, where the University, the modern part of the University was.

[1] Oxbridge entrance exams were taken in December, so Oxbridge candidates stayed on to take them. They then took time off before going up to university the following October. During 1969 Cliff Robinson’s eldest son, Michael, took this opportunity to spend nine months getting work experience in CL at Putney. With hindsight this was probably in Dennis’ part of the organisation.

The old Arts and Law faculties were still in the centre of Birmingham, but the Commerce Science and Medicine faculties and the Engineering faculties were all out at Edgbaston in the very large red brick University built there by Joseph Chamberlain (who was the father of Austen Chamberlain) founder of the modern University. It was originally a Mason college beforehand, I believe, but very progressive.

In my time it was eminent in that it had many science professors who held Nobel Prizes or the equivalent.

The Maths Department was quite extraordinary. It had two Professors. Professor Watson, who was a recluse, old, brilliant. Appointed at the age of 29 to the Chair, and was now in his late S0s. Never spoke to any pupils. You never had any contact with him. But he lectured incredibly quickly, writing on the blackboard and following up what he had written with a duster in the other hand!!

And the other man was Professor Rudolf Peierls[2] who did all the mathematical calculations for the atomic bomb. Because the Oppenheimer and atomic bomb work was all done by the maths and physics department at Birmingham University during the war. An absolutely brilliant German Jew - and later went to Oxford University as the Professor of Maths, and retired as Sir Rudolf Peierls. But he was the man who did the maths work for the atomic bomb. Totally different set of people altogether! Very weird. Very brilliant as well, however.

But I didn't like; in Birmingham in those days ,if you were reading Maths, you had to do a subsidiary subject, and if you were going to do it as a BA degree, you chose an arts subject like French or English or what have you and if you were going to do it as a science degree - a BSc - you chose, normally Physics. I didn't like Physics and I wasn't doing an arts degree and so having done a year of Physics which I didn't like, I along with a number of other people who didn't like it either said "Can we change to something else?" and much to the University's surprise they said "You can do Machine Drawing in the Engineering Faculty." So I, along with about 3 or 4 others, schoolboys, joined the Engineering Faculty.

Birmingham University had at that time, Chemical Engineers, Electrical Engineers, Mechanical Engineers, Civil Engineers, Brewing Engineers, Mining Engineers. It was an enormous Faculty and chock full with ex-servicemen. Virtually no girls at all. And we few boys joined! And all the engineers in the first year had to do machine drawing as a course. So we joined this, much to the consternation of the lecturers who didn't know why we were there, and why we didn't understand any Engineering terms at all!! I remember being asked, one of the things to draw was a cam. I didn't know what a cam was. We discovered in the end. But it was a very interesting period, because I learned, that's long before CAD and so forth, draughtsmanship skills were really quite important. Measurements are very important. And the ability to look at an object and get the three dimensional cross sections and produce or even interpret them, was a very interesting experience. And the exam was a 6 hour exam. I found it very interesting, very informative, and from a practical point no use … other than satisfying the degree requirement for a subsidiary subject pass. Having done this as my subsidiary subject, I then thought that I would like to try Statistics.

Now curiously enough although the maths department did Maths it didn't do Statistics! Statistics was done in the Medical Faculty for medical statistics, and in the Commerce Faculty for accountancy statistics. Very odd. And I applied to go and do the course in the Commerce Faculty, on Statistics, and since I was doing maths, they skipped the first year course and I did the Advanced Statistics course, which was a 5th year course, one of the courses for a Commerce Degree and I did that as an extra in my second year and had no difficulty at all.

And in the third year, was a possibility, as an additional bonus doing a new course which they were just starting to run in the Commerce Faculty, for a master of Commerce Degree, called ECONOMETRICS, that is a combination of mathematics with statistics in financial matters. And was being done by a chap

[2] Sir Rudolf Ernst Peierls 1905– 1995, Professor of Mathematical Physics at Birmingham University from 1937 to post war.

called Schlofield who was a Barrister and came out and lectured at the Birmingham University in the mornings before going to court as a Barrister. He was a Lecturer but most of the time was a Barrister. Quite an eminent chap. I, with about 4 or 5 other people, did this course on Econometrics – which is really a master of commerce level course. (laughs!) but I did it in my third year. Naturally, because I was a guinea pig we all passedll (ha ha!) But it was interesting to have an insight into the combination of finance statistics and mathematics. The ability to try and forecast the likely movement of things and so forth on a mathematical basis.

I completed my degree in 1950 with a 2:1 Upper Second Class Honours Degree in Pure Maths. There was a strong possibility that when I was called up I could join the RAF Education Corps as an Education Officer. In fact I attended an RAF Selection Board in London, for people with degrees, preferably science degrees, to help in the education of National Servicemen. As a result I was offered a Commission in the RAF but one of my acquaintances at Oxford…, knew I was interested in Statistics and said "You know it's possible you could to get into the Army unit doing statistics based somewhere down by Andover. Why don't you not go into the RAF but go into the Army and get into this unit."
It sounded a good idea, and so I withdrew my application for the RAF and applied to join the Army, thinking that I would manage to get this unit. This was an illusion. Things don't work like that in the Forces!

However, having applied to the Army, they then said, along with other Graduates and people who had professional qualifications, were given the opportunity of going for Officer Selection Board for Commission before they were called up. So I was told to turn up at Barton Stacey with clothing that would be OK for an assault course or for a long weekend at WOSB where we had intelligence tests and problems like "How would you organise a feeding of a unit in the field." Since I had been a Boy Scout and done quite a lot of catering, I had no difficulty with those questions. And the assault course with ropes and boards and gaps and things to climb and so forth and how do you cross streams and so forth…. We were in teams of 4, 8 teams of 4, and our team all passed. Only one of the other groups passed. I was through that. And so I had already gone through my WOSB successfully as a civilian! And I wasn't actually called up 'til 19th October 1950, which was the day I accepted the King's Shilling – that being the rate of pay!

I was sent to Oswestry where Park Hall Camp was the main reception camp for those who were going to join the Artillery or Signals, I think. Yes it was Park Hall Camp on the outskirts of Oswestry.

We did, I think if my memory serves me right, 6 weeks…, yes 6 weeks of basic lnfantry training where you learned to march and weren't allowed out of camp until you could salute people and things like that. And it was a dreadfully cold winter. I remember doing a route march on roads that were 2 inches deep in frozen ice. It was absolutely impossible to keep in step at all. You were sliding all over the place. However I spent some time there, and one interesting experience, quite a crucial one really….
We had, we were all accommodated in what was known as Spiders. These wooden accommodation huts, with different lines, the central bit the heated bit, a blanco room where you applied your blanco, and the ablutions. Otherwise the places were pretty cold. There was a small brazier type stove in each of the wings and it was perishingly cold.

But in pressing my clothes one day, I inadvertently left the iron which was suspended from a lamp fitting, which I'm sure is totally illegal, on the table face down and it burnt a patch on the table. The outline on the table, which was duly discovered by "the powers that be" who sought to find out who was responsible. Being an upright citizen I had to acknowledge that I was responsible.

"OH! " said the Sergeant Major, "Come with me with the table, we will see what the C.O. says."
So whilst the rest went off to do their thing, I was marched across the parade ground carrying this table top, with its imprint, towards the Regimental Office. And on the way there the Sergeant Major said to me, "Are you going to WOSB?" because he knew quite well that we were all likely to be going to WOSB. And I said, "No Sir." And he proceeded further:
"Have you been to WOSB?"
"Yes Sir."

"Oh. Did you pass?".
"Yes Sir!". There was a long pause as the SM & I stopped, and then he said:
"Oh. Take the table back and get it cleaned up and we'll say no more about this.".

Otherwise I probably would have been put on a charge in the Army, not gone to MONS and not got a Commission. So that was quite a decisive episode in my Army career. And I then spent the rest of my time there till the next intake to MONS which happened to be early January. A very cold year, very cold.

And went down to Mons Barracks at Aldershot, with all the people who were not doing, not Infantry, - Engineer, Signals, Gunners, Catering Corps, greenery, and all the Cavalry, and Armoured Corps people but not Infantry, where we had I think 6 weeks of basic training on Infantry work effectively. And then those that were…, Specialty Arms, moved off to the appropriate training place in their regiment of choice. The cooks went to Caterham, the Signals went to Catterick, the REME went to Arborfield, but the Gunners and the cavalry stayed at Mons, for their ten weeks of Specialty Arms training.

I thoroughly hated the Infantry bit - the weather was appalling . Crawling through frozen heather at Tweseldown, a dreadful place. I remember on the night assault the chap in front of me stepped into an old slit trench with ice covering. Seeing him up to his middle in frozen..... Oh it was dreadful!! However the weather improved as we finished and I thoroughly enjoyed the artillery training, which had no qualms for me from a calculations point of view.

Again there was another episode that was quite crucial. The final period of….. Well earlier in the course we were taken for a day's shooting on Salisbury Plain to see 25 pounders in action, and to go into an observation post and to do a little shooting. And the day we went it was divided into two parties, those who were manning the gun, and those in the observation post which was quite a bit forward of the gun. It was snowing. I remember sitting on the little polished seat of the 25 pounder gun and scraping the snow off. Also on that particular occasion I was laying the gun, and it was cold dreadfully cold. I also remember the instructor who came with us, was obviously doing this time and time again. He had organised his Batman to provide himself with small primus stove and had bacon and egg for himself whilst we cadets were eating Army haversack rations which were pretty cold. This Officer eating these lovely smelling things. That was very unjust. With hindsight I can understand. Just taking care of himself.

However when we went to the final shoot at Sennybridge in mid-Wales, for a whole ten days I suppose, you rotated what you were doing. Sometimes you were part of a gun crew on a gun, sometimes the Number One on a gun, sometimes you were the Troop Officer or Battery Commander issuing orders, sometimes the officer with the range tables doing the calculations for the angles for shooting and so forth. This particular occasion, I happened to be what I think was called the Troop Leader, responsible for seeing that the orders being given from the Battery Office to laying the guns were properly transmitted to the four guns. Normally you range with Number One gun, then you go for fire effect with all four. And one essential in the Troop was to make sure that they were pointing in the same direction. In order to get the guns all pointing in the right direction, they were given angles from a theodolite device called a director set behind the guns about 100 yards and the angles would be fed into the gun's range fitting equipment and so they got the right angles.

And this particular occasion the orders were coming over from the Battery Office to lay the guns. I went along behind the line of guns as was required with my compass to check that the guns were all pointing in the right direction. And I got to Number One gun which was just about to fire for effect and I looked at my compass and I concluded that "This gun is 10 degrees off the line". (Now was I wrong or was I right? Or was it the magnetic variation? Ten degrees was about the magnetic variation at that time.
I came to the conclusion that I was right and so I said "STOP!". In artillery there are two words, STAND FAST means you don't do anything and STOP means STOP!!

Of course the Directing Staff came down. Galloping over, "What are you up to Blackwell?".
I said "Lead Number One Gun 10 degrees off line .Sir!"
He was!! And the cadet responsible was RTU'd[3]. He wasn't commissioned – and I saved a round from falling way, way, way off the range. And that was a spot decision that I had to take.

If I'd got it wrong I think I'd be RTU'd. I don't know. Very difficult, no time to waver.

So then I was Commissioned and I got engaged at that time to a rather nice young lady called Anne Isherwood who was at Reading University and I used to visit her when I was billeted at Mons because it wasn't too far from Aldershot to Reading except I was usually on guard duty on the Saturday nights. For some extraordinary reason I always seemed to get Saturday nights so when I was due on the Sunday I was usually far too tired to do anything other than sleep.

But she graduated that year, she was a year behind me, and she invited me to her graduation ball, which I went in my new uniform as a newly commissioned Subaltern in the Artillery. I hadn't got a dinner jacket but I had got a Number One Uniform. Rather conspicuous but rather nice!

What did she graduate in?

She read Latin and Greek and English. And then I was posted overseas. The arrangement at Mons for the Gunner contingent was that they normally had the postings available for the dozen or fifteen or so passing out to choose where they would go to. And the possibilities were Germany (BOR[4]), one or two places in the UK – Troon I know was one, there is a big unit at Troon in Scotland – Hong Kong, Korea, Middle East. And I would have liked to stay in the UK, Troon more or less.

But the notice on the board said, "Blackwell will go to Middle East land forces." – so I hadn't any choice. I was posted to a place that I didn't fancy because it was a hot climate. I was to go to the 82 Locating Battery in the Middle East, Canal Zone. And before doing that I had to go on a locating sound ranging course at Larkhill, Salisbury Plain, and learn about sound ranging and that course lasted about 6 weeks.

I was posted to Woolwich awaiting transport to the Middle East. At that time the troubles in Kenya, the Mau Mau disturbances had blown up and ail the air movements were directed towards taking people out to Kenya by air. So I had to wait for a ship and I was at Woolwich for about 6/7 weeks waiting 'til there was a ship. By which time I was doing odd jobs around the…, Woolwich. One of the jobs I was assigned to work, with a Major, Quartermaster Major, who was just retiring from the Army and was also at Woolwich finishing things off. And he was given the job of carrying out a survey of Military stores in the Woolwich Garrison. So i joined him on this survey, mainly checking things like tables and chairs and beds and so forth, not guns and things like that, and I got amused by designations used by the Army: "Chairs, woodenheaded sergeants, or Chairs, Officers Easy" – there was a number of these terms.

But two things stick in my mind from this:
1. We did the survey of the Small Unit in the Woolwich Garrison where we found there was a considerable deficiency in what was supposed to be on store of War Office controlled stores. The important things like guns and rifles and binoculars and things like that and vehicles were on a separate register in the Army called G1098 list controlled. Things you must not lose, unlike clothing and furniture, things that don't matter much. And as a result of our survey, I learned later that the Unit Commander had been Court Martialled and Cashiered! He had obviously been up to something. However, that's by the way.

[3] Returned To Unit
[4] British Army on the Rhine

2. But the interesting thing about this old major who was doing the Board of Survey was that he had joined the Army just after the First World War, as a boy in the Gunners. After having the basic traininq his Sergeant Major said to him I'll make you a Lance Bombardier, the first promotion with one stripe, the first stripe, but he refused as he didn't want to leave his mates. And his mate accepted the stripe. And they stayed together in the Army right up until the Second World War. But one of the things they did in the late Twenties,.. He went to Ireland as part of the Royal Artillery Mounted Rifles there to deal with the Black and Tans. I had never heard of the Black and Tans, the Irish nationalists wanting integration[5]. The idea of the Royal Artillery having mounted rifles was quite extraordinary to me, but it opened my eyes to a facet of history I hadn't covered at school and I wasn't aware of. The interesting thing is that later on this man became a Sergeant and then a Company Sergeant Major, and then was commissioned as a Quarter Master's Captain, and his mate had also been commissioned, and his mate reached Lieutenant Colonel Quarter Master, when he retired ahead of him, who was only a Major? All because his mate had accepted the first stripe! Interesting.

Little things can have far reaching consequences.

However I went out to Egypt. Oh no, before that I was…, because we were at Woolwich, Woolwich was where they carried out routine Court Martials, and because it was a very large regiment, there were always some delinquent somewhere who had pinched something or got into trouble. And they would be arrested and eventually referred to a Court Martial proceeding at Woolwich. And as a young Officer, along with other young officers there we were instructed to attend these as "Officers under Instruction." They were mostly very sad cases…. A Sergeant who lost some prisoners. Because some prisoners wanted to go to the loo and climbed out of the back of the loo and disappeared. Immediately put on a charge, you see, and things like that.

Captain Anthony Hugo Stevens, a married man, an Officer of some experience, who had helped himself to the Unit Imprest Account funs, the regimental funds of his unit, for some reason. He must have got into debt and realised he would be caught so he skipped the country and went, I think, to Paris.

After a time he realised that he couldn't stay there and decided to come back. He was duly arrested and put on for a Court Martial. During this time I, with others, was his Officer Escort and I played lots of games of Canasta with him. Even took him out to London on one or two occasions. And I was £5- there for his Court Martial, which was a full blooded affair. Major General presiding over the Board, with five other Officers on the Board, a London King's Council, KC, defending him…, and his wife was there giving evidence. A very sad interesting case. Inevitably he was found guilty, and inevitably dishonourably discharged and sentenced to 6 months in prison. But it was quite a celebrated case. What happened to him, I don't know. However….

The other silly episode I can remember from being at Woolwich…, I happened to be the Garrison Orderly Officer at Woolwich one weekend, and the barracks was pretty empty, but I was there. Late in the evening, I was dug out by the Police who said, "We've got an unexploded hand grenade. What do we do with it?" Well, I'd not the faintest idea. I've never used a hand grenade in my training for infantry work. So I said I had better find the Bomb Disposal people. Trying to find a bomb disposal unit when you don't know where to turn, on a weekend in London was quite a challenge. I suggested that in the meantime they put the thing in a bucket of water – out of the way. But eventually I managed, after a lot of telephoning, that there was a bomb disposal unit somewhere and got a message through to them who eventually turned up at this place and said "It's only a practice grenade." and couldn't be exploded in any case. But I didn't know that of course.

[5] The ***Black and Tans*** were actually the surplus British soldiers after WWI who were assigned to the police in Ulster to control the Irish nationalists. They were so called because of their hybrid uniforms combining the dark green (almost black) of the Royal Ulster Constabulary and the Khaki of British troops (Wikipedia, 2020).

I went out to Egypt on the liner *Empire Trooper*[6] which was going out ultimately to Hong Kong. They had married families on board, and also quite a number of RAF people, but mainly Army, mainly going to either Singapore or Hong Kong. Some going on to Korea and a few of us were due to get off at Port Said in Egypt which is where I got off. And was shipped across to the other side of the harbour for the first night in Egypt. This was a very hot time about the end of July. Then I went, taken back across the harbour, to catch a train down to Ismailia which is half way down the Canal to be met by a vehicle to pick me up and take me to my unit at Deversoir which is just where the Bitter Lakes meet the Canal. And I found it very, very hot. We had a lovely camp, 'cos it was right up against the Suez Canal and it had a metalled, tarmac, track through from one end of the camp, from the guard room right up to the Officers Mess at the other end. Otherwise it was just a tented camp. We had a few palm trees. I used to walk from the shade of one palm tree to the shade of the next one. Fearfully hot. I suffered. Two days in I got uncontrollable shakings; It was salt deficiency. They called the M.O. to see me and he immediately prescribed lots of salt tablets but I was in quite a bad way for a little while.

But the funny thing. Having been in the desert in Libya we were supposed to be a sound ranging unit, as part of the Army 1st Division's Artillery Brigade. There was no question of doing anything like that. The unit had been sent there because the army, at that time, had thought that the unit might have to go into Persia, where the Shah had just been deposed, to protect the oil reserves. Valuable. It never got there, but it did actually bring other units from Libya in anticipation of going across. In many ways with hindsight one wonders it would have been much better if we had invaded Persia. However…. We were in the Canal Zone and the, my unit Commander, only a small unit under a Major, knowing that I was unusual because not only was I a subaltern but I was also a graduate. The other subalterns, I think there were 8, of the 10 Officers in the unit (there would be about 5 subalterns who were just going through National Service, and I was replacing someone who had just finished his National Service) and he (the Major) said to me at the end of August, he'd like me to go on a course on accounting. Army Accounting. Up the road about 10 miles there was an RASC camp that ran a training course for people doing Army imprest and regimental accounts and it also happened to be the Army's, the catering school for the Canal Zone. And you could go up there and for a week's course as well. There was also a fire prevention course I went on as well as the accountancy one. And the fire one was fun because they told you about the causes of fire, the oxygen, the combustion, and if you can stop that you can put the fire out and so forth. And they demonstrated that a hose pipes.... If you hold a hose pipe with 100Ibs of pressure of water going through it, you need about 2 people to hold it. It's tremendously powerful. If you don't hold the brass nozzle but lay it out on the ground, it'll go up I like a Dervish snake, and would kill you if it hit you, if you put full pressure on. But I learned how the RASC recommend fighting fires. The important thing is for a unit is that a) You should make sure that everyone knows how to fight fires and b) that a number of people must be trained in how to use stirrup pumps and so forth and c) that you should have proper Unit Orders describing what to do in the case of a fire. Such orders should be drawn up in the recommended fashion following the model as provided by the RASC. And also to make sure that every telephone should have a notice saying "In case of Fire this is the number to ring.", you see. So I got back to camp and duly organised some training of people on stirrup pumps, and the local artist lad in the unit did some very pretty little notices seeing as three or four telephones in the camp, which has connection with the outside world, sayjng "In case of fire ring this number." which was the actual RAF camp a mile or so down the road where they had a Fire Engine.

[6] The Empire Trooper sailed from England on 24th July 1951.

