

Personal experience of

Standard Telephones and Cables Ltd, New Southgate, Oakleigh Road North,

New Southgate, London N 11

When I left school in 1950 I was 16 years and 4 months old. The normal school leaving age then was 14 years, but I had applied from Manorside Secondary Modern School, in Finchley and been accepted for Technical School at Hendon College when I was 13 years old.

Having left there, and living in Finchley, there were not so many choices for a 'working class' boy as to where to find a job. Commonly there was Simms in Finchley and the Hendon Bus Garage opposite the College, and big sponsors of it. But as I was in the Scouts and my mother knew Tiny Palmer (later to become a Scout District Commissioner) who worked at STC, he suggested I try there and put my mother (not me!) in touch with the Personnel department manager who I remember as a blind ex-military type called Mr Hart. She got us an appointment to see him and after a series of tests, I was accepted to start on the 17th April 1950. Most boys were expected to be accompanied by a parent when applying.

I duly turned up very early (compared with school!) on that April day complete with work coat (or overalls?) and after the standard processing, at about 9.30 I was introduced to the Training School. I think the manager there was called Mr Painter, and his assistant Mr. Bedford – both Fred! I soon found out that they both had the same characteristics – work hard, do as you are told, and don't whistle! "*Which boy is the canary?*"

The training was aimed at turning the trainees from lazy schoolboys into potential employees, mainly as entrants into apprentice training. The aim being to teach very basic metal working skills as well as factory floor discipline. The pay was 29 shillings a week, but I got upgraded to about 33 shillings as I was older than the others. As part of our employment contract we had to go to part time day classes at Barnet College with a view to taking the Ordinary National Certificate. For me that was a bit of a problem as my Hendon College years had given me a pass for the first ONC year, so I was really only marking time until the next ONC year started in September. Needless to say, I appreciated the one day 'rest' every week!

The training was hard work and to start with very basic. As an example, we all had our allotted workbench space and at the end of the day it had to be thoroughly cleaned. All tools had to be put back in place and things such as hacksaw blades accounted for. The use of those was a shock! At Tech School and at home I was used to using a hacksaw to cut metal. Not a bit of it! At STC School we had to mark a line on the metal, drill a series of holes along the line, put the metal in a vice and bend it back and forth until it broke. Result - a piece of metal (hopefully slightly bigger than needed) with a jagged edge. That had to be cured by filing the edge straight and true to get the finished result. Until we could do that, hacksaws were verboten!

From all those bits of metal we had to start making our own tools. For many years I still had the dividers and other little things and maybe I still have them somewhere. I haven't thought about them for decades. Note: I had to go and have a quick look, and, yes I have. A bit rusty but still serviceable!

But my time in the TS only lasted three weeks. Mr Hart called me to his office and said that as I was older than the usual trainees and with my extra qualifications, he could offer me a position that had come up in the Circuit Lab on the top floor of Building 3. The lab boy there was moving on to apprentice training so they needed a new one. Did I want the job? Did I not! I got through the interview with the lab head (Mr Davis) and his services manager (another ex-military type) and started work there a day or so later. I still remember my clock number – 13049 on the right of the staircase. The boy I replaced was John Smart and he went into the QA apprentice scheme after National Service.

My job there was mainly as a gofer but for that lab it was necessary for me to also make the special relay types needed for the prototype designs. Any quantity needed of a particular type was ordered from the production line, but for small quantities the lab had an agreement with the union that the lab boy could make them. So my first task was to go onto the production line and be taught how to assemble and adjust a PO relay. The lab store man (Mr. Digby) made sure that there was a stock of most of the basic parts, and then I had to check on the design cards to get the assembly right, put them together, adjust the springs and hand them on to the lab wiremen as a kit for each unit.

I also had to make special brackets and so on and, most importantly, learn my way around the whole factory to find out where the stores were and all the other departments. I never knew where I would have to go next to collect together all the bits that the engineers needed. Building 8 was known as Radio and so we had little to do with that! A very impressive place with its more modern design, show cases, and escalators!