And I duly asked if we had the unit orders in the recommended fashion of how to fight fires. We hadn't , so I got all these all set up in the proper fashion and then, having done all that successfully, another National Serviceman subaltern joined my unit and, as I was now looking after the accounts, I said to my Unit Commander, "Do you think I can hand over this thing of being Fire Officer to this new subaltern?" "Oh," he said, "I guess so." 2nd Lieutenant Dudley Beckham, I think, was his name. He wasn't a graduate; he came in and became our unit Fire Officer.

The very night he took over, (*smiling/smirking*) we had this one bit of tarmac road which also acted as a vehicle park for the few vehicles we had. It was adjacent to lines of tents set out in the best Army fashion and so forth…, only about, the tents were about five yards from the line of the road. For some extraordinary reason, two of our drivers, presumably hadn't accounted for all their petrol records correctly, and decided they would siphon some petrol from one vehicle to another…, by the light of a Hurricane Lamp!!!!!!!!!! (*laughing*) with the inevitable result that there was now two vehicles on fire!! – AND I WAS NO LONGER FIRE OFFICER! Ha hal And of course all the telephones were immediately picked up to summon the RAF's fire engine and FIRE FIRE and jammed the thing. Stirrup pumps, absolutely useless. Happily the wind was not blowing towards the tents, otherwise the tents would have all gone, but happily it was blowing the other way. And the RAF tenders turned up in due course and squirted foam everywhere on the, by then, burnt out remains of the two army trucks.

At the subsequent Board of Inquiry, the Army being the Army, it was ascertained how it had happened, and the delinquent drivers were ordered to have stoppages of pay of 10 shillings a week for the next umpteen weeks while the Army wrote off two three ton vehicles. And the question was asked, "Were the fire orders drawn up in the correct fashion?" - YES. "Had the unit trained people in fire fighting?" - YES. "Was everything done?" -YES. So my Unit Commander was totally exonerated from this. Which goes to show one very early lesson. If you do things according to the book you can get away with it!! Because if it hadn't been, even as a regular Officer he would have had a very serious black mark on his career.

And so I think that was quite an educational experience on ail sorts of things. The gay way with which the Army can write off things,....because what can you do?.... the basis that got them just as wrecks, but the individual rate of pay..... Miniscule amounts of money, quite a lot to them for their pay but the fact that things can happen, like that. Very funny

We used to see the boats going down the Canal 'cos the camp adjoined the canal and the,... quite a number of boats, tankers, commercial vehicles, commercial boat liners, passenger liners, but quite a number of troop ships going through. The French were still fighting in French Indo-China and so they had quite a number going through and there'd be British troops going through to Hong Kong and Korea. We used to shout various things at them because they were only about 15 yards away from the edge of the bank you see. And you could see occasionally a passenger vessel with lights and a band playing and people dancing and so forth, iust within hailing distance. Two worlds apart!

Did you ever try to swim across the canal?

I didn't try bathing in the Bitter Lakes either.

But the… When a tanker came in from the Bitter Lakes, they fitted the Canal so well you had a dent in the water behind them. You'd see a sort of trough, 'cos presumably it's just like a piston you see, the amount of water going down the side of the boat was small in relation to the displacement. We had two occasions when there was a bad sandstorm and one of the boats ran up the bank slightly. Umm…, that was really quite an episode. The traffic was one way you see. Sometimes from different parts of the Canal, the signal stations on the Canal indicate where the… One of the… I'd been in the Canal Zone about three months when King Farouk was deposed and was replaced by General Neguib who was later interned, replaced by Nasser who stayed there as a very effective Egyptian ruler for many years. But umm…, the troubles broke out in the Canal Zone and there was a very strong feeling that the British should be out. About 80,000 troops in the Canal Zone which still had huge amounts of ex wartime

stores there from when it was the main base for the African, North African campaigns of the war. Fayed was the military depot camp in Ismailia, which was the old French city on the Canal. And life was very difficult. All our native staffs walked out…, they were intimidated. So the dhobi who used to get your clothes washed and dealt with, pressed and so forth back in one hour… Stopped completely.

And all the NAAFI staff walked out., we were all on our own and we an isolated camp effectively, much more exposed than other people. And one of the consequences was that since the NAAFI… since people were confined to camp, the NAAFI was quite an important relaxing place for the 200 or so people we had in the camp. And my Unit Commander spoke to the NAAFI manager, an Englishman of course, in Egypt, saying "What can we do?". He said, "Well I have no staff. You can take over the NAAFI, all the things in your NAAFI at book price and run it yourself. We'll supply it if you collect stuff from the main depot in Ismailia and give you a ten percent discount and when the troubles are over and the staff come back we'll take over the running back." So that seemed quite a good proposition. One of our subalterns, John Chitty, was nominated to run the NAAFI and John was an enterprising man. He'd been to Winchester and there was a very, very nice fellow and he became the man who ran the NAAFI and he very quickly discovered that not only could you sell beer and chutneys and so forth but if you went to the main NAAFI you could buy tins of fruit and things like that and all things that supply families with. So he expanded the range of things that we stocked enormously, which was very good for the moral of everyone. You couldn't leave the camp, they had their pay, you got to spend it on something, so they used to go to the NAAFI you see. And it became well known in the Zone that if you called at our camp you could go to the NAAFI and get all sorts of things you wouldn't normally get In any NAAFI. So we had quite a lot of passing traffic you might say. One of the things that always sticks in my mind, one of the things that I do remember we got in the takeover was a barrel of black peppercorns and this must have been 3/4kg quite a lot and they were fairly expensive as well. I remember when they were eventually sold back to them, and we moved back out of the camp, we made a profit on it!!! Ha ha! Because peppercorns had gone up quite a lot in value. However....

We ran that NAAFI and as a result we,… somebody found that we were creaming off I think it was about £30, no more than that, £30 in profit for the Unit Funds, the and we became quite a… What did they call the fund for it?? Wasn't available for the Officers or the Sergeants of the mess but for the men, people can buy things for this if you can get things, it became quite a major feature, making money for a small unit. However this situation deteriorated rapidly there because the Army, because of the troubles in Persia, brought in the, most parts of the First Infantry Division from Libya, including the Third Battalion Grenadier Guards who very quickly discovered that our camp was one of the nicest camps in the Canal Zone and since they had all the pull necessary that you might expect of a Guards Unit with all the right people we were duly required to vacate our camp for the benefit of the 3rd Battalion Grenadier Guards, and go out to Genifeer which is further down towards Suez in a chunk of desert. Quite dreadful. Remote because of the desert.

But we shared the camp with the 3rd B.G.G.for about a week and it was quite an experience because they mounted guard on alternate dates with our people and it was a bit like Buckingham Palace mounting the guard and so forth. The Ensign of the Guard, The Regimental Sergeant Major and so forth. It was The standard of our chaps drill went up quite a lot! But not quite up to the Guards standard!! Umm…, and there were about 30 Guards Officers - it would be a full regiment you see and we invited them to come into our mess on the first night and they said, "We'll be in civvies." We thought that's reasonable. And they all turned up absolutely immaculately dressed in Guards Blazers, Guards tie and so forth!!!!!!!! They were in civvies but by gum they made us shambolic by comparison. They stayed in the mess for one night and then set up their own catering arrangements In a tented marquee type place further down, and much to our surprise we found that the Guards Officers eat with their hats onII Rather queer. Ha ha!

But umm…, the Part One orders for the camp, included also a medical convalescence depot, were now drawn up by my Unit Commander who was a Major and by Lieutenant Colonel Guildgood, I think Colonel Guildgood and the Major commanding the convalescent unit. Of course, because the Gunners take precedence over the Infantry it was over the signature of my Unit Commander "Officer Commanding" However we were then kicked out to Genifeer and we joined a camp that was shared

with 73 Heavy Ack-Ack unit. They had 3.7 anti aircraft guns which could be used on the ground role as very, very extraordinary powerful machine guns. And this was a tented camp with a, ... buildings for the messes and so on but really far from enjoyable. Virtually no trees, lots of flies.

The Unit Commander Of The Heavy Gun, Colonel Furgusson, was a fanatic for cleanliness and he used to get men to go round D.D.T.ing any odd bits of muddy water anywhere, drains and so forth to keep the flies down. And anyone who was put in the Guard Room there was sent out with a match box and a fly swat and told not to come back till he'd filled it. And the effect of this was that his Unit had the best health record in the Canal Zone. Which was very interesting. But it was hot and arid. And that's where we had the experience of Rabies.

There was a very nice dog owned by one of the Officers in the heavy Ack unit which got, it was a bitch, by one of the Pyaad Dogs in the area and duly produced a handful of puppies. - Charming little things, and they used to wander round the huts and lick people's hands and so forth dangling out of their fly nets and so on ... And it was thought that they might have Rabies, which was quite possible and the instructions were given. Anyone who had been bitten by one of these dogs would have to have Rabies Inoculations, a course of 21 days of inoculations, and if you had been scratched it was 14 days and if you had been licked it was 7 days.

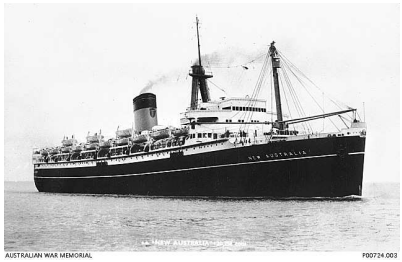
Well, since pretty well everyone, the batman, the Officers, had been fondling these bloody things, they laid on two troop carriers each holding about 20+ people to take us down the road to the local Medical Centre which was run by Medical Corps about one mile away and that was run by a, the wife of an Ordinance Major, who happened to be a qualified G.P. She wasn't in the Army, she was on contract to the Army. She was a medical Officer and she duly gave us all Rabies injections . The Army in its wisdom had a diagram for applying this.
The injections in those days were for about 10cc, which is quite a lot, as much as your little finger, to be injected into your wall of your stomach on the basis .1 .2 .3 .4 and then start again .5 .6 .7 .8 and since you were wearing a belt round to keep your trousers up it was quite an uncomfortable arrangement.

I had 7, I had been licked, but some people had the 21!! We ran through the entire supply of Rabies stuff in the Canal Zone which was quite amusing. I suppose they got some more later. But nobody got Rabies- thank goodness. But it was quite an episode.

So how long were you in the Canal Zone for?

I arrived in the August of '51 and I left at the beginning of October '52. And I came back on a boat that was going home and had been chartered by the Army because again the troubles…

… in Kenya were still tying up all the air travel. And the Army in its wisdom, had chartered the *New Australian*[7], which was a civilian liner, quite a big one, 30,000 tons[8]. It was created I think, the inspiration of the Australian Government just after the war, to ship people who would like to emigrate from Britain or Europe if you like, Britain mainly, to Australia - provided they had the skills that Australia wanted.



[7] Originally Monarch of Bermuda, rebuilt as New Australia after a fire on 24 May 1947.

[8] Refitted for the Shaw, Savill line after a refit to hold 1,600 passengers, the actual Gross Register Tonnage (a measure of volume) at this time was 22,424.

Australia had some very strict rules about not taking geriatrics and not taking people who were ill or what have you; but if you were young and healthy and had skills they wanted, whether they were professional skills or artisan skills - you were very welcome. A £10 passage to Australia! And the boat was coming back empty you see, and because there were no boats to go anywhere, the Army chartered it to pick up people and take them from Egypt back home. But I joined.....

Were you sent back home, was it a posting, or…?

The end of National Service. National Service had been 18 months full time service when I started, but the Army, the Government extended it to two years, so it went up to two years while I was there followed by 5 and a half years in the Territorial Army .

But I went up to Port Said and I think I was about one of about half a dozen G.A.F. Officers going back because the boat had been mainly chartered for the Infantry Brigade that was leaving the Canal Zone and going back home. Brigadiers and all the staff and so forth. And we went out to the boat, it was anchored - it was too big to go in against the harbour wall. It was anchored in the middle of the harbour area and you went out by tender and had to climb gangways up to get into the boat. Quite a long process.

And one of the troops going up carrying his kit bag overbalanced and dropped his kit bag which of course disappeared down into the water. And there was no way you could stop the people going up and he kept going. The kit bag was no doubt duly retrieved by some of the local Egyptians! And in due course they had to carry out an Enquiry into how this poor oik had lost his government stores and so forth from his kit bag. And I was part of the, being a G.A.Sh Officer, part of the Board of Enquiry into this.

It was perfectly obvious what had happened - he'd overbalanced, he'd let go and that was it. The Army, having records of what he should have had in his bag, whether he had it we don't quite know, but we duly had to write it off and so we did. And that was the last formal bit of work that I did (*laughs*) on that boat.

And I got home to Southampton, and I tried to ring my parents and I was surprisedI And I put in tuppence in the telephone box and it wouldn't work. These were old tuppences[9] and there were 24 to the £, no 240 to the £ 'cos while I'd been in Egypt it had gone up to 3d (*talks to mother about pennies and pennies to the £, 240x1d=£10*)[10] Put in 2 pennies and it had actually gone up to thruppence - 3d. Inflation you see.

And then I was err... I went to see my… I went back to Birmingham University Appointments and said, "What's on offer for graduates?". And Williams Deacons Bank which has long disappeared, were prepared to take on a graduate at £350p.a. and I didn't think that I could get married on £350p.a. We cast around a bit and then they said, "Well there's an asphalt firm in Birmingham, Limmer and Trinidad Asphalt, very well known major road surfacing company, did building works as well for building asphalt. Their local Director was looking for a Personal Assistant who might do other things. Would I be interested?" I said, "Yes." And I was met up with this person Wilfred Bond name, along with Oswald Brewerly who was the company's chief accountant and he my boss, became my boss, he was the nephew of the Managing Director of Limmer and Trinidad Asphalt Company which was an amalgamation of two family owned firms, the Limmer asphalt company from the Limmer mines in Albania and the Trinidad lake asphalt where the naturally occurring asphalt occurs in Trinidad. Asphalt is a mixture of oil, bitumen and lime and the naturally occurring one is extremely good for being a thermo plastic waterproofing device and produces excellent surfaces for roads and for tanking buildings. However..

[9] Meaning 2 old pennies (*abbreviated 'd' from the Latin denarius*), there was no 2 penny coin before decimalisation in 1971.
[10] Actually there were 240 old pennies to the pound.

My boss was an ex war time commander, I think, a very charming fellow and destined for great things, very able. Umm…. It was…. I joined the company and was given various jobs to find my way around and what he company did. It built its own road surfacing machinery ,and made asphalt and it also did building works and had a decorative flooring department that did decorative flooring in lino and cemtex tiles and so forth. And a concrete products company in Malvern that produced paving slabs, hydraulically pressed and kerbs and things like that for public works people.

So it had various activities and it covered an area from the Welsh boundaries right across to Norwich for building works. But the two main asphalt plants, one in Oldbury near Birmingham and one in Leicester, a good source of Granite … a surface provide surfacing material for the main midland areas, the big cities, Birmingham Coventry Leicester and Nottingham places like that. Umm….

And it was a fascinating job seeing how this chunk of a big British Company worked and in particular how well it handled it's accounts and stock exchange, stock control, customer affairs and so forth. And the..... much of the work was for Public Authorities including work for the big cities, so the risk of bad debts was NIL whereas on the building side the risks were rather more significant. But very interesting . And I learned quite a lot about the ins and outs of accounting and business and practices and contracts and standards. My first acquaintance with standards was knowing that asphalt was laid to B.S.554. This is the standard for asphalt surfaces. So I'd never come across British standards work before. Umm…, and….

It was intended that my boss should be promoted to the Board of Limmer and the… Going to the board meeting which was going to happen, the Chairman of the Company who was the "Doyen of the City" Lord Courtauld-Thompson, a chap in his late S0's had a heart attack and died, so the board meeting didn't take place.[11]

Going to the funeral of the Chairman, my boss' uncle had a heart attack and died! So he didn't get on the board. And he was sidelined, moved from Birmingham to London to a noneish sort of job. A great loss in my view because he was a very able person. With very good views on how things should run.

So this is 1953?

No about 1956[12], I should think…. So being the protegee of the person who was going to the top suddenly stopped you see. Completely. Moreover, I was neither fish nor fowl. I was the only graduate, one of only two graduates in the Company. The other was the nephew of the late Managing Director and a bit of a … not an asphalt man. Mainly the Company's management were ex forces, ex service type people dealing with County Surveyors and so forth. Or building people and of course the work force was mainly the Navvy level if you like. The idea of professionals apart from the Company Secretary and no doubt the Company Registrar. There was virtually nobody of my engineering level, if you like, in the Company. So a bit odd….

I'd been there about 4 or 5 years and the man who came in to run it was from the North East, Geoffrey Palmer, he was a very good chap. He seemed to accept me quite well. He left me to my own devices to do things. To do things like… I provided quite a useful service to sorting things out. Umm…. I even at one stage for a certain amount of interest, drew up, for my amusement and his, if you like, an indication of what the amount of capital required to run our particular chunk of the company. I suppose we were about $^{1}/_{8}^{th}$ or $^{1}/_{10}^{th}$ of the entire company covering the area we … 'cos done in areas of South West covering London, Scotland band so forth.

I did it in terms of how much money we have, and how much equipment we have, and how it depreciated, and debtors, and creditors, and so forth, and the money and so forth. A mini balance sheet as a company if you like which didn't exist. And it's surprising that apparently a week or two after I had done this, at a board meeting the Managing Director had berated his juniors in saying. "Do any of

[11] (Lord Courtauld Thompson became a liveryman in 1938 of the Worshipful Company of Paviors.)
[12] Lord Courtauld Thompson died on 1st November 1954.

you know what it would cost to run your particular part of things?" And my boss said "Yes", he did!! And produced all this information which gave, increased his kudos, and mine as well.

However I couldn't see that there was going to be much scope for me umm…, and I was frustrated and so I applied for other posts. And one of the posts that I applied for was for a Geodetic Survey work in Australia, for the Woomera Range. Top Secret job which I apparently had the right qualifications for - I'm not sure that's true - but they thought I did and I was offered a post there. But your Mother didn't like the idea of going out to Australia, so I turned it down, where upon they increased their offer, which was quite extraordinary for a government! Umm…. I didn't do it.

Can you remember how much that was at this stage?

I can't remember - it'd be worthwhile. I can't remember now. However….

And what sort of figure would you be earning at that stage?

At Limmer, about £700 a year. I don't know. And then I saw this advertisement that English Electric Research Laboratories at Stafford, which wasn't too far from Wolverhampton, were to … looking for people to work on the commercial application of computers in business . Umm….

I thought, this is interesting, I've got the right qualifications and I do have quite a good grounding on what goes on in commerce these days, having looked around business. So I applied to English Electric and went to Stafford and was interviewed by Cliff Robinson and Wilf Scott who was Deputy Chair of Research at the research labs at Stafford. Which was out in the country not in Stafford, out at Blackheath Lane. And along with 2 or 3 others I was duly recruited to do work on commercial application of the DEUCE computer.

Recap. 2 years National Service. - Promoted Lieutenant after 2 years, then Captain later on. (*In the T.A. said Mum.*) Royal Artillery Territorial Army R.A.T.A I have King's Commission and I have Queen's Commission.

You took school scholarship in 1939 before war broke out.

War broke out in September.

You were on holiday.

I was going to start with something back much further. We were on holiday at Minehead and the crisis arose and my father being engaged in the Great Western Railway Company's Traffic Locate Locomotive Division, Wolverhampton which covered from Bristol to Birkenhead and Banbury. He had a telegram from his boss saying, "Return at once". With the aid of that telegram we managed to get seats on trains, 'cos they were all packed, all going home and we got home by 3rd September when war was broken, declared.

And it was quite an eventful end to a holiday . With huge amounts of movements of people in all directions including troop movements of course. Umm…. But that was the start. Now what's the next stage you want?

So you went to Wolverhampton Grammar School in the September of that year.

Yes. Yes.

That was a scholarship - was it?

Yes. My brother Ted was already there, a fee paying student, being 5 years ahead of me. Not that we travelled together. We rode bicycles to school. The scholarship reduced the fees.

Applied to Army not Air Force 'cos friend suggested it. Statistics research unit. Didn't happen. In 1950 about July 1950 I was called up and joined Oswestry 19th October 1950.

47 to 50 University. '50 Mons Officer Cadet School in Aldershot in Jan '51. Bitterly cold Commissioned after my "Special to Arm" Gunner work on 12th May 1951 as a Second Lieutenant Royal Artillery, as my father had been in 1919. Two years National Service, demobbed from full time on the anniversary of my 2 year entry, 19th October 1952. Joined Limmer and Trinidad in December 1952 as Personal Assistant to Wilfred Bond the Executive Director for the Midland Region. And not having served Limmer for a full year my entitlement to leave was very limited. In those days you qualified for a fortnights leave after a year's service. But I wanted to get married in the April, and I had, 4th April, which enabled me to have a marriage allowance for the year ending 5th April[13], so it was a worthwhile thing to do . Especially when you are only being paid £500 p.a.