It was not only an interesting job, but also very healthy! Although there was a bridge between 3 and 4, that was only on the top two floors between the ends of the buildings. So most of the time it was up and down the stairs for me. If I wasn't sitting making relays, then I was traipsing around everywhere to production lines and stores. Luckily I managed to get on with that special species of mankind – the store keeper! I can still envisage where the Boley screwdrivers were kept! The storeman was a terrifying little man, but in later years we got quite friendly. With my little green slips I collected the commonplace and the obscure items we needed in the lab. Much of it was not standard as the lab had to put together the prototype designs for new exchanges. New in both senses: new circuit designs and new contracts for whole systems.

I suppose it was after a year when my happy existence got rather a shock. Mr Hart again: “you are old enough to start as an apprentice so which type do you want to be?”

Me: “I would much rather stay in the lab!”.

After some discussion and toing and froing it was agreed that the department heads were happy with me (and would prefer not to have to start again to train another boy!) so I could stay. BUT, no promises could be made as to my becoming an engineer, but it would be thought about after a while. That ‘while’ turned out to be about three years and depended on my ONC/HNC progress at Enfield Tech. Luckily I didn't have any problem with the exams and so got the remaining two years ONC safely put away. Then I started the Higher NC so was getting the qualifications STC wanted.

In the meantime I met my future wife and we got married in August 1953. Her parents got rather angry with us as they thought that I was already an engineer! When it came out that I was still only a lab boy, then all hell broke loose! Her father was a nursery man who had his own business, but in his eyes, he was still the servant type: a forelock tugger. For their little

girl who had only just left college to work in dress design in London, I was quite a come down.

I learnt a great deal in that lab, and as soon as I had the HNC, I was promoted to junior engineer. I had to take one exam twice, but managed OK the second time. I also went on to various advanced subjects, as well as basic English. (At Manorside 'my type' was not taught English grammar as such; that was for those slated to go to grammar school, not us technical school types!) I needed the English exam to be able to become a member of the IEE, but in the end, STC was happy with what I had and I couldn't afford the IEE fees, so I never got those initials for my name although I did pass the extra exams.

In 1956 we had our first son, and in that year the government told me I had to do National Service. I tried all the delaying tactics I could think of and the extra courses helped. The various calls to attend medicals I simply ignored. But in 1958 a policeman came to collect me at home only to be told by my wife that I was in hospital with appendicitis! They seemed to give up after that, so in 1959 when I was 26 years old, I automatically escaped!!! (Our second son was born in 1959, so a double celebration that year.

In 1958 we moved into our newly built bungalow on Myrtle's parents land (still in Finchley) when I was earning about £ 900 per year. Lots of money struggles, but lots of happiness, including a job I liked doing and only 11 minutes away! Before the children came my wife had had enough of the daily grind in to London and got a job as a stock records clerk at STC, in the famous Radio building where I soon became at ease. After lunch in the canteen each day she would come and sit with me at my desk in the lab. Rather unusual, but we got away with it with the help of a few blind eyes! As we were now working at the same place, starting and finishing at the same time, we travelled together and became quite well known as we parked our tandem in the bicycle sheds. A rather special one as I had added a little 4 stroke motor to it. That gave the gate security a problem as motorcycles were supposed to be in the Brunswick Park parking field, a much longer walk back. We agreed on a mutually satisfactory little compromise. We had to park it in the shed nearest to the canteen, and had to push it along the drive with all the bicycles – motor off of course.

Before our first baby she stopped work at STC and we bought a MC combination and so I then had to go to the car park with my new conveyance. That was also a bit unusual (not many in there), so I was still notorious!

I worked on many of the new designs for the PO telephone exchanges and for some of the other systems such as NOSHEB. Being the youngest junior engineer with the latest HNC (in electronics) I got given work on the early valve designs and even the cold cathode switching systems that were being field tested by the PO in the Highgate Wood exchange. I also was loaned to another lab for a few months to run an experimental production line for the new-fangled miniature (sic) diodes.