And we married in Driffield, and went over to Chester for our honeymoon. The Queen's Hotel, where we had the honeymoon, the bridal suite. Huge bedroom with a vast bathroom, right at the top of the main stairs. Obvious to everyone in the hotel it was the Bridal Suite! Ha ha . I remember the bath, it stood on four very distinct claw legs and you could have put three people in it I should think. It was enormous! Great big taps. And your mother's Aunty Mary, before we left, rushed out to give us an umbrella, "Here you are you'll need this." As we caught the train, and we had this umbrella. (*Mum's voice, And we said, "Thank you!!!!"*) and on the Sunday we went out for a walk round Chester, and we were queueing for a bus to go somewhere and it started to rain, so I put up the umbrella, whereupon confetti covered the ground in all directions. Much to the amusement of the bystanders. I can see this confetti going down the gutter as it rained. And we said a few harsh things about Aunty Mary on that occasion. We thought that we'd got rid of all the confetti that had been thrown at us. It's dreadful stuff, gets in all your clothes, we hadn't looked in the umbrella! (*laughs!*)

From Chester we went down on the cross country train, in those days from Crewe, Manchester, Crewe to Bath. And we went down to Bath and had two or three days in Bath umm…, which was quite nice before going back to Wolverhampton and starting work. I presume the end of that week. I can't remember now but it was a fairly hectic time.

So we've got you working for Limmer and Trinidad, December 1952 and you worked for them until....

I think '58 I think it was probably March, or May 1958, that sort of time, when I left Limmer and went to work for English Electric Research Laboratories, Nelson Research Laboratories, at Stafford on the commercial application of computers. Which meant the commercial application of DEUCE[14] the ACE[15] pilot model derivative of a valve machine developed by the National Physical Laboratory and built by English Electric, primarily for English Electric's own design purposes. Because they had a lot of optimising designs for transformers and various engines and aircraft. English Electric was an enormous group, and had tremendous amount of engineering capability and requirements. Atomic energy as well. Umm…. But the idea of using them for commercial work was quite novel because computers were scientific machines, and DEUCE was one of the fastest machines available at that time. Very much faster than anything IBM had to offer. Umm…, and 1958….

I ought to deal with family anecdotal history about the Blackwells. My father's father, Julian Blackwell, was the illegitimate son of Jane Blackwell who was the daughter of one of the major farming contractors of Northleach Oxfordshire where the Blackwell family had been, and may well still be, for a long time because when the present Queen celebrated her Coronation, they looked at Parish registers to see which families were there at the time of Elizabeth 1, and there were two families, one of which was the Blackwells!! And my Aunty Marjorie who lived in Wolverhampton, went down to represent the family in the celebrations for Queen Elizabeth II's Coronation. Umm…. So they'd been around for a

[13] This was a common practice until the 1970s when the tax man finally stopped treating women as the property of their husbands and gave them separate tax-free income allowances.
[14] Digital Electronic Universal Computing Engine, a name obviously made to fit the acronym DEUCE because it followed ACE.
[15] Automatic Computing Engine, developed after the war at the National Physical Laboratory, by Alan Turing.

long time. Umm…. Her Dad's mother had, grandmother, err…, that's mother, had been in service for the Earl of Coventry's family at Croome Court near Worcester, a stately home of some magnificence. Now owned by the National Trust, but at that time a major stately home of a significant aristocratic family, with roots going back to 1300's. Umm…. and while she was in service there, presumably as a house maid she was got in the family way by one of the sons of the then Earl of Coventry[16].

Whether it was the eldest son or not I don't quite know, and of course could not continue in service. But I believe that she was paid off effectively by the family and with the outcome of that was, with another friend, Miss (Elizabeth)Willis (born 1843) became the landlord of the Adam and Eve Inn in Painswick, which is between Stroud and , North of Stroud, and which Uncle Archie who you recall was a joiner of some skill. He carved not only the 'Tempus Fugit' Grandfather Clock which you hear every morning here but also the 'Adam and Eve' Painswick screen which is in front of Richard and Donni's fireplace. And he did very fine work. These are sort of family treasures if you like.

The, I don't know how long the, Jane and her friend, Willis were landlords of the Adam and Eve pub, (still there in 1891 census[17][18]) but clearly the son that was the result of the illegitimacy, Julian, was born and when he grew up he was in the Great Western Railway as an Engine Driver. Ted may have more information about the background, but it is alleged, rumoured, that he was the man, first man to drive a passenger train through the Severn Tunnel (December 1886)[19] when it was built which is quite an achievement.

But certainly he ended up in Pembrokeshire in a little village called Hubberston which is at the far side of Pembroke where he met up with and married my Grandmother Emma Blackwell, Emma Stallard. Umm…. And my father was born in Llanelly[20] which is fairly close and went to Llanelli Grammar School later on. But his early life was spent in West Wales. 'Little England beyond Wales' it was called. And I remember Dad saying in the very cold winters of the 1900's seeing the sea frozen at Llanelli. That's pretty cold.

When was your Dad born?

1883, and fairly recently, in recent times, in my living time, Uncle Archie when he was alive went back to visit his mother's home and was greeted by somebody who saw him, didn't know him, and said, "You're a Stallard!" They had recognised him from his mother. So there's a strong flavour of Stallard in it. I think the Stallards came originally from Cornwall, it's not a Welsh name, it's a Cornish name[21], but going back a long, long way, however. Umm….

When my father was 17 his father died[22], leaving him the sole, elder member of the family which had then Billy, Bert, Sydney, Mabel, Marjorie, Julian and Archie[23,24]. Archie was the youngest … and they were at the time living in I think it was Frances Street Wolverhampton and times were strained, it is said. … (emotional time) … that Archie the boy, when his father died went out and got a paper round at

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[16] Julian Blackwell was born on the 2nd October 1859. The 8th Earl had died in 1843, so his 5 year old grandson became the 9th Earl and would have been 20 at the start of 1959. The 9th Earl did not marry until 1865 and was the only male member of the family resident at Croome Court in 1859.

[17] Jane and Elizabeth were still at the 'Adam & Eve' in the 1901 census, but retired in the 1911 census.

[18] Jane died in early 1919, and Elizabeth in the Spring of 1927.

[19] Julian Backwell's service record at GWR shows that he was not promoted from ***Fireman*** to ***Engine Turner*** until 29th September 1890 and not to ***3rd Class Engineman*** until 27th November 1893. The first train through the tunnel was a VIP train for staff and dignitaries on 5th September 1885 so Julian may have been on it, even as Fireman, but did not drive it.

[20] Now spelled 'Llanelli'.

[21] Julian & Emma's 3rd child, George, was born in Penzance, suggesting a family connection.

[22] Julian died on 3rd November 1903, following his wife's death in the same quarter as Marjorie was born. Complications of childbirth were a major cause of death on those times and may well have been the cause of Emma's.

[23] Birth registrations exist for James E Blackwell b: 1886, William Arthur b: 1887, George Albert b: 1890, Archibald Willis b: 1892, twins Mabel Jane & Amelia Louise b: 1895, and twins Sydney Stallard & Stanley Hubert b: 1896, Julian b: 1898 and Marjorie b: 1903. They were all born in Llannelly except George who was born in Penzance.

[24] The 1901 census for 34, Austin Street, Wolverhampton shows Juian (senior) & Emma with their children James, William, George, Archibald, Mabel, Sidney(sic) and Julian.

1d per week. It was needed. Dad was 17 and he must have been at that time working for the Great Western Railway Company at Wolverhampton. He obviously continued to work for the Great Western Railway Company and must have been in the Chief Clerk's office of the Wolverhampton Headquarters. At the time it was a significant part of the Great Western Company because the, ran, the Stafford Road works where the engines were maintained for the Birkenhead to Banbury and Shrewsbury to Wolverhampton lines. It was also where Brunel's seven foot gauge ended. They were taken out, and it was a very significant engineering facility, and I believe it was used to, at one stage, make actual steam engines which were painted royal blue whereas all the other engines that were made at Swindon were painted leaf green.

However that had long ceased before the First World War. But they were still maintaining engines right up to the second world war. And I've seen engine wheels being cast in the Stafford Road works where I was taken as a lad by my father in the early 40's I suppose. Uncle Archie was a pattern maker, i.e. he made the patterns for casting the metal and Sydney was a fitter who fitted things very exactly and they all worked at the Stafford Road works which was a major employer, and a very significant part of the Wolverhampton scene, because it provided steady safe employment for people, and the building societies and the football teams and a number of other things. Things sprang out of the fact that, that was a major source of stability in the Black Country, part of the Black Country.

Dad remembers helping to put up the wages for people, as presumably a wages clerk, before the first world war. And each man had a little pot into which sovereigns were put. The wage might be 3 or 4 sovereigns for a week and individual pots. And when Cousin Marjorie died, you, someone, maybe Felicity, somebody, found one of these little pots that had been kept by her as a memento - with some sovereigns in. Ha ha!

Before the first world war anyone who had £100 p.a. was quite well paid[25]. A schoolteacher for example might well be paid £150 p.a. Domestic servants, living in, might be paid as little as £15 or £20 p.a. plus keep and clothes of course and so on. One has to get an idea of the relative value of money. My mother's eldest brother Arthur Hickling, was a hard working businessman and linguist. He learnt Russian, and did very well as a translator in the first world war, when there was a need for people who spoke Russian and I remember him saying that from the age of 30 he never earned less than £1000 p.a. which was a lot of money! A lot of money!!

He later went on to become the proprietor of the Carlisle Newspaper and Editor and he retired to maintain a book shop in Ambleside with the astuteness to make sure that it also became the ticket agency for the London Midland and Scottish railway. So if you were going to the Lake District, which many people did in the late Victorian and early Edwardian times and you didn't want to go to Windermere to catch the train you could pick up your ticket at Ambleside and get it booked. And of course the people going into the shop would browse on the books. It was a very nice little side retirement job for somebody. And he had two sons, Ross and Alan, who were of course…. I was the youngest of all my cousins and they were about 30 years older than me so I didn't have much to do with any of them. Nor did much of the prosperity of that family flow in our direction. But that's by the way. I think one of them became a tax inspector and the other became a Cathedral Organist . Quite talented.

Now where had we got to?

You need to link together your mother.

Ah yes my mother married Bert t, I think it was Albert. Amy Hickling was a twin with Percy. She was trained as a seamstress by Miss Hobley, who was one of the ladies of New Hampton Road Sunday School and who ran a business teaching girls to sew. And my mother got very adept at sewing material, seamstress. So much so that she set up an independent business to do things like that before the first world war. She would go out to the big houses in the surrounding area that wanted someone to make

[25] The RPI in 1910 was 4.94 on today's scale which is based on 100 in January 1987. The RPI in October 2020 was 294.3, so £100 in 1910 was the same as £5,963.27 in 2020.

clothes for their maids and possibly dresses for the children. Not clothes for the Master or Mistress, but clothes for the working people. A big house may well have half a dozen people, juveniles inside the house and there'd be perhaps half a dozen people working in the gardens and the horses and so forth and so quite a big operation, and she'd make curtains for the rooms and so forth. Spent a week or fortnight living in and doing things around the place. It was quite conventional until the first world war destroyed more or less the Edwardian period.

When was Amy Hickling born?

She was born 5 years after dad so she must have been born in 1888. Ted was born in '23 So I think she must have got married to Bert some time in about 1920-21. But they jointly set up a business of collecting and dealing in waste paper. Collecting it, bundling it, and supplying it for recycling. And quite a significant quantity, but Bert died. I don't know what he died of, probably tuberculosis and just after Ted was born. And there was no way his mother could continue to do this, and so Bert's elder brother, Uncle Billy took over. Effectively sidelined my mother out of it and I think she never really receiver her proper share of the value of the business. And so there was a certain amount of coolness between Billy and the rest of the family over this affair. He continued to do very well and developed the business and had a daughter, cousin Marjorie who became a schoolteacher like her Aunt, Aunty Marjorie, and when we were married in… (she was the ginger haired lady . yes yes) She wasn't married and neither was Aunty Marjorie, - I think a lot of that generation, nearly all of the potential men, had been killed in the war you know. A tremendous loss of life in the first world war. I don't know whether there were any prospective beaus - there would have been I expect. However she didn't. I get the impression the Blackwell females were very picky. Ha ha! Umm…, err…. WE when we got married in….

When did your father marry Amy?

I think about 1926,maybe slightly earlier because he was aware that his brother's Bert widow had a small child and err…, needed support and he must have been fond of his then sister in law. And they got married and they went on honeymoon to North Wales in the Wirral - Hoylake I think, with Ted as a child, a three year old child which raised a few eyebrows. Ha ha! And that's before I was born. And by this time dad had, of course, been through the first world war where he was a sergeant in the Royal Garrison Artillery and was offered a field commission which he turned down, quite rightly so, because the expectancy of life of an Infantry Subaltern in the first world war was measured in days if not hours and he was the sole breadwinner of the family at that stage and his younger brother Julian had been killed as a newly commissioned officer in the Lancashire Fusiliers in the battle of the Somme[26], and Sydney had been very badly injured and wounded in the first world war and invalided out with major stomach difficulty. So a lot of reasons for being cautious.

And we, Bert and Amy, my mother and her husband, in anticipating their getting married, they bought a small terraced property in James' street in Wolverhampton, with the intention of occupying it when they got married. But it was occupied, and owing to the rules of Secure of Tenure, the existing tenant wouldn't get out and when he died the tenancy passed to his widow and when she died it passed to their daughter and it wasn't till Ted was about 35 that the daughter eventually died and the property which had passed from mother to Ted actually became available for his. A joke. Which at this time had been paid at quite an absurdly low rental, the whole time. Absolute travesty of justice. I don't know whether Ted ever sold it for more than a few hundred pounds but it was an awful story. My father and mother bought the house in Coswolds.

That's Tempus Fugit that Archie did strike 12.

Are you OK with that as family history and ready to move back to DEUCE?

Yes I think so yes.

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[26] Commonwealth War Graves Commission records show that 2nd Lieutenant Julian Victor Blackwell of the 11th Batallion, Lancashire Fusilierse, son of Julian and Emma Blackwell, died on 11th April 1918 and is commemorated on panel 4 of the Ploegsteert Memorial, just north of Armentieres in Belgium, with over 11,000 others who died there.

There's a bit more about Suez, my service in the Suez Canal….

Ok we'll cover that quickly before we go to DEUCE.

When the King, Farouk was deposed, and things got very difficult my Unit Commander realised that there was no one in the battery who really understood much about Army ciphers . And there was an arrangement that there would be a training course or indoctrination for the people who wanted to know about how the Army did it's ciphers, to be organised at the Headquarters of the British Troops in Egypt, on the north side of Ismailia on a certain day. I was asked, and told, I should go and attend this thing, because presumably, they thought that having a degree in maths , I… a bit more knowledge about ciphers than anyone else. That's not true. And we set out in an open 15cwt truck. No doors to it at all and just a canvas roof over the cabin part. Driven by one of the National Servicemen, might have been a regular, Gunner Findl, F.I.N.D.L., who was a charming chap, he'd been a taxi driver in civvy street and he was well known for coming round and shutting doors on cars for Officers and so forth which was really rather charming. So we were going out in… however we bounced up the road to Ismailia and when we got to Ismailia we could see that there was smoke in the distance and there were people running down the streets and there was general commotion.

And suddenly running towards us was a Frenchman, there were quite a lot of Frenchies in Ismailia, saying, "Go back! There's a riot up there, they are burning cars." And it was quite clear there was a road blockage 450 yards ahead with an angry mob venting their spleen on anything and everyone[27]. So very astutely my driver turned the vehicle round and we set off to get to the other side of Ismailia by some alternative route.

Now going from the Nile to the Suez Canal area is the Sweet Water Canal, sweet water meaning that it is not saline, it's not salty, and it's quite a wide canal, which moved at an extraordinarily sluggish rate, but it provided the water which passing through the filtration plants and so forth and so forth and so on, provided the water which everyone in the Canal Zone relied on, umm…, including the locals who didn't have filtration plants and used the canal for all sorts of purposes as you can imagine. Including putting dead dogs and even dead camels into it to float down to the next bridge where someone would pole it through to the next one. Umm…, And the, you had to get round this and we eventually managed to get round it by going through the rubbish dump for the canal zone area which was a huge mass of rubbish you might imagine, where a huge cloud of kites, buzzards, or whatever they were rose as you went by in the vehicles, disturbed and then go back to reducing the rubbish to err…, And we got to the Headquarters of the British Troops in Egypt where of course,

There was no question of being taught about ciphers and so forth the question was, they called out the depot Regiment to go and quell the riot and there's … the Balloon had gone up!!! And it was really a major event. And there was equally no chance of us going back through the way we'd come. Umm…. It was absolutely ridiculous umm…, so we had to go back by going into the desert further west, umm…, which wasn't difficult, but you had to cross the canal, which ran from the Delta through to the, Ismailia. And the only crossing place you could go was the railway bridge. You couldn't have got on any road bridge 'cos the mobs were there, and we got to a railway bridge that was about 4 or 5 miles further out of town, err… umm…, and there was a crowd on it!

[27] This might have been 25th January 1952, when a confrontation between British forces and police at Ismailia caused 40 Egyptian policemen to die, provoking riots in Cairo the next day which left 76 people dead and strengthening support for General Nasser.

Hostile crowd!! With picks and stuff, and Gunner Findl, drove the truck across on this road bridge going bump, bump, bump across the sleepers through the crowd. Making no concessions AT ALL! They didn't jump on the vehicle, if they had we wouldn't be here. Undoubtedly he saved his life and mine on that day. There is no doubt, had we stopped we would never have got home, it was quite a…. We had no arms, absolutely none at all. When we'd left camp all was peaceful, umm…, and when we got back to camp they were quite concerned, we'd been missing for quite a long time and no one knew where we were.

The Army in its wisdom had known there might be trouble and had set up three states of emergency. State 1 - people confined to camp, State 2 - they'd be armed, and State 3 - only escorted vehicles with arms would be allowed out, but it had gone from 0 to 3 while we were out of course!!! Ha ha!

And thereafter all movements were very restricted and any that had to go out went out with an armed party of people because you were liable to be shot at and so forth. The English were out in the desert area err…, and that's when we lost all our NAAFI staff. And one of the interesting facets of life, the NAAFI Manager, along with a number of Officers who had wives out there, lived in lsmailia in the French part of lsmailia, which was very much open to getting and being got at by the crowd. And err…, when the NAAFI Manager came to see us about our managing our own NAAFI, he told the , my Commanding Officer that he was very worried because he'd left his wife and daughter in the flat. And they were very much exposed. Err…, umm…. My Officer Commanding said, "Well you'd better have a pistol." And he told him to go back to the guard room and draw an Army pistol and some rounds, so he'd have something to protect himself with so he did this and wore the pistol on his belt, 'cos that's what you did, as we did. And some 2-3 days later he happened to be in the Fyad garrison where he was spotted by the Provost Marshal who said, "What are you doing with an Army Pistol, Mr Civilian?" and confiscated it. Which wasn't a very good thing to do, whereupon the story came out and my Unit Commander was summoned to explain himself to the Brigadier.

And he explained the circumstances, and said that he'd done the right thing, and they agreed and thereafter NAAFI were provided with an armed escort everywhere they went. It was a pretty brave decision to take. I've got a lot of time for some of these people who break the rules, but they are sensible rules to break.

Now, we then had to, we were then given, we were then kicked out of our camp by the 3rd Battalion Grenadier Guards and went down to Geniefer[28], and one of the jobs we had there was to provide a guard for Abu Swir[29] ammunition depot, which was one of the old ammunition depots for the Middle East war and it was 13 miles in circumference. The double barbed wire fence with mines laid in between, and where there were stockpiles of everything you could possibly … bombs, ammunitions, shells, everything, covering a huge area in different bays, so that if it went up it wouldn't destroy the whole lot. But 13 miles in circumference gives you some idea as to how big it was and there was a Bren Carrier Patrol that went round at night time and it kept the Wogs out, doing any damage. But it was quite an extensive thing to guard.

Umm…, another one which we didn't guard was the tyre stock, mainly from the 2nd world war's El Alamein campaign which was a huge dump of tyres, of all descriptions, for all sorts of vehicles. Which the locals managed to get into and set fire to and it burned for several days!!! This huge pile of black smoke going up into the skies. There was nothing you could do about it. You couldn't get any water to it. It must have been thousands of tons of tyres there.

[28] Was this Jennyfer? It seems too near Cairo.

[29] From October 19511 the Abu Swir air base was home to 208 Squadron of the RAF. The British left in the 1956 Suez crisis. On June 5th 1967 Egypt's air force was neutralised when Abu Swir air base was the first base attacked by the Israeli air force in the Six Day War.

Eventually, I was, interestingly, a year or so later it was actually mentioned in Parliament and the Army estimator referred to about the loss of so many millions of £'s worth of tyres in the troubles in Egypt. They would never going to be needed unless you were going to fight another Alamein campaign, but I mean a pity to lose all those tyres.

Umm…, err…, we used to see occasionally, the local Egyptian Police riding camels. Lovely camels, racing camels, and they'd be in white uniforms, with a red tarboosh on top. A racing camel can outpace a horse you know. A very pretty sight. We'd see them occasionally. However that's enough of anecdotes.