But in 1961 I saw a notice that STC was going to start a Work Study department and they wanted to recruit trainees from among the existing staff. They had headhunted a couple of people to run the department and they interviewed applicants. I was one of the ones accepted. There were about 15 of us, including one of the shop stewards, the latter idea being to gain quicker acceptance by the unions of the ideas and methods. (The site for the training room was in one of the old garage buildings on the lower car park!) There I learnt a lot, including how to operate and read a flyback stopwatch! Another useful subject was the use of P.E.R.T. – Product Evaluation Review Technique - that had been invented around 1951 and by 1961 a computer programme had been developed to make it faster. One of the very early practical

applications of the new computer technology. Honeywell (who were being employed via Arthur Anderson to provide the first computer system for STC at NS) ran a set of courses at their headquarters near London Airport and we were sent there for the introductory course. As part of that we also visited the Air Traffic Control Centre at West Drayton where a new system was being installed with PERT being used (badly!) to 'progress' the work.

At the end of our training, the unions had still not signed the agreement, so then came the question of what to do with us all!

One of the two chiefs left STC for another job and the remaining one put together a small team to continue small scale experimental studies with union agreement. Some of the trainees were able to go back to the departments they had left, but there were several of us with no longer anywhere to go. Some left STC altogether and so there could only have been me and, perhaps a couple of others, to rehome. As I had that diode experience, and had my own transport, I drew the short straw! That meant going to work at Harlow, travelling there and back every day in a very wet winter as a temporary work study engineer on the new semiconductor line. Great experience, but the travel was so awful on my m/c combination in very cold and wet weather that I got a flu that I couldn't shake off, so wanted to be back at Southgate after I recovered. (At that time Harlow was still so rural that part of my route took me through what became a ford after heavy rain!) So now what could they do with me?

I was promised that if I could just last out a bit longer (the weather was better anyway!) something would be done. I must admit, Harlow in the sunshine was not too bad, and the experience was good. But then I got a break – Monkstown! An evocative word for many.

The incentives were good for STC to move more manufacture to Northern Ireland and so in addition to the small existing factory in Larne, another was being planned for Monkstown, where WS had been agreed with the unions. The opening was to be later in this year, 1962. A team had been working on the planning of the factory layout, the equipment needed, and the training programme. As it was intended to give them a lot of the telephone exchange business, and I had had 11 years in that and now a year on work study, it was felt I should be useful. By then there was only a few other people left over from the work study department and they were also absorbed into the Monkstown project. By the way, I was now back on the top floor of Building 3, just opposite the stairs where my old time clock still stood! Although by now, I was a 'signing on' type of employee.

I did actually get to see Monkstown as we became friendly with one of the new managers, Gwyn Evans, who was moving from England to Ulster. When he was settled in his new house, he invited us to come over for a visit. The whole family went in our trusty combination via the Liverpool ferry and apart from the interesting holiday experience of leaving England for the first time, we got a tour of the new factories. Our sons came back home with a pronounced Ulster accent! The only downside was having several punctures, and losing a sidecar window on the way back through the Mersey tunnel. The boys were bored and pushing each other about ☺

Back in Southgate the planning was far enough advanced that the team was being reduced, so I was back on the surplus list for work! But by a stroke of luck Fred, who had been appointed as the training manager (from his QA job) needed an assistant, and that was me!

We set up shop in the new sports pavilion that had just been completed and we were allocated a couple of rooms for our use. The sports committee was not pleased! Various benches and assembly jigs were installed and we had some of the new Monkstown employees to train in

the gentle art of relay assembly and adjustment. But first, the two of us (manager and assistant) had to be force fed as to how to do the job and ended up for a week or so at an office building in the City that STC was using for training of specialist trainers. Great fun was had by all – personally I got a lot of value out of it.

A further experience at around that time involved visiting Treforest with one of the new Monkstown staff. I cannot really remember much about it except that he had some responsibility for the installation of new production lines in NI. He had to visit several of the existing facilities, and at NS I was given the job of taking him around the place so he could see all the relevant production areas. It also included escorting him to Treforest. Looking back, I assume it was to get to know some of the areas that would eventually be consolidated at the new NI factory. My sharpest memory is having to quickly get a one year passport; to visit Wales! In reality, it was due to the 1962 smallpox outbreak in South Wales where 19 people actually died; it was that serious. I had to be inoculated and have a passport so the doctor could certify that I would be safe.