You clearly enjoyed your time in the army. Was there ever a time when you considered a career in the Army?

Oh I was asked by ... would I like to stay on? I think under normal circumstances if I weren't married I might well have done.

But you weren't married at that stage.

Well I was engaged, intending to be married, and in those days the regular Officers…, there were a number of National Service Commissioned people who transferred to become regular officers, the requirement was that you were not normally expected to get married until you reached Captaincy rank because you, a) wouldn't have enough money, and b)the Army couldn't provide the facilities for married life, family support, accommodation overseas, and things like that for large numbers of people. So you cut it off at a level that is fairly senior and of course if you were engaged in any activities that were warlike, or non warlike, your full attention was spent in being an Army Officer. So it was not really practical politics to become married until you were in your early 30s or perhaps 35 and reached a reasonable rank of stability. And you wouldn't reach Captaincy until before 30, even if you were very good. A 2nd Lieutenant commissioned at 20 and promoted to First Lieutenant by 23 /24 and then you'd be 6 years as a Captain, 6 years before you became a Captain. So you'd be lucky to be a Captain before, a Captain by the age of 30. War time promotion was always faster of course, but peacetime wasn't. And pay rates and so on, effective….

Ok are we ready to move up to English Electric DEUCE?
So you joined English Electric and you were living in Wolverhampton with three small children

Cranmore Road, Yes[30]. We then just moved to Oakes Crescent, which is nearer Chapel Ash.

Working in Stafford?

Yep, And the having done some work on the commercial application of computers if you like, working um, at Stafford, English Electric were being pressured by Universities and all sorts of bodies, to provide computers for their own use. And it was a time when technology was advancing from valves to transistors so the next generation of machines was in prospect of being bigger and better, and so on, and so English Electric in its wisdom decided to spin off from its research laboratories this computer entity and join it up with the people at Kidsgrove who were working on Radar for the Admiralty on the basis that all electronic work could be grouped together. Mainly because the Kidsgrove factory was a satellite of the Stafford factory and therefore under the control of the General Manager of Stafford whose son-in -law was the manager at Kidsgrove. And a bit of a well, not an engineer.

But it was DEUCE you were working on originally in 1958. Just give me some more background - who was working at that point and what you know about DEUCE and a little bit about DEUCE.

1958 - I went to Stafford, DEUCE had been developed in the late 50's, early 50's, as a derivative of the ACE Pilot model ACE developed at the National Physical Laboratory with the aid of the English Electric

[30] Joined English Electric in 1958.

engineers. And in parallel with that, Cambridge University was producing EDSAC[31] (Electronic Delay Storage Automatic Calculator) and Manchester University was producing the early Manchester machines[32] and other bodies were dabbling in computer like things but DEUCE was by far the fastest machine of its day. And therefore very much needed for scientific calculations and scientific work and was esteemed by Universities and bodies doing scientific development, in particular English Electric in what it did for its design calculations for engines and tractions and atomic engines and things like that. And the Lightning fighter which was probably a huge development based at Warton. Umm…, and…, but…, one of our maintenance engineers at Stafford….

Who were the people involved at that stage?

Wilfred Scott was Deputy Director of Research at Stafford, that's the research labs. J.K.Brown was Director of Research but he played very little part in this side because there were other branches of research going on. Research labs, not just computing, you know. All sorts of other things going on. J.K.Brown was a very peculiar individual. He was obsessed with numbering everything. Every desk and table and chair, had a little plastic plaque with its number on it. So he could control it. He was a freak on that sort of thing.

When they built the new buildings down at Blackheath Lane, which is close by. That's before we left, he had the gardens laid out before the building was finished!! Quite incredible!! (*Laughs*) But he had. He was kept away from all these computer people by Wilfred Scott, who was the Deputy Director, who really looked after us completely and was the major force in the development of what was done in DEUCE.

The idea of using DEUCE for commercial work was really quite an interesting one as people hadn't thought of using computers for commercial work. Commercial work involved lots of paper work, and numbers and data and so forth. It wasn't calculation as such, it was data processing, umm…, so the idea that you could actually use a computer to help on stock control, or payroll for example, and things like that was a fairly, ere… bold one.

Who thought of that idea?

Well I think it was coming along then, because the Joe Lyons and the LEO computer people had started to work more that way as well, and we were ahead of the Americans. Most of the commercial applications were done on National counting machines and things like that, Bowers, NCR. and punch cards. The Hollerith Punch Card systems[33] which went back to the American original census days and were usually mostly made for data processing and things of that nature. And in fact we had the Hollerith punch card readers and printers as the input and output device on masses of data for DEUCE.

Umm…. And one of the jobs that I was given early on, by Allan Gilmour, who was very keen on railways, railway timetables. He had a contact with the railway people in Crewe, who had a problem. And the problem was quite simple. That the Crewe area which stretched from south of Stafford, including Liverpool, and Manchester and quite a big area, and the docks, Garston Docks. Had 100, I think it was, 125 different locations where there were either stations or depots where trains were set up and created or emptied and so forth. Some of these were commercial, belonging to firms like ICI or British Steel, but many of them were railway sidings for places like Crewe, Wolverhampton, Wellington and places like that. And they had…, in these places there would be wagons that would be either empty, and therefore available to be filled with goods, or full and about to be emptied, or broken and about to be repaired, or err…, in some cases specialist things like fish wagons which were refrigerated, and bogey

[31] EDSAC was developed in conjunction with Lyons who had recognised the value of using computers commercially in their business, and

[32] Manchester developed ATLAS, of which three were made for BP (shared with UCL), Harwell, and Manchester itself, and an upgraded version known as Titan went to Cambridge University.

[33] Herman Hollerith had patented the idea of recording data on punched cards back in 1884, and it was used for the 1890 US census. His company performed simple data processing and tabulating, going on to acquire others, and was renamed to IBM in 1924.

booster ones for carrying long pieces of things so they set over two wagons. And their Commercial Department was endeavouring to supply a service to customers in this whole area by making sure that when somebody wanted to move goods of all sorts, fish or piles of sand or timber or what have you or coal. That they could have the train in the right place to be filled and be taken to the right place to be emptied and so forth. And they found that each of the places which had these things would put in a return by telephone each day to the Commercial Centre saying what they'd got. Which the people would say, "Ah, yes. We've got enough of those to do this order and so forth, or we must move some from here to fulfil this order."

But the accuracy with which the…, this data was provided was somewhat dubious. Umm…. Partly because people were sloppy and partly because they were dealing with lots and lots of figures and things could change. Umm…, and they worked on the principle that if you could actually compare what they said today was the availability of wagons, of about 20 different types, and what their state was, full, empty, being repaired, or in some cases being a runner under another one. And compare that with the following days estimate, and the following days estimate, you'd see which of these various depots were doing things accurately or being a bit trigger happy. And they had the bright idea that if they could process this data and provide information on what was going on they could jump on the chaps who were being sloppy and make better use of the available wagons. Because nothing annoyed the customers more than being given permission to move goods and the wagons weren't there to do them.

And so I was taken with Allan Gilmour, to a meeting in Crewe station, The Crewe Arms Hotel, by the station to meet up with the Crash Control People from that area. And the requirements were described, and that was a meeting which lasted about two hours. And they answered all my questions. How many types of wagons were there? I've forgotten now, about 20 or so different types. How many wagons would there be? 30, 30,000 – most of them being mineral wagons taking things to the docks. But quite a number of specialist wagons like refrigerated fish and things like that, and I said "And in how many places were there?" I think that there were 127 places that they could be and they could be in one of six different states, err…, and I said, "What are the names of these places?"

"Oh, Shrewsbury, Liverpool and so forth". I had to see how I could do this and get it printed on a tabulator which was an 80 card input device and therefore the maximum number of characters you'd get was 80 characters. Which you'd think is enough but, umm…, I discovered very quickly that it wasn't!! Because you had Imperial Chemical Industries, Warrington, occupies an awful lot of words. We had to do a lot of shortening! And I said, "Well how many, what's the maximum number of wagons you'd ever get in one place?" And they said, "Well a train might be 30 or so wagons and so forth and not a huge number."

So,… and I had to do all this in binary, because DEUCE used binary, and I said, "Would 664 in binary numbers be enough??" "Oh, yes, yes that would be enough." So I programmed this thing very carefully to process the data which was… They said they'd send the data down by… on the train from Liverpool to Crewe and we'd pick it up at Crewe at mid-morning, and it would then be punched up by our punch girls on the punch cards, so it could be read to go into the computer and we would run the programme, print out all the results and then go back at four o'clock in the afternoon on the train from Crewe.

Daily processing data processing!! I should think the first daily data processing done, certainly on DEUCE, in Britain possibly!!!! And we did. And we said, "Do you want all the results or do you want just the significant results? (because there might be an awful lot of paper.)" They said, "Oh we'll have the lot." Well if that's what you want… we'll have…. The first 2 or 3 days we printed paper (*Laughing, and waving his hands wide to indicate how much paper!!!!*) then they said, "ENOUGH I! We'll have the significant results please."

But the thing that amuses me is… that I'd arranged, we'd had to pack everything in binary, a certain field length for, um…. certain bits of data you see, and I'd allowed, I think I've forgotten, 6 bits for the amount of wagons. The FIRST week they did this thing there was a dock strike at Garston Docks!II!!!!!!! And all the mineral wagons went in and NOTHING came out!I!!! There were over 3000 wagons at

Garston Docks, which as far as my programme was concerned… !!!!!!!!!!!!! I truncated it. Because it went outside the field, so the first day it was inaccurate, but the middle inroads were all accurate, because I'd chopped off … deleting the 1000s and the last day it was inaccurate. But I thought how very typical of how things can catch you out.I!

I'd asked all the right questions, I'd made all the provisions. But They had provided correct information, but a dock strike had gummed it all up!!!!

Tell me about Cliff Robinson.

Cliff was the head of the maths and Computer section of the research labs, and responsible for the development of DEUCE from I think, with Colin Hayley[34], the chief engineer, from the Ace Pilot Model; built at Stafford and Cliff was a very talented mathematician. A very keen Liberal and he and Allan[35], both Liberals - members of the Liberal party thought they could devise a method of helping in forecasting election results. And they programmed DEUCE…

This is before the Crewe trains thing.

They programmed DEUCE for the 1955 election[36], very early on, to do a forecast of the outcome of the Election. And they were very canny because instead of working on the assumption of taking trends from the first few results declared, and working it out, they had divided the country up into different classes: mining areas, industrial areas, urban areas, Tory strongholds, marginal seats and so forth, and had decided that they would only make a forecast when they'd had representative indications from each of these particular subsections of the total electorate.

Which election was this for?

'55

You certain about that?

Yes.

OK.

It was the first time anyone had made an attempt to use a computer for election forecasting. Umm…, and they got some very good results, very accurate results, err…, which quite upset the pundits who were doing their things without any aid of a computer in live, in studios. And this was quite a coup.

And this was before you joined them?

Yes and that was done in DEUCE freezing 500 words of store in about 2000 words, 32 bit long on a racking store on a drum. So it was really quite an achievement to get all that information and process it in real time, at that time. However.....

Going back to our little anecdote, when I was, we were, working on the commercial applications for English Electric, one of the jobs that was looked at was the stock control and so on for the Meters Relay Instruments Division of English Electric, which was based at the Stafford works. And they produced all sorts of small instruments of various sorts and umm….

[34] Colin Hayley was a brilliant production engineer, responsible for taking the concepts of the ACE pilot model and creating a design suitable for mass-production as DEUCE.
[35] Allan Gilmour
[36] English Electric provided support to the BBC's radio coverage on general election night in 1955, its television coverage in 1959, and then ITN's coverage from 1963 when the BBC switched to ICT. After EE and ICT merged to form ICL it provided support to both television channels in 1970. Cliff Robinson was working on the ITN coverage and his son Peter on the BBC coverage during his pre-university break.

One of their people there happened to be summoned to appear on a jury. In those days Stafford still had Assizes - great sober occasions where the High Court judge came with trumpets, out runners and so forth. And there was a particular salacious case, which was up for trial, and this man was called in to be on the jury, and so he had to leave his work and attend the jury. And he made a practice of going into work at 8 o'clock in the morning and doing a bit and then nipping up the road for when the courts sat at 11 o'clock, sitting on the jury, and then at the end of the day coming back home to his work and tiding a few things up. But, umm…, getting towards the end of the trial, about a fortnight, the Judge said, "I think we'll finish it tomorrow so we'll start early. The Court will commence at 9.30."

Now this man, as his wont, went into work with the intention of getting up to the Court at a good time, but his boss wanted to see him, and his boss was on the telephone. So he hummed and harred around outside his boss' office. And his boss was on the telephone and the result was, with his boss seen, he was already late. And he arrived at the Court to find, the Police out looking for him!!, The Court in session, the Judge in the box, everyone there looking for him, because the trial would have to be abandoned if (he) wasn't in time. And he was hauled up in front of the judge who upbraided him strongly. "Why was he late???" and he explained things. "Oh" said the Judge, "Your boss can only fire you. I can send you to Prison!!" ha ha . It's quite true as well but he was let off in this case.

However, moving on. One of the jobs, Derek Hall, who was our maintenance engineer from DEUCE, had an idea, that he thought that automation of steel mills, which was one of the side lines of English Electric, who did a lot of work for steel mills, could be improved, by proving the yield of rolling the lengths of steel. Steel can be anything from, stainless steel for making knives and forks, to girders for RSJs for railways and all the things.

There were a number of different steel works around the country which specialised in producing particular sorts of steel. Shelton iron and Steel did for instance, railway lines and so on. Um…, and the way it is done, is the steel is in a billet, a large billet, perhaps weighing several tons or maybe many tons, which is then put into a soaking pit which then soaks up heat until it is red hot or preferably nearly white hot, then it is cogged through a rolling mill which cogs it, squashes and squashes it and squashes it into the profile you want. And of course in process it gets from being 6 foot long to perhaps 160 foot long of a smaller dimension. And this is all done hot, very hot.

And in order to supply customers with what they want the man in charge of the hot saw has a list of the orders to be fulfilled, which may be so many feet and so forth. And judging the steel as it comes from the rolling mill at quite a high speed, and is the right dimension, he would then decide to cut it, usually on a hot saw, actually normally shear. And inevitably there would be some spare stuff left at the end. And generally speaking you could get a yield of saleable material of about 92-93% of the total length. The rest would be waste.

If you could improve that so the waste was smaller, by about lor 2%, over the course of a year, you'd be saving a vast amount of money. And he, Derek Hall's idea, was that you could automate the selection of the orders in the order book so that you got more saleable material out of that particular length, which would not be the same as the next one by a few feet of a few inches but it'd be enough and you could actually save, conventionally at an ordinary mill perhaps £100,000 p.a and he wanted to prove this by simulating this by feeding in the order book and demonstrating that by careful combination of orders and so forth you could arrive at a higher yield.

And I had the job of writing a programme for this, for several steel mills because they all had slight differences, and we demonstrated that you could actually improve the yield usually by 2% or 2.5% depending on how skilful the hot saw man was, and what sort of steel they were producing.
I remember going to see Samuel Fox's Sheffield who produced stainless steel for knives and forks and that sort of thing and they rolled up to 6 lots in one go! Going through the mill at a speed of about 30 mph!! So really a hell of a speed! So cutting was really quite a tricky exercise, not the same algorithm applied for cutting through six which might be slightly different lengths from cutting 1 or 2. So I got around to see quite a lot of steel mills, including Norman Long who did girders that were 3 foot by

2 foot by 60 foot long and would take a railway bridge. Really quite extraordinary!

Umm, So what was your job title at this stage?

Oh, I was a computer programmer.

Give me the dates here.

Well, I joined English Electric in '58 and it wasn't until we were up in Kidsgrove, which was '62, or '63, '64 that I had any supervisory responsibilities for other people. I was just one of the lads doing things, as we all were.

'58 to '62?

Yes and then we were selling computers for serious commercial work, big ones. And part of the deal which our sales force, along with salesmen of other people, was to provide experts, on how the computer was used, to the customer, so that they trained the staff. And it was a necessary requirement. You provided the people who understood the computer, Systems Analysts, to analyse the job and to help in the programming and to help the customer's staff so that the time that they are getting on to the run up to the job was productive. Because very few people had first hand knowledge of computers, or first hand experience of things that could go wrong, or even handling data in large quantities, err…, it was very, very early days in computer world. Added to which the computer manufacturers were constantly losing their trained staff, because customers wanted to recruit people who knew something about the things. So… there was a tremendous turnover of people going through the whole industry. And that went on for a very long time.

But we... one of the early jobs we did was for the Yorkshire Electricity Board who bought an early KDPl0. A very large computer with lots of tape river which they were going to put into their new building, somewhere north of Huddersfield, built specially for it. And I was responsible for finding staff to go and work on this project. In fact I was also in the interviewing panel when they were recruiting their proposed Computer Manager who was a civil servant. Didn't know much about computers but we thought he'd make quite a good manager for this enterprise and I think he did turn out to be quite a successful manager.

The one thing I remember from that job was that the Yorkshire Electricity Board being excited, they were leading the field in Electricity Boards, err… found a suitable place out in the country, a stately home type place and they built there a place to put the computer.

And they didn't get planning permission!!! And they were taken to court. And this was a celebrity case - a very large public authority being prosecuted for failing to get planning permission and much to the consternation of many people, the judge thought this was a flagrant disobedience of the act and he sent the Chairman and the Finance Director to prison for six months!! You can imagine how that went round the whole industry. It was intended to send a message and I think it did.

They didn't pull the hall down, they went ahead with their building. And these days the planning people would make you take it down again. But quite a memorable occasion. And it was a big job because up 'til then, Yorkshire Electricity Board's billing had all been done in small area units, the Huddersfield area, or the Leeds area, of the Weatherby area and so forth. So what they did was to combine the whole lot into a huge computer data processing project and, err…, it was quite an adventure .

When would that be?

About 1966, I should think. That sort of time.

So your job then was not just a computer programmer, you'd changed.

No, I was responsible for finding staff who would do this, the systems analysts, and I also acquired….

What was your job title and when did you make that change?

Oh I don't know … Manager. I also had responsibility for the software development as well as the non-scientific machines at Kidsgrove and err… had some responsibility under Allan Gilmour, for the Bureau work that they did on the, at Kidsgrove as well. Umm…. But increasingly as we got more machines, and big customers, and they were big customers, Midland Bank was one, Commercial Union was another, Bank of London South America, who had machines, in London, two in South America. They all required quite a lot of staff, and recruiting, hiring, training and despatching these people and with all the things they needed for a one or two or three year stint to help the customer get through the planning, and installing the computer was quite a big job, and a number of these staff moved around quite a bit from one place to another. One site my friend David Williams and his wife went out to South America and were there for the bank of London South America installations in Rio de Janeiro and what was that other place? And a lot of them were passing people around.

And then we had people in London of course. There was a small DEUCE bureau in Kingsway in London which was the focus for doing work in London. Umm…. And that was under George Davis who was a mathematician and computer man from NPL. And gradually as we got more people there, the, we eventually merged with the Lyons Computer Company, LEO[37], which produced LEO 1, LEO 2 and later on LEO 3. Excellent machines and I had the responsibilities for all the support staff there on these. All these machines. And then English Electric acquired Elliot Automation's computer interest. Liam Bagrid the chairman of the Elliot Automation had a huge number of small companies under his wing, that specialised in individual areas of automation, many of them computer based. In fact his method of promoting seems to have been to have taken his research people who had a bright idea and say well go and run with it and if you can run a business, we'll set up a little business and you can become the Managing Director of a small business.

And when English Electric took over Elliot Automation in about 1968, I suppose '67 I remember Wilfred Scott, our Managing Director, remarking that he was the Managing Director for English Electric, but he'd taken over Elliot Automations which had 127 Managing Directors 'cos each little company had its own boss. It's quite an interesting way of testing the market and letting entrepreneurs make their mark. And you know, medical automation, industrial automation, anything. An incredible amount of work with small companies doing err… online controls, traffic lights, anything, washing machines. A very exciting time.

But then there was great national interest in what should be the next British computer. Ferranti had really sold out their interest to ICL (ICT) the punched card of British tap to form ICL (ICT) and the Armstrong's interest in small 20 hole, 24 hole round hole punch cards used by the Post Office for, for Post Office billing was sold to ICL (ICT) also, but they kept on producing these small billing cards for accounts and ICL, ICT, and ICT had produced its own fairly mundane computer, the HEC[38] machines, and Ferranti had produced the 1900 range, a very good machine. And they joined with British Town to form ICT, and so the Ferranti machine the 1900 range was quite a contender for becoming, for having a successor which would become the British Machine. On the other hand, English Electric had its KDF10, KDF9, KDM2, and of course had inherited Al's 10/10 and the LEO 1, LEO 2, and LEO 3. So a whole gamut of potential good machines, some of them very big machines, which the British Government wanted to back ONE. And it really got hold of English Electric and said, " You really ought to come to agreement with what we can do."

[37] Lyons Electronic Office, developed from the Cambridge EDSAC computer for tasks like payroll and stock control at Lyons' tea shops. Peter Hermon from Lyons went on to become IT director at BOAC where he oversaw the development of the first commercial global computer network in the 1960s, long before the World Wide Web.
[38] Hollerith Electronic Computer

And so each company put up three people on a working party which met at the Cavendish Hotel in London, to look at the possibilities of producing a successor, British Machine, which the government would put some money behind. And Colin Hayley, John Pinkerton and I were English Electric representatives, John Pinkerton being the designer of the LEO range, Colin Hayley being English Electric's Chief Engineer Computing. And, umm…, we met and really sensed that it is possible, we could develop a machine which would not be either a derivative of the 1900 range or the English Electric System 4 range, but could be a new machine. But it could be done. But we could only do this if there was an agreement commercially between the parties.

ICT was an independent quoted public company, English Electric Computing was a mere little entity of the English Electric Group, and whenever you have a joining of some sort there is commercial interests involved. Also Ferranti and Armstrong, Vickers Armstrong, still had some slight interest in this because they had a shareholding from their earliest things. So there were a lot of people who had to consider their shareholders, as well as the technicalities of technology of doing things. But.....

And the net result was that the Government was told more or less, "You can't do anything unless we have a single commercial entity. Hence ICL was formed. And I think English Electric expected to have the dominant share in this.

Can you give me a date on this?

It'd be 1968.

Ah that coincided with our move from Kidsgrove (Congleton) to the south.

Yes, yes and but, umm…, shortly before that Wilfred Scott had had a heart attack when he had tried to stop his dog from trying to fight another dog when he was at home and had died very suddenly[39]. Which was a great tragedy. And we had parachuted in from the Liverpool works Sir William Barlow who was the General Manager of the Liverpool works which made washing machines and transformers and things like that. Not computers. Ha ha! But he was a very, very talented engineer, ex naval man, and was dropped in to hold the fort whilst the merger operations went through.

Tell me a little bit about the computers 'cos the perception of computers is that you can hold it in your hand.

DEUCE was a valve machine, with a mercury delay line[40], the valve machines were, had British valves and there were many many of them in racks inside the thing about the same size as a shipping container except that you could walk down the central isle inside it. Of course it was generating a fair amount of heat withal those valves, in fact on a cold night you went in there to keep warm. And the front of the thing there'd be the control desk with all the keys and so forth to operate it. But…, and DEUCE when it was built would cost about £50,000 which was a lot of money in those days. A lot of money! The average house would be selling for about £1,000 so it err…, the reason why, it's the big electrical companies did things in computers was that it required a lot of capital. Now Ferranti had produced their machines which were not quite so fast but much the same cost until Basil de Ferranti who was the…, one of the founder members had the concept of producing a super machine, which they rather foolishly said would meet all the computing requirements that Britain ever had!!!

[39] Wilfred Scott died in July/August 1967. Cliff Robinson was on a summer camping tour of France, Italy, Switzerland and Germany with his family. Failing to contact him through BBC World Service messages English Electric sent someone out along the reverse route to try to intercept him at camp sites. By a stroke of fortune they met at a petrol station near the France-Italy Border.

[40] An early form of digital memory.

Which was called Atlas. They were wrong in that. But Atlas was a super machine and it cost them £1 million. And they produced about 3 or 4 which was a tremendous burden on a company like Ferranti to tie up so much money in an asset. One they sold to Manchester University Science and Technology[41] for joint research work, one I think they sold to the atomic energy people at Harwell, one I've forgotten and there was one more or less spare. But Basil de Ferranti had been a Junior Minister in one of the Governments and he was got out by a Professor Gill who was a Professor at London University who suggested that what the government ought to have was a Computer Design Centre and wouldn't an Atlas be an excellent machine to base it on. And that idea received a lot of blessing, partly because Ferranti wanted to sell the machine, and it was a very powerful machine, and it would go to Cambridge because Cambridge was a good place to do that sort of engineering work and it could go there. And the arrangement was that it should go there and it, that ICT, because Ferranti was part of the ICT organisation, they would provide the staff to run it, so they wouldn't be civil servants. They would be owned by Government, but it could be a sort of privatised version of this, so no problems of paying Civil Service rates, or pension schemes.

It would be a straightforward commercial contract between the computer world and the government to set up a Computer Aid Design Centre in Cambridge. And this was going through at the time of the merger. And when I went in the merger I ended up being responsible for ALL the software organisations of both companies as Director of Systems Programming ICL. Systems and Applications Programming Organisation my title: ***Manager of Systems Applications Programming Organisation***, which was about 2500 people from, most of them being programmers, but quite a number of technical staff, machine operators, data processing, data preparation people, tape operators. And in all this was the requirement to look after this C.A.D. centre at Cambridge. Ha ha! And ICT had already nominated it's staff to go there to Cambridge. The machine[42] was going through its acceptance trials at the time of the merger, at Cambridge, and they had appointed a very competent man to be in command to manage the centre.

But it became very obvious to me that whereas we had the means of running the machine and staffing it, not being civil servants, it was totally inappropriate that, a commercial company like ICL should be charged by implication with deciding what the commercial, what technical policy of computer design should be for the government. Clearly that was a decision that shouldn't be in the private sector and it should be in the hands of government. And this point was put very strongly to the Under Secretary of The Department of Trade and Industry who was responsible, and said we don't mind running the machine, in fact we are happy to, but really has to be somebody in charge as Director of the project who represents the Government interest in what sort of work, what sort of computer design software is to be developed and what priority will be given to various things 'cos there were lots of people clammering to use the machine.

And as the result of that, Arthur Llewellyn who was quite a senior Civil Servant, based at NATO. in Paris, who wanted to come home, was drafted in to become the Director of the Computer Aid Design Centre at Cambridge. And we were to work with him, under him. He was to provide the technical direction. Worked very well and went from strength to strength. And eventually the contract was assigned to the ICL software house which I was responsible for setting up, Dataskil…, Dataskil Ltd, of which I became Deputy Chairman and Alan Roussell became Managing Director, and Peter Hall was the Chairman. And I moved. The reason we set up Dataskil was that we had staff from all over the place doing software work and applications programme work for not only new machines but they are now called legacy machines. Machines that had been developed and were being used by people in the field, some of them being quite old.

[41] UMIST – University of Manchester Institute of Science and Technology.

[42] The Cambridge computer was an enhanced version of Atlas and was called Titan. Cliff Robinson's son, Peter, later became Professor of Computing at Cambridge and Peter's wife was project manager for the installation of the university's citywide computer network.

We had in fact, every British made machine in existence except Stanteg Zebra[43]! i.e. We had all the English Electric machines, all the Ferranti machines, all the early machines, all the LEO machines, all the HEC machines, Eliot Automation machines . There were oodles and oodles of them! And some of them were quite old, but people still using the software, and the software needed to be maintained and in some cases developed.

So what is this date for setting up Dataskil?

1970, umm…, and in order to tidy it all up and also to concentrate the technical resources, without having the basic software for the new range we agreed to produce. I thought all these quasi commercial interests for doing things for other people, and manning machines and facilities, and management should be hived off into a Software House effectively. So we set up Dataskil and it had about 6 or 700 people in it initially and simplified the structure in ICL no end.

Alan Roussell the Managing Director later on became the Head of ICL's Field Maintenance Organisation and later Managing Director of ICL, so he did very well out of it. And his successor became the man who ran Camelot. Ha ha! The National Lottery so a number of people have spun off from that.

You have glossed over the move from Kidsgrove to London.

Well yes, when ICL was formed it was quite clear that I couldn't operate with this conglomerate of responsibilities outside the head office area of ICL which was London, Putney. I was told by William Barlow, our Managing Director, "You'll just have to go down south Dennis."

So, at very short notice, very short notice, we moved from, domestically, from Congleton to Bracknell. Where your mother was sent to go and find a house for us to go into which she did very successfully and we still went and had our summer holiday in the summer before getting down to business in the September.

(I left Congleton Grammar School for Girls at the end of the summer term late July '68 with no idea of not returning, and went to The Holt Grammar School Wokingham for the start of the Autumn term in September '68.)

And moving children to schools and so forth, and later on moving our belongings from Congleton which had been in store down to the Thames Valley area where eventually after months we bought a home in Wokingham, which is…, you know all about.

Yep.

It was a very busy time and err… your mother was very active and very decisive and did lots of things ‘cos I was far too busy to do anything else.

Yes I never saw you.

She was indignant when I said, "Why haven't you GOT a house for us yet?"

"No, you didn't say that, you said, haven't you got the KEYS!!?".

We rented a house off Bracknell Corporation because they were going to build a road through where the house was eventually. Which they did eventually but it didn't ….

I liked that, Beechwood Cottage that was called. Quite nice there.[44]

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[43] Zeer Eenvoudige Binaire Reken Automaat (Very Simple Binary Automatic Calculator) was an early Dutch computer programmed at the hardware level (in a similar way to DEUCE) as was common before firmware/microcode was introduced to make programming simpler. ZEBRA was marketed in the UK by Standard Telephones & Cables Ltd (STC).

[44] This may have been spoken by Susan or Anne.

Now a part of urban motorway, a piece of urban way.

So you did some trips to America at this time.

Yes, that's, the interesting bit there is that, before the first world war the Marconi company had, was world renowned for telecommunications, you might say in particular, for communications on board ships. Greatly, wireless greatly transformed transfer of information. There were under water cables for telephone communication but for people in motion wireless was tremendous. In fact they, the Crippin murder, was trapped by a wireless call to the ship in which he was travelling trying to escape to America. One of the celebrated early cases.

But during the first world war, the American Government took exception, quite reasonably, to the control of the Marconi Company in America, being a British Company, when it was doing so much of great importance to the American Government and Government interests.

And so they decided they would nationalize the Marconi Company in America and turned it into The Radio Corporation of America. But Marconi over here because it was, they were losing their American limb if you like, they negotiated a very satisfactory patent exchange agreement with the new Radio Corporation of America, whereby there would be free exchange of patents between the two bodies. Marconi Britain, of course, being much the bigger body at that time. And that worked very successfully facilitating technology exchange from both halves of the Atlantic.

In the late thirties when life was difficult, English Electric was then run by Sir George Nelson, and he acquired, English Electric being built up as quite a big organisation, he acquired the Marconi Company, maybe just the early part of the war, and Marconi became the jewel in the English Electric crown. English Electric, huge Company. In my day I remember going to a personnel…

…conference meeting at the training Centre, where the person lecturing remarked, "Gentlemen, do you realise that there are more people in the English Electric Group than there are in the British Army at the present moment!" Over 300,000 people. And we were a very, very minor little, computer world, only about 1500, so we were only very small. But the group had tremendous tentacles and tremendous size.

Marconi was a very successful company, economically, technologically, leading you know in electronics, and made lots and lots of money because a lot of the work it did was for defence and it actually The Chairman of Marconi was at that time Sir Gordon Radley who had been the Chief Engineer at the Post Office at the time when the Post Office was the prime mover in the development of Colossus at Bletchley Park, during the war. So Radley was the man who backed Freddie Flower the engineer who developed Colossus. And provided all the valves from the Post Office to build it because valves were in short supply. So he played a very significant role in the work of establishing the solution to the Enigma, and he was Chairman of Marconi and on English Electric's main board.

When English Electric, having acquired the Mar,.. LEO computers, formed not a division of English Electric, but became English Electric LEO Marconi Ltd., Sir Gordon Radley became the chairman and in that capacity I had some dealings with him. Went with him to visit Siemens, unsuccessfully in computer matters. He was a very, very, greatly productive chairman. Very good, umm….

So why did you go to America?

When English Electric had produced these very fast scientific machines at Kidsgrove, but had very little experience of producing data processing machines, they looked to America where RCA had produced a huge bite, character driven alpha numeric machine called RCA 501. Which could have up to 64 tape stations on it!! Ha! And could handle huge amounts of data, umm…, and printers and so forth, and the… English Electric said, well we could produce that here under the patent agreement with Marconi ‘cos Marconi was part of the same group.

And so it was decided to send a team of engineers over to America to see how they could anglicise the RCA 501 to be made in Britain by our British components, and when this was done it became the KDP10, Kidsgrove Data Processor 10, and this work was done in about 15-18 months and they anglicised the whole design, not the computer, just the computer, but all the peripheral equipment, tape stations, the printers, key boards, everything. You can imagine!!! It was a phenomenal piece of engineering, to anglicise, convert that. Very, very competent engineer went over to do that and English Electric ended by building KDP10's in England. We bought the printers from, most of the printers, the print um… barrels which were very elaborate castings from America. But everything else was BUILT in England. With English components. Err...

Have you got some dates for that please?

Well KDP10 would be 1965/68. That sort of time just before the merger.

I don't remember you going to America at that sort of time. You went in the '70s.

Ah, That's later on yes. I wasn't involved in the decision to anglicise the 501, no. When ICL was formed we were working on the…, the later machine, the…, let's see…. We sent a team over to the States, umm….

Who is we, Dataskil or I.C.L?

No…, ICL to help in the development of the software of the successor range machine, Ah yes the RCA. IBM had come out with a range called the 360 range and RCA were producing their own equivalent of this, which was supposed to be programmingly compatible with IBM and we sent a team over to work at Cherry Hill, Philadelphia to help the software development and also that when we got the right to build that machine we would have the inside knowledge of how the software worked. And as part of the business of supervising the relations I went over to the States, periodically, for joint meetings with RCA management to see how they were getting on. Usually they were miles behind what they had promised!!! Ha! But I had several visits there, and the machine we produced equivalent...

People didn't travel that distance did they?

No, No. I used to go from Manchester to up to Prestwick and we flew on the Great Circle route over the back end of Iceland, and Greenland and down that way into, we err…, Philadelphia. Quite an interesting journey. We always came back on a night flight which left about 10 o'clock and they gave you supper, and by the time you had just got to sleep they'd be waking you up 'cos you'd be arriving in England. And at Prestwick they'd put on music to…. Whilst some of the people got out to go to Scotland. And they put on strident bag pipe music!!! Which at that time in the morning was not the sort of thing you wanted to listen to, when you had only had two hours sleep and you were dog tired. Awful. And get down to Manchester, where your mother would meet me, and bring me home. And you might notice I'd got home.

No, I didn't. That was the whole point. I never noticed you'd gone away!

(*laughs*)

I didn't meet you at Manchester, I met you at Heathrow.

(They agree Heathrow.)

And you also have been to Australia. When was that?

Ah yes that was early '70s I think. We had…, ICL had quite a connection with the computer market in Australia. It was quite small of course because Australia was only populated by 28 million and the population was spread into about four or five big cities and they were very anxious to catch up with the modern world, scientific work and so forth. But they hadn't any computer industry of course. So they either looked to America or they looked to Europe. And being British they looked to England first. And English Electric sold fast machines to the Scientific Commercial…, Scientific Industrial Research Organisation, CSRA[45] or something like that, in Australia[46]. And ICT had had quite a lot of punch card business there and so they built on that. And it was thought that if it was possible to, umm…, to encourage the latent talent in Australia, in the universities there, and there were some very able people, instead of going to the States to learn things or coming to Britain, they could develop things themselves.

Good idea if we had a software enterprise there. And the sales organisation in Australia was certainly keen to do this 'cos it was a very good image and it was agreed that ICT would send out a 1900 computer and some staff to do some applications development work based in Adelaide. And for that purpose one needed to make an appointment for someone to run the thing, who was an Australian, and who was competent, and who could be the basis for developing the software house for Australia. And we advertised for possible candidates and there were three or four from Australia, who I didn't know their names, and one person who was Australian, was actually in America, at one of the New York universities at the time.

And I and one of my senior managers, err…, went out via the States to conduct an interview and select somebody out in Australia. Umm….

Is this still in your capacity as Director of Systems and Applications Programming Organisation for ICL?

Yes, Yes. We got to New York, where we were changing planes, flights, and we thought, well we'll see the man who is here. And he turned out to be just the job and we were very impressed with him, but we were on our way to see the other candidates, so we put him on the list and then we went on to San Francisco and then flew over to Fiji where we spent the night in Fiji and part of the next day and then went on to Sydney and ultimately to Adelaide where we carried out these interviews. The other candidates were not anything like as good as the one we'd seen in New York. And so he got appointed. And that's why I went to Adelaide and came back having done that and set up that….

Have you got a date for that?

It would be early '70s . Quite early on.

It would have been quite early on because I left home in 1974[47] and that kangaroo skin cushion is still in the car and it was in the car from that thing and so it is of that ilkII Dated by a Kangaroo skin cushion!! Ok!

What was the title of the thing you set up in Australia? Can you remember?

Manager of the Software Development Unit ICL Adelaide. He became an ICL man, and he used to come over periodically to update himself here but he was an ICL employee. I think he was an employee of ICL Australia rather, I don't know. We sent a few staff out there to seed the thing but mainly they recruited their own and grew their own. Very talented people in Australia. Competent.

[45] CSIRO - Commonwealth Scientific and Industrial Research Organisation
[46] In 2007 John Barrett, one of many retired Australian English Electric engineers wrote a DEUCE emulator to run on a Windows PC, with all the switches and displays on the screen but using input from PC files of 1s and 0's instead of punched cards with holes.
[47] 1972

Unfortunately when they, ICL had a change of top management, and American Management came in, they scrubbed the thing, they liquidated it, thought it was irrelevant, which was a great mistake. In much the same way as they got rid of the software unit in Dalkeith Palace, Scotland, which we set up and I haven't mentioned have I?

This is the royal we, because it is ICL rather than you personally but it was your job in ICL to facilitate these things.

Yes, we in the early days….

Is there any other person who was equally part of your team, because there seems to be quite a lot of diversification of things that you've done here. Was there anyone else who was with you throughout this to come from DEUCE through ICL through English Electric through into ICL and moving the whole of the computer picture forward In a similar way to this?

(*Thinks*) … I don't think so in quite that way, No. Malcolm Shelmerdine who was, came in. Got a first in History from Cambridge, but he was a very good manager of software development. Umm…. He ran part of my organisation for a while 'til he was edged out by a change of ICL management and went and worked for William Barlow, who was then running the, umm…, Ransom Hoffman and Pollard, the ball bearing manufacturers in Britain. Before he in turn became the Managing Director of the Post Office and Malcolm was his Data Processing man.

But I don't think, you see Allan Gilmour was round the bureau side of English Electric and when ICL was formed it joined with, partly with money from Barclay's to form a separate company called BARIC, Barclay's Computer Bureaux. And Allan was its Managing Director. But he left when he was squeezed out and he became the Professor of Computer Science, the Director of Computer Science at Swansea University, before he tragically died (circa 1990[48]).

There were a lot of winners and losers from all these mergers you know.

Cliff Robinson?

Cliff was equally…. He was the head of the Software Bureau, and the Dataset, that's a punch card organisation[49], and one other. But he was squeezed out quite brutally from either being on the ICL Board. And in spite of representations being made by ICL[50] about the treatment of their ex staff, on the losing side. He was found a satisfactory post[51] in the Lyons organisation as their Guru in organising the purchase of materials, by optimising, by computer, the decisions to buy cocoa and coffee beans and sugar and all sorts of things, and buy tea and so forth[52] and did very well and that saw Cliff for another 10 years, I suppose, before he retired completely[53].

I think the only one who survived really, most of the time was Colin Hayley the Chief Engineer who remained with them 'til he retired. But again sidelined in many ways by other people. Very sad. But these things happen.

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[48] Allan Gilmour died in March 1998, aged 76.

[49] Dataset was an ICL subsidiary selling consumables, such as punched cards and continuous stationery, and office supplies, even including furniture. Cliff also oversaw the introduction of the first electronic calculator into the UK as part of the Dataset portfolio.

[50] He means English Electric

[51] Cliff Robinson's role was initially Business Improvement – going round the company looking for easy ways to save money. An early success was the laundry which cleaned linen from their Post House hotel chain. If the linen was not completely clean when it came out it would go through again, and again, and again… 75% of the laundry was going through the cycle endlessly because the stains were permanent. He saved 75% of the laundry bill by getting them to stop after 3 cycles.

[52] .Lyons used to import all these and would buy forward the required foreign currency when as orders were placed.

[53] Cliff Robinson retired from Lyons (by then Allied Lyons) in November 1984 to enjoy a 34 year retirement.

But talking about Dalkeith, when I'd been in office, not very long, when we were asked by the Department of Trade and Industry's Office, "Would we be interested in having some staff in Middlesbrough?"