Once the Monkstown trainees were well on their way through the course we designed for them, the Southgate management passed over to us a job they had undertaken to train a group of employees in the Portugal factory, for their new assembly line. Even greater fun as only the appointed supervisor spoke English. By the end of that additional course (a few weeks) Fred didn't speak any Portuguese, but I could manage a few words.

An enjoyable period, but now what could STC do with me? This would probably have been in 1963 when I was still officially reporting to the Telephone Division manager as I did when I was in the Circuit Lab. He called me in to his office and made it plain that I was no longer of any use there and that my experience since leaving it was not of much use to his departments. As I sort of slipped into my job in the first place by evading being an apprentice, I was on my own as just a person who nobody had much use for – a bit of a shock! However, he had spoken to some other department heads and one felt that my experience in the electrical/electronic field might be of use in the design and setup of an automated production line (the first) that was being considered. One of the other leftovers from the WS failure was also going there. We would be part of a new group working alongside Production Planning and Rate Fixing.

We would be under a manager called Wilf Ewell who himself was a bit of a maverick and been promoted to head the new section that would be responsible for production innovation generally. An ex-Lotus Engineering man. (My funniest recollection of Wilf was the Mole wrench he had pressed into use to replace the broken throttle pedal in his car!)

The background was that the production planners and estimators had been given the task of laying out a new production line to make the new GPO telephone called the Trimphone, although STC, who were the inventors in 1961, called it the Deltaphone. In that design the new miniature receivers would be needed to be manufactured in much larger quantities than STC was used to, and in heavy competition with the rest of the Ring, so the cost had to be much lower than conventional assembly methods. Full production was planned to start in 1965 and it was hoped that STC would get the bulk of the earlier contract for the receivers that the GPO intended to stock to supply the other Trimphone assemblers. (The GPO way of awarding contracts amongst the five manufacturers was a law unto itself!)

The *Rocking Armature Receiver* was designed by acoustic engineers who were not production engineers. Thus, through no fault of their own, the prototypes did not reflect the difficulties of mass producing at low cost the many millions of units that would rapidly be

needed for the GPO's plans. To help in developing such new methods a small team of research engineers had been setup elsewhere in STC and one of their early projects was a machine that replaced the manual method of adjusting the armature with an electrically controlled high speed method. That prototype machine was handed over to NS and Wilf's new team had to incorporate its principles into a complete machine that would handle that stage of the RAR assembly fully automatically.

Our young team accepted the challenge with enthusiasm and developed a paper concept of an almost fully automated assembly line with a minimum of operators. That idea needed a totally new approach to manufacture that quickly involved many different departments and the trade union officials on site. Luckily management and unions could see the potential benefits and agreement was reached quickly enough that designs could be produced, built, tested and installed in a special area of Building 4 in time to meet the deadlines.

My main job as part of the team was to design the control circuitry for the various machines involved in the new assembly line. As a team, we also agreed to run a week long production test for the machines whereby the team would personally make several thousand receivers. A new idea in itself and our efforts went a long way to convincing all those involved that "automation" could be part of STC at NS ☺ Incidentally, I still have a legacy of that effort as one of my fingertips was squashed when I misjudged the effectiveness of one of my own control circuits ☹

We had two other organisational concepts that were put in place and helped the overall acceptance of such manufacturing lines. The first was to have a floating operator (on an agreed payment increase) who could operate any stage of the line and have sufficient knowledge of the way it all worked so that she could liaise with the operators and engineers to quickly report problems and cope with overflow problems. The second was to appoint one of the NS toolmakers to have complete responsibility for maintaining the machines, including the control electrics/electronics, for which he received extra training. Another job for me!

The production foreman who had been given responsibility for the new automated line had a large part to play in the acceptance of the new ideas – his name was most suitable – Bill Southgate! Rather frightening for me as he had been the foreman of the relay line where I first encountered a factory assembly line. But we got on OK, much to my relief.