Middlesbrough happened to be the parliamentary constituency of Jeremy Bray who was the Under Secretary, under Frank Cousins, Under Secretary for the Department of Industry, and clearly his interest in having a software organisation in Middlesbrough had a political flavour to it. And when the idea was put to me, at that time, there was a complete embargo on office development in the London area, you couldn't establish ANY offices. The government was trying, the Wilson Government, was doing its best to decentralise things out of London. And since we had at the time of the merger, 17 different locations of software people under my wing, all over the place. Quite apart from the general London area, Elliott Automations and places like that at Rickmansworth, it was a difficult job in trying to rationalise these into some sensible organisation shape, let alone unison, and so you wanted to put people into blocks and very difficult. And to be told, well…, you could go and expand in Middlesbrough was just a joke!!!

What's in Middlesbrough???? Apart from being just up the road from ICI Wilton!! It had no University, it had no particular technological skills, umm…, there was no obvious reason for it.

And I said to Peter Hall my boss, well we have a handful of people in Scotland working on a joint project there at Edinburgh University. If you want to go up, out of, up north, Scotland is the place to go. It had oodles of Universities there desperate to, high tech and so forth, and we already have some people there. It'd be much the best place to go. And we could recruit people. You don't find many Scots who want to leave Scotland and go all the way down to London if they can possibly find the right sort of employment for themselves in the Scottish area. And so….

Who was your boss at this stage?

Peter Hall. He was the Director of ICL for the software. He had been the Sales Director of ICT and in the merger he ended up with the Personnel and Field Engineering and Software Organisations under his wing. An ex Ferranti man, and a telecommunications expert from the RRE[54] work at Malvern during the war.

And I said to him, we ought to go and look at Scotland. We established contact with the Scottish Development Organisation which was the government agency in Scotland for encouraging business to, industry to go there and they arranged that we should go up and have a look at various places that were available. We said we are looking for pleasant places that are suitable for research type activities. No engineering, building of things, it's intellectual work, programming and things. There'd be a need for a computer but these are programmers they are working for and we already have some working at the University.

And so they took us for a trip round various parts of Edinburgh . When we asked what we might have and they showed us a site that is now the second Firth of Forth Bridge. And said that's available for development, but we said we want it now, not in two years time.

Otherwise it would have been a lovely site but, on the hill overlooking the Firth of Forth. They took us to a place that had a mile long drive up a very gaunt avenue about 25 miles south of Edinburgh, up to a great huge place that was full of space, owned by the government, and was full of spare beds and things like this! - a dumping ground for spare things. Been used as a barracks during the war. Totally gaunt, miles from anywhere, no bus service, no pubs, no village or anything. Absolutely out of the question.

[54] Royal Radar Establishment

And on the way back, in some despair, we came, approached Edinburgh from the south, and spotted a large walled, railinged, parkland with a building some distance inside it. A prestigious building, err… and glancing through the railings we said, "What's that place?"

"Oh, That's Dalkeith Palace, one of the Palaces belonging to the Duke of Buccleuch. He's got half a dozen you know; hasn't been lived in since the First World War, and been used by the troops and it's empty at present."

We said could we look at it, so we went round and the entrance to the grounds was only about 400 yards from the centre of Dalkeith. And this 400 acre parkland with this Elizabethan style E shaped large mansion Palace was there up a drive. Grand entrance, Library on the ground floor, Ball room on the second floor, and so forth. We had a look round and it seemed to be a very suitable place. It was not too far from all the amenities you'd want and you could walk into the town and have a pub lunch quite easily and busses and so forth into the centre of Edinburgh, and it was quiet city surroundings. The River Esk, I think, runs in the middle of the grounds, further down. Err…. An ideal campus and space for oodles of people. And we thought it was quite a good thing. And the only difficulties, you couldn't, you obviously couldn't put a computer inside this building, 'cos it was a listed building. So we said perhaps we could build a separate little computer establishment in the driveway under the trees and they thought that could be done. So we arranged, we said we'd take that. ICL spent £100,000 on doing the place up 'cos it hadn't been touched for,… since about the First World War.

Have we got a date for this?

About 1970 again, about that sort of time. A very busy time and we were told we weren't to use the Duke's parlour which was full of Grinling Gibbons[55] carvings. Carved fireplace, and it was forbidden. But everything else was available. And from the cellars down below were storage rooms for everything. The Muniment room, which was stone built cell like building, where they used to keep, apparently, the important documents of the establishment. Quite safe. And they said they'd move all the contents of the library to one of the other Dukeial establishments - he had quite a few. And clear it up and we could have it. And we did and we had a lease on it and transformed it into a very comfortable working establishment, with about 50 people up there. Some of them came in from the Edinburgh project which was coming to a close, and others recruited locally from the Scottish Universities. 'Cos lots of Universities, so got talent looking for that sort of work in Scotland. And it was a very successful venture. And we subcontracted…

Is it going now?

Not, NO.... 'Cos when the American management came in they stopped it. I think it did a power of good for that bit of Scotland. No doubt it's being used for something else like that now. But it was one of those things, where different management view prevailed, and I was no longer in charge of it, so there it was.

However I have no regrets. I have pride, if you like, in having caused that bit of technology to have emerged in that part of Scotland. And I vested a lot of British money in doing it and I'm sure the Duke would have appreciated it. Quite the place, Yes.

The thing that does amuse me is that they, at the bottom of the staircase, marble staircase going up, there was in the lobby area, a twice normal size stone, marble, statue of Napoleon, in the guise of a Roman Emperor. Nude of course apart from the fig leaf, on a plinth about 4 foot high. And we said, "What's that?" And they said it was a trophy from the Napoleonic wars. Obviously one of the Duke's predecessors had served with the Duke of Wellington and had somehow acquired this thing. How they had got it I don't quite know. And they said, "We'll get the contractors to move it.". It didn't get moved!! It must have weighed umpteen tons. How they got it there I don't know, and it's probably still

[55] 4th April 1648 – 3rd August1721.

there at the bottom of the staircase! But this grand wreath covered statue, nude of Napoleon, always tickled me. However I suppose these days you could sell a thing like that for a lot of money!

SO… we have got you working for ICL and I know that your last job title was Director of Quality Assurance, which is not quite the same as you said for 1968. So...

Then there was a shift in the management of ICL and I was displaced by, Peter Hall's empire was chopped up and I was pushed,. The software side was amalgamated with the Engineering development side.

Have we a date for this, roughly?

'72, that sort of time, '71. And I was effectively sidelined, I think they wanted to get rid of me but I had children at school and university and so forth and I just sat tight and so they offered me the post of being manager of Multi National Data. Which was a joint study company with Control Data America. It was a Belgian company, incorporated Belgium. I was Director and Secretary of this along with Control Data and National Cash Register and a French company CII which was the French computer company sponsored by De Gaul and Honeywell. And the idea being that these other companies would collaborate in developing common designs of peripheral devices to attach to their mainframes, so that you had the ability to purchase from a larger market and err… avoid any incompatibilities. The idea was sound but it didn't actually work. And very much because in the main, the American market was vastly larger in terms of its requirements for peripheral devices, and tended to dominate where people got printers and tape stations, and drives of various sorts, and it didn't really achieve its objective.

But it did achieve frequent quarterly meetings of top management on these 3, then 4 companies which circulated, rotated between Minneapolis, London and Paris and later on Dayton, Ohio. And I, our then Deputy Chairman, Arthur Humphreys, who had been Managing Director of ICI became Chairman and Roussell….

Do you want to talk a little bit about the fact that the Americans came into ICL 'cos you've glossed over that and when you talked to me in the past you made more of it.

I think the problem was the company got into financial difficulties, and there was an argument, I guess, with government over how much money should be put in. And the Government was reluctant to put too much in and er,... the,.. an American management from Univac was brought in as Managing Director, Geoffrey Cross, who was a young, very thrusting, very American, very un-British, computer whizz kid who brought his own people in at senior level and displaced senior people in ICL with uncomfortable effects for a lot of people . With the idea that he would bring in American knowledge and connections. It didn't work out like that in the end but I think that was because, the terms of his engagement were heavily constrained by contracts.

You explained to me before something about the ethos of British companies as opposed to throw away technical skills of American ideas and how that didn't quite fit with the all-enveloping concept of caring for the computers in the UK.

Well very different, well America was the, Geoffrey Cross had the reputation of firing anyone over the age of 35 at management level as part of the principle of introducing new blood. Whether he did that actually, I don't … but certainly he was a young man and he believed that people should be young, and that experience that people who are over that age, and I was over that age at that stage, let alone more senior people, were obviously not able to accommodate the fast moving technologies that were coming on in the computer world generally.

I think that attitude very quickly met difficulties when he was dealing with English clients, because they were much more used to dealing with older representatives of big companies and of course, and let alone not American ones. So he tempered things down quite a bit. I know when he first came he was an open necked shirt and casual style, which doesn't go down well when you are meeting Ministers of the Crown on big contracts. He then changed and started wearing suits and ties. Just little things like this.

I think there was a certain amount of arrogance on behalf of the Americans – they knew more about computers than the British did. Which wasn't actually true, because the real development of computers really started this side of the Atlantic! And certainly there was no doubt that a lot of the brains were on this side, – that's by the way.

It helps to be on the winning side in all these things. Its the winning side that writes the histories you know. In history as well.

The, at some stage, when ICL was in its difficulties they brought in Tom Hudson, who had been Managing Director of IBM UK, And retired as Chairman of ICI, with Arthur Humphreys, who had been ICL's Managing Director, as Deputy Chairman. And Geoffrey Cross was the man from America, from Univac, who came in as Managing Director from America, and there was this little separation of powers between the Chairman, the Deputy Chairman, and the Managing Director and which was very visible. At that stage having been displaced by Echo, I was then acting in..

As manager of Strategic Planning, as well as in the Corporate part of ICL as well as General manager of Multi National Data, the study company the Belgian Study company. And doing odd things. One of the odd things at that time was the time when the, some, it's a bit earlier, about 1982 I think. The Younger report on Data Privacy had been published and about the risks of Big Brother and all data being public and so forth, a very comprehensive Government survey, were making recommendations on what should happen about protecting private information and a great Government Blue Book was produced.

I've given mine back to the BCS. A very, very comprehensive survey of this Government Commission which took evidence from the world and his wife, all computer companies, Universities, Bodies, and so forth and the evidence submissions are all in the book and the conclusions they recommended and so forth. Which led indirectly, towards the Government recognising something had to be done to provide for data protection. At the same time the British Computer Society had been working with its counterparts in Europe on the idea of there being some code of practice for Data Protection, which later got encapsulated in the Common Market Directive on Data Privacy and effectively what are now known as the Data Protection Principles…. Purpose to be known, legitimate, and so forth.

And there was lots of pressure on Government to do something about it. It's not a vote winner but it was the thing that was stirring things. And the Government then indicated that it would do something but required submissions from parties, - particularly computer people in this, on what form that should take. And so various bodies were invited to submit memorandums of their views including of course ICL.

And it so happened that I was the person that was responsible for putting together the ICL paper. It so happened also, that in quite a different context, I happened to be the representative of our company on our Trade Association. British Equipment Trade Association, BETA, which included Computer Manufacturers and people that made paper, files, and cabinets and furniture and so forth, business equipment and so forth. And they were of course invited to submit views on this, and it also happened that the National Electronics Council, which was a successor body to that had been chaired initially by Lord Mountbatten, who was very keen on electronics, and when he died, or was killed, the responsibility for the Council was taken over by his nephew the Duke of Kent. Who chaired a quarterly meeting of this body which had representatives of the great and the good. Because with a royal Chairman you had no difficulty in getting, making sure that, the Permanent Secretary of the Departments who were invited, and the Generals and the Admirals and so forth who came along….

So were you in that?

No, it was a Council. And Tom Hudson, who happened to be Chairman of I think IBM, at that time, no!!! ICL!! Was in, somehow had his arm twisted to become Treasurer of the Council. They didn't have much money but did have a few things to do. Promote electronics in the great and the good, and so they were asked of course, for their views on the Data Protection Legislation. And Tom Hudson, as Treasurer, said he would find somebody from ICL to do this and so I was nominated to join the little working party on the National Electronics Council to prepare their submission.

So I have had fingers in three pies all bringing submissions to the Government on the form the legislation should take!!!

So you were working…?

For ICL for BETA. and NEC and..

Were all those three different segments aware they had all nominated you?

No, it just happened that way. No secret that I worked for ICL and had knowledge of these things, but worked with other parties you see, and helped to put together papers. And one of the things that I learned very quickly, very early in ICL Before the, before ICL was formed, its former Chairman had been Sir Edward Playfair, an ex Permanent Secretary of…, some Home Office, I think. One of the big Governments, and he, when he'd come in, oh…, quite a few years earlier, and ordained that ICL, in its formal submissions to Government should follow the Government style of presenting information, which is that you put the headings in, but you number the paragraphs, sort of white paper style. Any Government report you see follows this pattern. And it's a very good technique because you can prepare a chunk, a chapter on something, err…, with its headings and you can add new paragraph in and all you've got to do is to change the numbers. And cross referencing. In terms of doing anything and cross referencing it's an excellent way of doing things. A very excellent way of putting in one or two sentences a particular idea before you move on to the next idea and so on.

And I latched onto this as being the style which was very, very good and adopted it for any, this, things I drafted for ICL and of course drafted for anyone else as well. And it's much better than having a long rambling diatribe, which there is a tendency to do. You hit points in a very logical order and if something wants to amend things, you can amend things fairly easily. Ideally suited to doing things on a word processor in those days. But err…, (*rambles*)

Because I was, I did, my bit to help the National Electronics Council to its submission, they invited me and one or two other people, at low level, to become Associate Members, which is just a sort of title, except it gave you an invitation to the annual Mountbatten Lecture on electronics which was given at the RAE Savoy House each year. And after that the guests….

So you are an Associate Member of the National Electronics Council and this is because you worked with other people.

Yes, there were other people. There were different sets of people for different groups but yes I worked with Murray Laver who was the ex-Director of the Post Office and somebody else I've forgotten now in producing this report. But since I had all the material to hand, most of the work was done by me. (*laughs.*) Putting together and so forth, and preparing it and so forth. And the result of this, after the Mountbatten Lectures each year, the guest speaker and one or two…. The Guest Speaker was normally taken to have dinner with the, i.e. the President in the Savoy House and the Duke of Kent, because he was the Chair, and the Secretary because he was a retired Civil Servant. But before they went, they disappeared for dinner, they had a wine and canapés reception for principle guests who had been invited. About 30 people. Because the room had about 200 people at the lecture, and we were usually

swept into that and invited to meet a few people, all the great and the good and, usually to meet the Duke of Kent and shake him by the hand and have a few words with him and so forth in the course of this reception.

And I was KNOWN! At the same time he happened to be, he was Patron of the British Computer Society, and he became President of the BCS for a couple of years or four, I think. It was largely in title, but he did actually Chair a Council meeting, and I happened to be on the Council that time. And he, when he met me, said, "I know you from somewhere don't I?" "Yes Sir." Curious.

So I at that time, had also been involved through BETA, with the work on privatising the telecommunications networks. Up to the Thatcher Government time, when Kenneth Baker was the Minister of Technology, umm…, then, if you wanted to attach a device to a Post Office line to make, it to talk to a computer, you had to rely on the post Office to provide the modem. And the Post Office, having developed its networks over many years, had not got very standard connections which made life very difficult for all manufacturers of peripheral equipment and any one wanted relied on to talk to anyone else cost her was non standardisation. And Kenneth Baker introduced the idea that there should be a thing called the British Approvals Board for Telecommunications which should be the statutory regulatory body for approving things that you can hang onto a telephone network.

And we the Business Equipment Association, which I happened to be on the Council, and Treasurer at the time, was invited to participate in this in two ways. First of all to make sure that the industry (*mumbles..*) put in their best people to work on it at working level, and that since the Government hadn't put any money into this, to provide some money to get the thing going. Ha ha! Which is really quite absurd considering the importance of the thing!!

And ICL would pass the kitty round and they got £1000 out of ICL to put into this thing to start it off. And it was set up under a chap called Vivers, Dr. Vivers who was the Director General of the Business Equipment, Electrical Equipment Approvals Board, which was the thing that approved washing machines, electrical irons, and things like that and therefore he had a lot of experience in regulating control of things that were electrical and so the Government thought he'd be a good chap to run things. And he became Director of the British Approvals Board for Telecommunications and I represented the Computer and Business Equipment Industry as a Director of that body. I became a Director of BABT.

At the time I was also secretary and treasurer of, (*corrects himself…*) Treasurer and Council member of the Business Equipment Association, I was an Associate member of the National Electronics Council, and I was a council member of the British Computer Society. And I had set up in our Equipment Society an exhibitions company to do, run exhibitions for business equipment. So I had a finger in the professional, the business, the technical, the statutory, and the um, research industries.

That must be fairly unique!

Yes, Absolutely unique. Absolutely unique. Yes, yes, yes, absolutely unique! Quite extraordinary. Added to which when BABT got going, it spent money when it hadn't got the money. And I had to make a report to BETA representative to its council as to where things were going and I said they're going to run out of money! Now this is a Statutory Body and its unthinkable the Government will allow this body to go bust. Equally I am a Director of it and under company law, Directors are personally liable for decisions taken which expose them to liability. And I said, "I don't like this! I'm only an ordinary person." And I said what about getting me a 'letter of comfort' from the government?? Ha ha (*laughs….*) and that was explored. And I also took legal advice from ICL as to what I should do from an ICL point of view. Eventually it all worked out, but for a little time there was real concern that BABT, this Statutory Body, was operating illegally because they hadn't…, were insolvent!!

And that would also be the case for the other Directors.

Yes, I don't think many of them pay much attention to the accounts, and I as an ex treasurer, I looked at the accounts and could see it going like that (*gestures downwards with his hands*), you see. Eventually of course, it picked up because more and more people started getting equipment evaluated and they paid their fees and so forth. But for quite a while their spend on getting things set up was far ahead of any income coming in. And it was a matter of some personal worry.

You have got your little finger in lots of little pies here and why are you able to have your fingers in these little pies. Is it because you should be fully committed working for ICL. These things are…

Well I mean, doing the Data Protection Paper for Government for ICL, was for ICL and collecting information from all parts of ICL to assemble it and get it approved, polished and so forth was an ICL job. Working for the NEC was a direction of my Chairman, Tom Hudson, who was treasurer of the thing, and you don't argue with the Chairman. I was nominated so no one argued with that. I don't think our American boss would have approved but he didn't have a chance – went over his head you see. And the BETA, I was there in a corporate capacity representing ICL in our trade body. But the trade body was the only way in which you could get nominated people to work on Standards Technical Committees. The British Standard had lots of technical committees, whether devising cornflour or sizes of… (*rambles…*) and gardens. Lots of technical things, and it was very important that the industries, all manufacturers, had their technical people talking together so they are working on the same standards. And if you weren't working on one of the BSI technical committees you were outside of the loop of what was going on, and therefore what the next type of equipment might be when it was developed. So every manufacturer was very keen to put good people in on the various technical committees and in order to do that you had to be nominated by a trade body. And the trade body was BETA, so absolutely essential that that existed.

ICL used to belong to two trade bodies, The Electrical Association, I think, and the Business Trade Association. And the American boss who came in said "Why are we paying these fees to be members of these bodies? Err…, lets save that money and withdraw from membership." And there was a great outcry from the working levels, 'cos all these people going to BETA and so forth seeing themselves chopped off at the knees and it was, he had to rescind the order, and he said we'll just be members of the Business Equipment Association. And I was nominated to be the representative to BETA from the company corporately. So I was the channel if you like through which these things worked. And err….

So BSI…?

Peter Hall was, my ex-boss, happened to be President of The British Computer Society and thinking that I was now free of, with not much to do sort of thing, he said, "You know, you really ought to come and be a member of the Council. Why don't you put yourself up to be nominated for election?" You needed, I think, six people to sponsor you and the election took place every year for a third of the membership of the Council. And so since I had plenty of contacts I had no difficulty collecting people who would sponsor me, and I was duly elected to the Council. In about 1970 I suppose. And then having got me on the Council said, well would you like to look at this area, have a working party?

At that time BCS was very much a club of computer people and they saw themselves as being club like, a lot of them. On the other hand there was a tidal movement of people saying this should be a Professional Body. And should have examinations and make sure that only people who are competent are members of the body. And this was a major controversy. And I chaired a, I don't know chaired, I did a review into the possibilities of the body going from being a club like organisation which anyone could join, who was interested, and into something where there were definite criteria for the ability to become a Professional Member. You could be a member, but to be a Professional Member you had to satisfy certain educational and technical experiences. And I even suggested that we should possibly introduce a licensing system where people would be licensed to practice as computer consultants and so on. The result of all this which was duly considered by the BCS Council, I think before I got onto it,

was the recognition that they really ought to do something about getting proper Professional level because at that time there was a lot of work going on by a newly formed body called the Engineering Council which comprised all the engineering professional bodies, Civils, Mechanicals, Electrical, Aeronauticals and so forth.

And it didn't include the computer people, who regarded themselves as Systems Engineers in Computing and would like to have the ability to call themselves Chartered Engineers. But you had to be a Professional Body to do that and be part of the Engineering Council's set up. And there were those including the (incoherent rambles..) Society who were quite on that, because quite a number of their members were heavily involved in building computers even if they weren't much in the programming side of things. So there was a very strong recognition that computers were quite an important thing in the Engineering world. Even though we weren't building ships and railway engines and aeroplanes and so forth. Computers were the coming thing.

And BCS therefore got round to thinking about how it could become a Professional Body. And my report into what you do was quite a significant one in stirring things on. And one of our members, John Iveson, (*He wrote three articles. Said Mum.*) said, well in order to become a Professional Body you have to get the membership to agree. And so the BCS published, quarterly, I think, or maybe monthly, a journal. And John Iveson and I decided we would put in, we'd create a series of articles that said more or less, um…, starting with the ideas of Francis Bacon: every man is a debtor to his Profession. I.e. you learn from the past, and that it's the only responsible thing to do.

We wrote a series of articles that really were aimed at saying to the membership: "You know we really ought to do this. So when it comes to the vote, you know which way to vote, DON'T YOU!". And in due course they duly voted and got more than 51% of members to agree which satisfied the Engineering Council that we were on the right lines – we had the backing of the membership. And from that they then sought to establish approval for that and it so happened that um…, the…. In order to become a Professional Body you had to seek the approval of the Privy Council.

And the Privy Council in its wonderful way consults the good and the great as to the appropriateness of approving it, anything like that, so there is a long consultation period, where views are taken from the establishment, the universities, the government, and so forth. But since at that time we had the Duke of Kent as our Patron it did rather help! (*laughs*) And in due course the Privy Council agreed that the BCS should be, cease to be a Charity, but should become a Chartered Body, which is charitable status but independent of charity law. And it became a Professional Body. And that was quite a significant event.

It normally takes quite a long time, but the application overt the signature of the Duke of Kent, it probably helps, to speed things up a bit. Of course we went from trying to get in much faster than other bodies ever achieved it. And I…. One of the requirements of the Engineering Council was that bodies should have….

When did the BCS achieve this roughly?

About 1972. Maybe a bit later, I could look it up, maybe a bit later.

Are you a founding member?

No that's the Livery Company.

One of the requirements of the Engineering Council is that all professional bodies should have appropriate disciplinary procedures for ensuring proper adherence to Professional Standards and so forth. You kick me out because I broke the rules and so forth. Which meant to say that the, an essential part of the working material of a body should include its procedures for dealing with disciplinary matters, and which means that people can complain, and there is a proper body that can examine the complaint. And decide whether it is good bad or indifferent. And decide whether the person should be reprimanded, or dismissed, or what have you, or suspended.

And the BCS had a very poor piece of paper on disciplinary matters because it hadn't needed to do things like that in the past. We'd had the odd tiff here and there, but by and large the branches were much more semi-autonomous from the Council. And the then Director General, The Secretary General of the BCS, asked me to look at the disciplinary papers that had been drawn up by the Registrar. And I looked at them, and I said that I didn't think that they were really at all appropriate. In fact I couldn't recommend them at all. So I read, suggested that, they should be redrafted. Here there and everywhere!!, more or less 80% of it. And she was under pressure because she had been invited to submit it, on behalf of BCS their disciplinary procedures to the Engineering Council, for approval. Ha ha!

So in a very short period of time she was on a hot seat to get this done and I think she was more than grateful that I pulled out all the stops to give her the right material 'cos eventually things were put together in a very acceptable fashion. And the Engineering Council were satisfied and duly, in the fullness of time, approved that the BCS should be given the autonomy to appoint those of its members who had the right technical qualifications as Chartered Engineers.

And the technical requirements were that they should have a degree in computer science, or mathematics, or physics, or I think electrical engineering. - Well since I had a degree in mathematics, many years earlier, I became a Chartered Engineer!! (*Laughs*) Which is a bit of a joke really!! Umm…, because, err…. But I am, yes, I'm a member of the Engineering Council. I can give you my council reference number! And so that's another little thread that ran through all this.

In the process of doing all this I was on the BCS for quite a while, Chairman of the Professional Advisory Committee, which was a board committee to handle professional issues, err…, and advice on whether one should do this that or the other or even to consider particular technical issues that required gnawing at.

Computer pornography was one which caused quite a stir, umm…, err….Data protection was another. But we had a number of things. Registration was, and err…, I, because of this, I was involved often in being an assessor on quasi disciplinary type issues for the society, which I had the time to do, and the I suppose the background ability, along with one or two other people who helped – the expert witness people. Some of them were quite difficult cases because they were involved where some outside body had complained that a BCS registered man had behaved incorrectly. You know you can't just ignore things like that you have to do something. And it has to be subject to the ability to be handled by an appeal. 'Cos all process have to be subject to appeal. And I remember one very difficult case which involved the Deputy President of the Society being accused. He was an independent consultant who did a lot of work in courts, being accused by an aggrieved client, who had witnessed some pretty scurrilous things and err… it was ultimately handled by err… an external appeal body with our President involved to put it to bed. It took a long time, and thought, and care. Be careful what you say. You work on evidence. Facts. Not opinions. Opinions are plenty, facts are not always easy to establish.

And at the same time, the err…. I, through BSI, had been invited by one of my old colleagues, who had joined the BSI, from ICL, to Chair the Quality Assurance IT Committee, which BSI's Quality Assurance Board had set up to look at Quality Assurance of I.T. matters. And as a result of being Chairman of their committee I became a member of BSI's Quality Assurance Board under David Penny who was the ex-Director of the National Engineering Laboratory at Kilbride.

Have we got a date for this? Give me a rough date.

Late70s early 80s, I should think. About 78. I was then, I was at ICL International Computers Limited. There are so many threads….

Can I just take you back to Kenneth Baker and the BABT?

I really represented the Trade Association on BABT but I served as a member of their board for a year and a half or so, or a bit later until I left ICL International Computers Limited, and was succeeded by another BETA man on the Board. But I played my part in the, making sure it got financially viable and that it survived that initial stage. The civil servant who did the work there, I think really deserved a Knighthood. He did a remarkable job, because there was tremendous pressure from equipment suppliers, and telephone suppliers, to find ways of hooking into BT's network. Not counting the world at Hull, which was quite a separate one you know because Hull had their own system!!!! And standardisation was a great pressing thing, and the industry put into it, its best people, from all companies … competitors,because everyone saw how dammed important it was to solve this problem, in about….

Just identify the problem.

In order that equipment could have a standard modem attachment to the BT network to communicate through the modem to other equipments.

We take that as standard now.

Yes.

That's how computers work.

Yes.

But in those early days?

No.

....It didn't, and it couldn't, and it wasn't going to be able to unless there was a group of people who facilitated that. And you were part of that group.

Well on the fringe, Yes. Kenneth Baker drove it through politically, through parliament and the statutory powers. The BABT was created by him. I did my bit in representing the Business Equipment Industry on that and ensuring that the computer elements of that, not

the telecommunications people, the computer elements put their people in to working on these working parties. And John Pinkerton, my old colleague from LEO played a major part in overseeing the telecommunications aspect of that work. It was an incredible amount of work done in a very short time.

Give me a time frame.

About 18 months I think.

So in 18 months the whole of the country got together, all the facets, all the people who might have vested interests, they were competitors normally, they all worked together in order to produce standardisation?

Yes.

And facilitation?

Yes.

To make sure that we have a computer system in this country that is cross-national.

Pretty well, Yes.

That's fairly major isn't it?

I would say. (*laughs*)

What was your role within that? Just a person on the Board?

Yes, well yes, and the link to one of the major companies, yes, and the link to BSI.

Moving on to the BSI front, What is the significance of the British Standards Institute?

Because it had this Quality Assurance Board, which had members, Chairmen of these various committees, about half a dozen committees, there was a textiles one, there was a food one, there was a fire one, there was the IT, there was electrical equipments one, and the chairman of all people at senior management level in the member companies in those fields, the Marks and Sparks merchandising Director of Textiles was the Chair.

Give me more names of people and expand on the connection between Government and computing.

Well in about 1968 the British element of the computer industry had amalgamated into two blocks. One was ICT, which included Ferranti and Powers-Samas, and the others were English Electric, LEO, Marconi, and AEI, and Elliott Automation. And when government thought that it should try and support a united range which would meet the world standards, world markets and satisfy…

Reads a paper

" The Ministry of Technology has been pressing ICT and English Electric LEO Marconi Computers to co operate in development of a family of computers that would be fully competitive with anything IBM has to offer, in 5 years time." 3rd, 4th, 5th July 1967 meeting (*reads document…)* DJ Blackwell, ACD Hayley, Chief Engineer of English Electric, JMM Pinkerton, LEO Designer, Derek Edridge, Peter Ellis, and George Felton of ICT.

Seven minutes of reading from the document.

ICL formed 1st August 1968.

And the people who went into ICL from English Electric were?

The whole of the English Electric and LEO Marconi software manufacturing. In the next two years of course the amalgamating of responsibilities and organising things led to all sorts of…. The normal stresses you have in organisations where one is a much bigger organisation than the other.

And the reason I'm asking this is because, if you project 5 years on from 1968 you were still at ICL. You were at ICL until 1983 when you took early retirement. So you were there 'til the end of your working life. That can't be said for other people.

No, some chose to leave because they saw better opportunities elsewhere but there are obviously conflicts of interest. Some were eased out because the winning side thought its man was better than the losing side. A number went into the user market place, because there was plenty of interest in having people who are highly competent in the computer world, and some were not appointed in the initial appointments of senior management and therefore effectively made redundant by their original company.

So the significance is that you were still there and you were part of it having come through from the DEUCE days through to starting to interface with Government about modern computers as we understand them today.

Yes, if you like. The accolade was that English Electric being the smaller party…. That I would have responsibility for the entire software organisation of both parties. ICT was much larger in its software organisation than English Electric, but technically not as competent. They had less brilliant software developers. Far more machines, far more operators and a lot more programmers who worked on contract for customers. Part of the sales force arrangement. That was before the merger. Their software organisation became under the commercial and marketing side of ICL not the manufacturing side under Echo Organ.

What I'd like you to talk to me about now is, the recommendation, maybe skipping a bit further ahead, can you give me a date for when you were talking about the languages that computers used. How far ahead is this?

Oh, the next year or so. The object of the merger was to develop a new range which would take some years to get going and that would require a whole set of consistent software and it was inconceivable that we should continue to produce the languages that existed for high level work on LEO, Ferranti's Orion, English Electric's System 4,and ICT's HEC and ICT's 1900. There weren't enough people to carry on doing that work, and it would have been absurd. Those people were required to develop the languages for the new range. And so where there was no pressing case to continue maintaining those languages we, I recommended to Peter Hall, my boss, that we should cease that work. And where necessary tell the customers who were expecting to continue to receive enhancements to existing languages, that those would stop.

Maintenance of existing software was a major man power burden on all manufacturers because having issued the software it often had to be maintained and may have had hidden bugs and often wanted slightly enhancing because of some changes to the, you may make a bigger high speed memory available, or the ability to support different peripheral devices from when it was first done. So there was always the question of developing going on just like motor cars, umm…, and the…, because we had inherited all the historic British manufacturers' machines into ICL, there were handfuls of people maintaining what are now known as legacy systems. Old machines that were not being made, manufactured, but were still in use by customers and which required support. And this was a very significant past burden if you like, involving all these machines, a whole host of them…,. from the 5 or6 made by Ferranti, and the 5 or 6 made by English Electric and Elliot Automation and AEI. The only one that was, that escaped was Zanteg ZEBRA who were, Standard Telephones had a computer in the first phase of computing which they dropped out of. And that was the only one that escaped!! (*laughs*)

So would you describe that as the first ever standardisation? Possibly? Looking back in hindsight?

Yes. The government made it very plain, that as government both in terms of money and no doubt in terms of a purchasing agency was interested in there being a strong single British manufacturer which you could rely on.

With a single standard.

Yes. Which would make sense and that was undoubtedly one of the thrusting forces on this. And very sensible as well. Especially since IBM had about 70% of the world market, effectively providing a de facto international standard. Very difficult to compete against circumstances like that because IBM was an international company with a presence in, all over the world, just as ICL with its punched card days had a similar presence, mostly all over the world, but not quite the same.

So you are now firmly ensconced in ICL and you have moved on to having fingers in other little pies, sitting on other Boards, and Trade Associations etc. How did that come about and what were they?

Gradually I think. I'd been a member of the British Computer Society from very early days. I wasn't a founding member but a very, very early member . When I was at the Nelson Research Labs we were encouraged by Wilf Scott and Cliff Robinson to attend the BCS branch meetings in Birmingham. This is very much a club level of activity in those days, 1968[56], but I was a member. And gradually BCS attracted more and more members, largely on the basis of fellow interest in computing. And branch meetings were set up in major centres throughout the UK with technical meetings and presentations by other groups. So this was a way of spreading the knowledge if you like, and you meet other people and it became very clear as time went by that there was a need for the quality of people doing computing work to be in some sense registered.

And the Society, therefore had a dilemma if you like between those who wanted to keep it going as a sort of club and those who saw it as being the embryo of a professional body with professional standards which (it) requires members to meet. And by definition anyone who did not meet those professional standards could not become a professional member. And that came more or less to a head when Peter Hall, who was my boss, happened to be Chairman, President of the BCS. And he encouraged me to stand for membership of the Council, which required you to be nominated by half a dozen people, and about one third of the Council was elected each year for a three year period, I think from my memory. And I duly stood and was duly elected because I was fairly well known in the industry. And having got on the Council which involved going to Council Meetings, 2 nights or so, Peter Hall asked me to look at this question of the issues over whether the future lay in being a bigger and bigger club or a professional body. In parallel about that time, the Engineering Bodies had been grouped together under the aegis of a body called the Engineering Council which was empowered by statute to award the grade of Chartered Engineer. Rather like in Germany people were Chartered Engineers as a very distinct legal entity showing competence.

So, if you were an electrical engineer, or a mechanical engineer, or a marine engineer, or a brewing engineer and you met the right standards you could become a Registered Chartered Engineer under the Engineering Council. And there was a general interest in people seeing that the work of being a systems engineer in the computer sense should be regarded with equal seniority and respect. And the BCS should aim to become a body under the Engineering Council with its power to award a Chartered status to professional members. This meant that the BCS a) had to be a professional body as opposed to just a club, and b) it had to have procedures and discipline practices and methods of evaluating membership that were, stood up to the, in comparison with other bodies in this field.

And so I was asked by Peter Hall to produce a report for Council on this issue and in due course I, .. I think I had some help, but I can't remember now. I produced a report that said, yes, the way forward is that we should be a professional body and that we should seek a proper recognition as a professional body and this was duly put to the Privy Council who were the bodies which had statutory power to grant status for bodies. And they in their time honoured practice consulted the great and the good, Universities and other bodies and so forth to see whether this was the sort of thing that should happen. And of course over a period of time it went through with the blessing of the Privy Council, which gave the entre' for BCS to deal more formally with the Engineering Council about becoming a recognised Engineering Body under the Engineering Council. Which meant in turn also that procedures for entry, examinations for professional skills and for disciplinary matters for dealing with people who failed to meet them, or were subject to complaints had to be there in position and in working order. Err…, and this all took some time . But I was later on invited, when I think the Director general of the BCS was actually going to one of the Engineering Council meetings and was required to produce some evidence of the discipline procedures for BCS, she found that the ones the BCS had were somewhat sloppy. And were then redrafted by the Registrar and I was asked to look at them and I thought that they were not at all adequate and made a lot of significant proposals on how they should be strengthened and so on,

[56] The move to Kidsgrove was in 1960 so it must have been before that.

which err…, Most of which were taken on board, - very rapidly!! After which the secretary of the BCS was duly grateful. So I was if you like, involved if you like with pinning things down a bit more . I can't remember exactly when the BCS became a nominating body under the Engineering Council, but it would be sometime I should think in the er,.. mid 70's I should imagine.

Which then gave the BCS the power not only to award professional membership to those people in BCS who met the criteria of membership, either by examination or by evidence of long service in the industry. But if they had as well a degree in an engineering subject, mathematics or physics they met the criteria for being Chartered Engineers. Many people who were doing senior jobs in the computer world were not mathematicians and not engineers – they read classics or commerce or what have you or even law. We even had a man in Kidsgrove who was an archaeologist. He'd come across the use of computers for comparing the relevance of remains found in digs, statistically. He was a very good chap as well. We also had someone who read Oriental Languages which demonstrates very considerable mental ability but nothing to do with computing. So there were in the BCS quite a lot of people who were from an engineering point of view, 0ddballs!! (*laughs*)

And some were very good. My colleague Malcolm Shellmadine had read history at Cambridge; had a first in history; and a very competent computer man, he wasn't an engineer. So the computer industry even at that stage was embracing people from all sorts.....

But you did maths.

I did maths, yes.

Therefore…

I qualified very quickly to become a Chartered Engineer. Yes.

Well done!

Yes. If I look in my diary I'll give you my number. My Engineering Council number is D.390396. My BCS number is 15913. So fairly early number. There weren't 15000 people when I joined. Um,….

What other boards did you sit on whilst being at ICL? And when?

ICL, in common with most technical organisations producing products for end user purchase was very concerned with the standards which govern the interface ith those products with their computer systems and so the interface standards between equipment and whatever it was – whether a terminal keyboard or display or printer or any of these things were quite crucial, for the industry as a whole. And that end, British Standards Institute as the British representative of the standards world, had a whole number of technical committees covering everything from foodstuffs and agriculture right across to….

Is this the Kite Mark?

No, that's Quality Assurance.

But in order to be a member of a technical committee, whether you are in the food industry or the paper industry, you had to be nominated by an industry body, not your company. And therefore the way to go on a technical committee, which was quite crucial in many cases, when standards are being developed, where you meet other people from other companies who are interested in the same standards and are therefore wanting to get agreement on the technical points was to be nominated by a trade association. Now ICL at a time where we had American Management had come in, happened to be a member of two trade associations: The Electrical Engineering Association and The Business Equipment Trade Association. Electrical equipment is fairly obvious, electrical businesses, the Ferrantis, the Plesseys, the AEIs of this world. The Business Equipment Trade Association happened to include nearly all the manufacturers of computers as well as the people who made filing cabinets and

paper and that sort of stuff. Business equipment, chairs and tables and so on, a very wide range. But the computer industry, IBM, Honeywell, NCR, English Electric, Ferranti, Plessey, all these people were in at that equipment because they were interested in the computer side of things. And the American Management thought one way of economising on unnecessary expenditure was to err… was to reduce the membership of their external bodies if they weren't necessary. And he tried to cancel these memberships of both bodies which led to an outcry from all the people who were already on technical committees because they could no longer go to the technical committees. They were no longer nominated!! So that was very quickly reversed. But reversed at the extent of only supporting the Business Equipment Trade Association.

And the person who had been doing that representation from ICL at that stage was about to retire and I was at that stage in the corporate part of ICL and it was suggested that I should take on that role on behalf of the company. So I was nominated to be the ICL nominee to the Business Equipment Trade Association, {BETA) and since ICL was a very significant player in the game, and a very significant company from BETA's point of view I was invited to stand for election to the Council of the Trade Association. My predecessor had been on the Council, and it was sort of rather expected that ICL would field somebody fairly senior who would actually be a Council member. And I thereby became a Council member. I was also on the BETA's technical policy committee which dealt with lower level issues like technical standards and thereby when the question of the Government wishing to liberalise telecommunication connections came up under Kenneth Baker, as the Minister of Technology, the Government decided….

What year is this? 1982?

(Picks up a document and reads from it.)

"The liberalised regime legislate for the British Telecommunications Act 1981provided the Secretary of State to appoint a body to undertake the approval of subscriber apparatus as a prerequisite to be connected to any British Telecom theatre work."

And thus the British Approvals Board for Telecommunications (BABT) was incorporated on 7th May 1982.

It was going to be a wholly owned subsidiary of the British Electrical Approvals Board, which dealt with white goods; washing machines, kettles and things. And the prime aim of this body was to create the standards which enabled anyone to hook their equipment to British Telecom's network. And there was an urgent need to produce these standards because until these standards existed the manufacturers who had the equipment, the key boards, or tape stations, or printers, or what have you could not sell their equipment because it didn't conform to the requirements of British Telecom's. So there was tremendous commercial pressure in the industry to forge ahead; which of course Kenneth Baker who was the Minister of Technology was well aware of. And put his weight behind all this. And in setting up the British Approvals Board for Telecommunications the Government consulted industry and he'd set up a general council of the great and the good: people like the BCS, and the City of Kingston upon Hull, which had its own telephone system, the Board of Trade, the Electrical Association for Women, the Home Office, the Broadcasting Association, the British Radio Electrical Manufacturers Association. All sorts of the great and the good. And they also had a board of management, which was nominated under the terms of the agreement with government in which the trade bodies involved were given either 1 or 2 places on the Board of BABT. And since at that time I happened to be the Council member and Treasurer of the British Equipment Trade Association (BETA), I was the obvious nominee for BETA to put forward as their representative on BABT. And with the approval of the ICL management that was done.

So I became the BETA representative on BABT, and played my part, if you like, in the work of this body. My main concern was that, it had been set up with virtually no money but a promise from Government that it would get income from approving equipment in the fullness of time. That rather ducked the issue that it required quite a lot of pump priming money before it actually had some standards which people

could apply and therefore pay fees for having their equipment approved to, for this. And government for some extraordinary reason required industry to put up quite large chunks of loan money as a sort of pump priming amount. Including BETA – was asked to produce £30,000 – and so its members, the ICLs the IBMs and Honeywells and so forth were each asked to provide some money. In the case of ICL it was £2,000. It was thought to be £1,000 to start off with and £1,000 later. And this was an unsecured loan for BETA to offer to BABT. That itself was a source of some technical problem because under agreements which ICL as a commercial company, a public liability company, had covenants with banks and so forth and we were not supposed to enter into unsecured loans outside our normal terms of business.

And the question arose, and Council's Opinion was sought on this as to whether loaning money to an Approvals Board on a wink and a nod basis actually breached those undertakings. However, Council's Opinion said, he came to the conclusion that it didn't matter that much. (*laughs*) So we could go ahead. So ICL duly coughed up its £2,000. And no doubt other companies had the same sort of problem to face. But the fact is that the money that went in was totally inadequate for the early costs although the Government leant £200,000 initially. Because recruiting staff and setting up the work and getting the standards and so forth all took money. And as the representative of the Trade Association on the BABT Board I was in a position to see the, on the Board Meetings, how the money was being spent and how much money was coming in. And I grew increasingly alarmed that more and more was being spent and very little was coming in. And I got to the stage, as a Director of the Company, I was worried that my personal liability for the company, which appeared to be heading to be trading insolvently, was a personal liability! And I sought comfort. A letter of comfort from my Trade Association that if anything went pear shaped I would not find my personal assets totally at risk!

They were unable to give me a letter of comfort but they, it was said that it was unthinkable that the Government would let BABT go into liquidation! And of course eventually there would be so much work going through their approval system they'd be making money hand over fist. Which is a nice thing to say but… The legal advice was that long term aspects of the thing breaking even were sufficient to exonerate a Director from being liable for any insolvency action.

And that's a Legal Council's opinion which I got as a result of disturbing this issue and was much comforted I must say. That is my initial participation in this. I was succeeded on the council of BETA when I retired by Dr. John Pinkerton the developer and designer of the LEO machine who was our technical representative and he became the ICL's technical council member from BABT and led the, supervised a lot of the work on the technical standards developments for the apparatus to connect to BT networks. It was a major task, in which industry put their best people to work to advance and solve the difficulties. An incredible achievement. Competitors all working together to pull. The only analogy I'd say is very like a war time competition where everyone sinks their differences and pulls for a common aim. It was remarkable.

And how long was this time scale?

I think about 18 months, about that sort of time.

And he succeeded you within that 18 month time period.

Oh yes yes.

And was that because your 3 year time period had come up?

Well I was taking early retirement , I think, shortly after that. Yes, '83.

He was followed on the British Computer Society Council later on by Alan Roussell who was at that time the Marketing Director for ICL and therefore we had a very senior person on the BETA council. And Alan Roussell later became Managing Director of ICL so it was quite a coup from BETA's point of view to have very senior people on their council. 'Cos it's one thing to be a nominee and another thing to be the top man.

Yes.

Alan, of course, had worked for me when ICL was formed. I was responsible for him being made Managing Director of Dataskil, the software house part of ICL.

And who else have you had contact with that subsequently gone on to be the great and the good?

Well, when Alan left the Managing Director of Dataskil, he was succeeded by Tim Holly as Managing Director who later joined Camelot as the Director of the National Lottery! I had something to do with Tim in my capacity as Director of Quality Assurance.

When ICL choose to seek to have its entire development of manufacturing operations certified to the defence standard 05-21. A quality standard of manufacturing to a known performance and it was a requirement if you were going to supply equipment for military purposes. You had to comply with this standard. And this standard not only covered the things, but the whole manufacturing and development process, whereby you satisfied the development. And ICL wanted to sell very big computers to government as opposed to torpedoes or guns or what have you.

And this meant, 'cos ICL was a whole integrated company, one manufacturing, one development, one sales organisation with one or two minor subsidiaries; bureaux companies selling computer bureau time, and a software house Dataskil meant ALL these bodies had to go through a MOD evaluation, against the MOD standard 05-21. It was a major exercise which required practise runs on every establishment, manufacturing and developing throughout the entire company. Really very significant task which was overseen by **me** as director of Quality Assurance. Using guile, pressure, peer pressure all sorts of things to achieve the desired result. Which we did achieve and ICL was duly approved as complying entirely, including its software house with the requirements of the defence standard 05-21.

And that was a very significant thing. We sent our auditors to be trained to Portsmouth where there was a management school dealing with e the training of auditors to defence standards. And in conjunction with them I issued certificates of competence to auditors who had been on a course and passed the requirements. Signed, countersigned by me and issued by them, as Certificates of Competence as a Quality Auditor and a step in the right direction for some professional paperwork. Valuable for anyone who wanted to move onto another job.

And in 1984 you left ICL took early retirement, but you haven't, didn't relinquish all your contacts with the computer world etc.

I was still chairing odd committees for the BCS and I was also invited to Chair a Quality Assurance Committee for British Standards Institution who had a number of Quality Assurance Committees looking at the requirements for particular sectors of industry; food or manufacturing or electrical or what have you. And they decided they'd set up one for Information Technology and I was invited to Chair the committee called Q13, BSI's Q13, Quality Assurance Committee 13. Which had representatives from the IT world, the British Computer Society, the Electrical Engineering, the IEE - the Institute of Electrical Engineering and various bodies, which met from time to time to see what was going on in development in BSI, their quality assurance methods for looking at firms that were engaged in Information technology work.

I was also the Chair of the Professional Advisory Committee for the BCS which was a committee of the professional board and effectively the body that was expected to make recommendations on professional issues that arose from time to time. Clarifying the points of detail, representing lines of policy for the Society. And I served in that capacity for a number of years. One of the major pieces of work we did was a report to government on combatting computer pornography, which was a topic of some interest then. And has been in more recent years. Umm…. It was a, proved a controversial issue because there were many, many people who thought the long haired types if you like, in society, that anything goes in terms of computer communications including pornographic matters. The view that we took as a committee was that a professional body should have a regard to the morality of these things

and it was not compatible with professional membership to engage actively in the development of computer pornography. And if individuals happened to be employed by firms that did this it would be inconsistent with their professional membership. That was a controversial point which caused quite a lot of debate and comment inside the British Computer Society at Council level. I don't think it was very satisfactorily resolved, but as far as I'm concerned we produced a booklet which clearly said what the professional body's attitude should be. And it was circulated fairly widely which was part of the controversy 'cos some people didn't agree.

What was your input to the Data Protection Act?

Oh well, umm…, I think it was in 1984[57], no…, (*pauses*)

The Younger report on Data Protection was a Government Commissioned survey into Data Privacy dated 1968[58] I should think, that sort of time. And it took inputs from Industry and to users and great bodies and so forth. And the Younger Committee, including input from ICL sought to collect all the data and represent some views on what the government might or might not do. Umm…. Curiously enough the BCS in its input had come up with the idea of the Data Protection Principles.

That data should be subject for purpose, only kept for purpose, and those sort of things which later became incorporated into the Act. But those principles were fed into Europe as well and became part of the European Commission's Data Protection views on privacy.

The Younger report contained submissions from industry including ICL, and at that time I was in the corporate part of ICL and was the focal point for drawing together the views of the people in ICL on data protection matters. It so happened that BETA also, its technical committee, had been approached by government for its views and therefore I participated in the BETA working party on this topic as well, and it also happened that our Chairman, Tom Hudson, who used to be IBM, but was now our Chairman at ICL, had been appointed Treasurer of the National Electronic Council, under the Duke of Kent who followed his uncle Admiral Lord Mountbatten as a focus for Electronic matters at national level, trying to encourage people. Mountbatten was very, very keen on telecommunications and modern things.

This isn't 1968. This is later on.

No, no….

What time scale have we got here for tying together of data information?

Early '70's I should think. And the National Electronic Council had, from time to time, picked up interesting things, and had all sorts of people who could look at them and make a report to their council which met two or three times a year. And they were approached by government, of course, for views on data protection. And since Tom Hudson was the Treasurer he volunteered that ICL would provide someone to work on this working party and I was the nominated person for that because I'd been doing work for ICL in this. So I was invited…, so I was involved as a member, or a drafter in some cases, of inputs from the trade associations, the computer company, from the National Electronics Council, and I almost certainly must have had a finger in the BCS inputs as well. Which was quite interesting because depending on which body you were speaking from there were certain different facets to represent or different views to put. But a lot of common themes evolved in it.

There was some need for some legislation because the prospect of no legislation would be very, very disturbing for everyone. They were concerned about that private data. Privacy and Data Protection are not quite the same thing but there is no privacy law in English law, just a common law expectation of privacy. But there was no statutory instrument.

[57] The first UK Data Protection Act became law in 1984.
[58] The Younger Committee met from 197 to 1972, when their report was presented to Parliament.

The Younger Report was followed later on by the Lindop report which took, some years later, which took the recommendations and was charged with helping government to actually formulate the Data Protection Act, 1984/6 which eventually was passed into law and a Data Protection Registrar was established at Wilmslow under Eric Howe, who had been at the National Computer Centre in Manchester, but quite a few years earlier had been part of my organisation at Kidsgrove! So I knew Eric very well indeed.

But, umm…, one of the funny stories he told…. When the government decided to set up the Data Protection Registrar the Home Office under whose wing it came, had got him appointed. He was appointed under the Letters Patent by the Queen and therefore couldn't be got rid of except by Parliament!! He wasn't a civil servant. And they said to him "How much money o you want to run this?". Well, he had no idea at that stage what was involved at all. And so they said "Will £4 million do?". Ha ha! And they sent him a cheque for £4 million!!!! And he went to a local bank in Wilmslow who refused it!! (*laughing*)

He wanted to hire an office, and get paperwork, and get…, hire secretaries and so forth and he had no money!! He went to the bank with £4 million and they refused it!! And it took effort from the Home Office to persuade a bank to accept this money so that he could get this thing going. Really quite ludicrous!! I suppose there was no precedent for creating statutory bodies ab initio. I can't blame the Home Office – they had the money and he had to do the job. But This, a most extraordinary situation when you can go to a bank with £4 million and have it refused!! And he went to a different bank in the end so someone lost out on that.

Eventually retired after seven years in the job. Did a very good job. The office of Data Protection Registrar, Wilmslow. Now, the Data In Chase…, the Information Commissioner, but in those days the Data Protection Registrar. And he was succeeded by a quite an able Civil Servant, and then came from inside the Civil Service from thereafter. But it was a job that not only requires I.T. knowledge but also legal knowledge as well.

In what capacity id he work for you at Kidsgrove?

Oh, he was one of my leading systems analysts when we were supplying computers for customer use. I think he worked on one of the banking jobs.

Right so, umm…, how…. Where does your link to the Worshipful Company of Information Technologists. Where does this all tie in together 'cos you are retired and yet you still have fingers in pies.

When I was with The BSI on their Quality Assurance work as a Chairman of the committee on IT. I was part of the Quality Assurance Board which was a separate Board in BSI. The side, part of the BSI that ran the Kite Mark Approvals for all sorts of things as opposed to the standards development side. And one of the people in that body was Andy Anderson who worked for the Shell Oil Company. Who was in fire insurance. The Committee on Fire Insurance. He was a Freeman, liveryman of the City of London, because he was a Tallow Chandler and he'd been Master of the Tallow Chandler's Company. And he was a Freeman of the City of London by paternity; that is his father had been a freeman before him, and before him, and before him to about 1500 and Andy was a very, very well known and respected City man. Tallow Chandlers of course deal with oil and he worked for Shell, a natural connection with Shell fuel oil, tallow and so forth. So there was a lot of connection there.

He said to me one day at one of our Quality meetings, "You know, you IT people, you are all over the City these days, why don't you have a Worshipful Company? It's really quite absurd!". And I said, "I know there are people in the BCS and in the Computer Services Association who are anxious to try and establish some sort of standing in the City because so many, so much work was going on for City companies and it was important. And he said, "Well you know you could become a Freeman. You don't have to become a member of a company. As a Liveryman I can nominate you along with my son."

I said, ''That's very kind." And I liked the idea because when I'd first gone out to business and worked for Limmer and Trinidad, my boss had been a Paviour. A Liveryman of the Paviours Company. And I was always quite intrigued. And the founder of my school had been a Master of the Merchant Taylors in 1512, so I had some faint knowledge of the City of London and Livery Companies and what they did and I was quite pleased with the idea of being involved. Umm…. And the result of that, I was duly nominated by, to become a Freeman of the City of London, and granted the Freedom. 1986.

And more or less in parallel with that, perhaps a bit earlier, the BCS and the Computer Service Association had approached the City with a view to forming a Worshipful Company. Not a Livery Company, a Worshipful Company which would be the first step in becoming associated with the City of London. Um…. And I, pointed our BCS Director General, Derek Harding to Andy, and said, "Andy will tell you. He knows his way around the City and will point you to all the right people to talk to if you want to go, to proceed down this road."

So whether they were followed I don't quite know but it certainly opened the door. He had a contact. And the Worshipful company was effectively established about 1985, I think. And that was the first stage in getting recognition. And the, moved on from that. It normally takes time to go from one stage to another but such was the interest in doing this that the Master, Barney Gibbons, who I had some dealings with in software world and Alan Benjamin, who had been Director of Communications for ICL were leading lights in this. Alan Benjamin had been responsible for responding to Kenneth Baker's requirement for 1982 the year of IT – '82 – and I had been persuaded, urged, as an ICL man to organise ICL's conformance in the year 1982. Where factories and establishments all opened their doors to the general public to explain what IT was all about. And as the Director of Quality Assurance I had contacts right across the company and we arranged a very comprehensive programme of events and activities, which promoted IT and opened the doors of ICL to wives, husbands, mayors, councillors, all sorts of people. The general public all over the place. And it was all done relatively, with no money at all! Because the various people found money to… suppliers, the catering firms supplied buns and so forth; very well done. However, umm….

To cut a long story short, the company became a Livery Company in whatever date that was. And as a Worshipful Company it was able to nominate people to become Freemen of the City of London. And I was invited to say whether I wanted to be nominated. And I was able to say… I was already there! Which was rather gratifying. But I was duly elected as a Liveryman of ICL, a founder member of Information Technologist's Livery Company along with about 25 other people I think. And I now, and have for some time, participated in a number of Livery activities. Most particularly the duty to elect the Sheriffs and the Lord Mayor at the Guild Hall each year. Which is an opportunity for meeting many, many people in the City and followed by, usually a jolly good lunch with one or other of your colleagues in the Livery Hall.

The Livery Company has made great progress in offering its abilities to other bodies of the City who are not so competent in IT matters, to help them on their way. And in sponsoring, more recently, an Academy in Tower Hamlets, I think it was; for which £1million was collected from members of the Livery to do it. In accordance with a lot of City traditions money is found for charitable affairs. Vast amounts are available and a lot of work is done of a charitable nature. More particularly the Livery Company has done a lot of helping Charities in the Greater London area to work with the difficulties they have in using computers. As such, it has achieved quite a recognised standard as a very new…, the 100th Company, Livery Company in London. And a number of its members have now been Lord Mayor. They were Lord Mayor not because they were our members, but members of other Livery Companies and very senior people in London, but have also become members of our Company.

That's computing coming of age, That is.

Now to go back to a different topic completely. When I was involved in the steel mill automation work at Kidsgrove in 1964/65 the idea that English Electric would supply lots of control equipment for electrical drives and so forth, should like Elliott Automation, have an online computer for that sort of work, was very, very keen. Elliott Automation had lots of early machines for things like traffic light controls and all sorts of applications of an online nature. And it was thought that we should, English Electric at Kidsgrove, should not only be producing scientific machines and big data processing machines, should also help the individual control system side by having an online control computer. And I was invited with Wally Parsons one of the engineers at Kidsgrove to participate in a small group to devise an,... the order code for a small industrial online computer which was later developed and named KDM2. Ken Chisholm was the engineer in charge of the developments. I think I remember it was a 16 bit word machine and was quite a small machine with an order code which Wally and I put together. A fairly small high speed store but quite a powerful little machine and was used really for on line applications in Electricity Board.

I remember the consternation our promotional people had when a contract I think it was the Central Generating Board. Their standard terms of reference was that we should be able to maintain the equipment for up to fifty years!!!! Well the idea that computers would still be the same computers in fifty years' time, or that you would even be able to get components that had relevance was so absurd because computers were changing every five minutes. Valves had gone to transistors; transistors had gone to integrated circuits. Everything was going fast. The idea of anyone being able to get hold of equipment to maintain the machine in fifty years' time was so ridiculous. But that was the standard term of contract!! (*laughs*) I don't know how they resolved it. Now of course things have slowed down a bit but even so it must be incredibly difficult to source anything that has gone out of production. Because there is no way you can set up an integrated circuit system just to service something. And they are not things put together by hand easily so I don't know how they resolved that. But later on we thought that it would be possible to hang some, a couple of tape stations on KDM2 and do some minor commercial work with this machine, as a data processing machine. And that was done somewhat later and became known as the KDF6 Computer which was sold at very much cheaper than the big machines to small bodies that wanted a small computer for data processing purposes. I've forgotten how many were sold but it was a reasonable development prior to the development of ICL. They went on after that but they were there before ICL was set up.

And to finish up with move on to the World Wide Web. What is your personal connection to the WWW?

I've no direct connection. My colleague at ICL, Ferranti, was Conway Berners-Lee[59], whose son, had two sons. One coxed the Oxford boat in the boat race many years ago 'cos he was a small man, and his brother was Tim Berners-Lee who was the founder of the World Wide Web and gave a lecture to the BCS, a public lecture some years ago before he was knighted, on the origins of the work he'd done at creating the web for the interchange of University information worldwide. Remarkable work.

What did his father do? What did you do with his father?

Oh, he was a computer boffin if you like in Ferranti man. Very, very competent. Very good. Absent minded though!

Well thank you very much, Dad. Got lots of information there.

(*He turns to Mum*) *And I was with him every step of the way!*

Yes . Thank you.

[59] Conway Berners-Lee was one of the developers of the Ferranti Mark 1.

Acronyms and abbreviations

ACE	Automatic Computer Engine	An early prototype computer developed at NPL by a team including Alan Turing
BABT	British Approvals Board for Telecommunications	Set up to approve equipment for connection to communications networks after the privatisation of BT.
BCS	British Computer Society	
BETA	Business Equipment Trade Association	
Blanco	*(a trade mark)*	A cleaning product for cotton webbing on military uniforms etc.
BT	British Telecom	A telecommunications provider, split off from the GPO and privatised.
CSIRO	Commonwealth Scientific and Industrial Research Organisation	Australian government research organisation.
DEUCE	Digital Electronic Universal Computing Engine	The commercial computer developed from the ACE pilot model and sold for commercial computing in the UK.
EDSAC	Electronic Delay Storage Automatic Calculator	The first practical stored-program computer, built at Cambridge University.
GPO	General Post Office	Responsible for postal services in the UK, and also held a monopoly on telecommunications until that was split off to become BT.
IBM	International Business Machines	An American computer company.
ICL	International Computers Limited	Formed in 1968 when the government unified all the British computer manufacturers
ICT	International Computers and Tabulators	A British computer company which was incorporated into ICL.
LEO	Lyons Electronic Office	Joseph Lyons & Co recognised the value of commercial computers early on and made & their own (LEO) computers based on EDSAC as well as selling time on them to other companies.
Mons	Barracks at Aldershot	Officer Cadet School
NAAFI	Navy, Army and Air Force Institutes	Provided recreation and entertainment for UK troops, with a shop on most large bases.
NATO	North Atlantic Treaty Organisation	A mutual defence arrangement between Western allies after WW2.
NCR	National Cash Register	An American office equipment supplier which got into the computer business

NEC	National Electronics Council	Set up in 1967 by the Ministry of Technology to advise the government on matters affecting the application of electronics to the national life
NPL	National Physical Laboratory	Original location of British computer development in Teddington, west of London.
RAF	Royal Air Force	
RCA	Radio Corporation of America	The US arm of Marconi after it was taken out of foreign control.
RRE	Royal Radar Establishment	Wartime research unit in Malvern
RTU	Returned To Unit	Usually from training, as a result of being unfit, incapable or disorderly.
WOSB	War Office Selection Board	Officer selection school.
ZEBRA	Zeer Eenvoudige Binaire Reken Automaat	Very Simple Binary Automatic Calculator, A computer designed in the Netherlands.

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