The changes needed to establish the new sales potentials, and hence development and production budgets, pointed up one deficiency and that was the need for an organisation that could respond more effectively than could the existing specialist departments within the Switching Division. The first step was to create a small organisation to work together with various parts of NS that would be better able to work with production and engineering departments on design, production and sales of new acoustic/electronic based telephone accessories such as the Deltaphone and other potentially profitable products.

The second step was to appoint a new manager, headhunted from one of the other manufacturers. He was allocated office space with a secretary and in the first days introduced to all the different people that he would have to work with. I heard about the appointment and suggested to Wilf that I would be an ideal person to continue to liaise and "could I have the job?". I know there was some reluctance to lose me from Wilf's team, but I was told to help the new manager as best I could without actually stopping the work I was doing. I can't be sure of the actual name, but I think he was Don somebody from oop north.

It was then really a process of “make it up as you go along”! I stayed physically where I was, but spent a lot of time with Don and my usual walking around to visit all the departments I had been working with in one way or another for many years. In fact, as I remember it, Don got bored with the slow progress of setting up the new Division and after a few months moved himself to yet another manufacturer! By then the potential of the new Division was starting to become clearer and in short order another appointment was made. That was Thomas D. Hayes who lived in Harlow and was already ‘something in STC’.

Tom came to NS and continued to ‘borrow’ me, and with a much more positive approach he got a nicely organised department going. We got on well together and he promised to do his best to get me officially appointed to his Division if at all possible. Two extra staff were employed who were respectively an assistant to Tom (Keith) and an office manager (John) who would control all the paperwork and statistical aspects of coordinating the sales and manufacture of the products no matter where they were made. Eventually the Board agreed that the project could go full steam ahead.

Now, at last, my Honeywell course came in useful! As part of my work in the AD I had to pull together all the costs involved in making new products so that Tom could, with our cost accountant, set a realistic price for the sales people to negotiate. This must have been in the late 1960s and by then ITT had developed some computer programmes of which there was one that could quickly calculate, and recalculate on demand, these figures. A new STC office in East Barnet had been setup to provide timeshare computing facilities overall where Tom, Keith and I went to discuss if they could handle the programme, and if they could connect us at NS to their service. The answers were both yes and within a short time S&M had installed next to my desk (in Bldg 3 again!) a teleprinter with a dialup connection to EB. Punched tape input for the programme plus data and telex tractor-fed paper for the output. Magical stuff admired by all!

With the increase of work and necessary staff, our Acoustic Division 7510 became a complete reality with new office space made for us in Building 8. At the same time I finally became part of the new Division reporting to Tom for general work, in particular, coordinating the general aspects of budgeting and liaising on new designs with the engineering staff of the Acoustics Laboratory, which was more or less designated to eventually move from SD to AD control. It was a rather loose arrangement, but as we all knew each from years back, it worked well enough to be going on with. (S&M didn’t want to move the teleprinter to Bldg 8 which meant I was often back to Bldg 4 where my teleprinter still lorded it over the nearby typewriters!

One of the first uses AD had for our budgeting programme was the bidding for the design and prototype production of a new hearing aid for the NHS. It was the first real trial of Acoustic Division as we had to involve the acoustic lab in design and testing together with Harlow for transducers and Footscray for the solid state amplifier. We used an industrial design firm for the casing etc. and as part of that I ended up with my name on a couple of patents –wow!

A decision had been taken to place the manufacture of the 500 prototypes in Larne. To keep everything organised meant I had to travel over there several times to share information. I even had to take Wilf Ewell with me a couple of times for him to advise on production methods. The time scale was so short in the end that I transported the new test equipment from NS to Larne via Liverpool/Dublin ferry in my Land Rover and eventually collected the 500 units to drive them to the NHS store in Bristol to guarantee meeting the contract deadline. Needless to say, the units stayed in store for months until the NHS could get around

to actually testing any! Sadly to say, the NHS advisory engineers turned out to have been woefully careless in supervising the specification so the design turned out to be unusable by deaf people. But at least AD had proved that we could do it.

My own personal affairs also got more complicated around that time. As a result of trouble I was having with getting on with the Larne management, I had been given some extra training in interpersonal/management relations. That proved of some benefit to me and STC and during 1971 I had been sent on a management training course with the object of promoting me to more direct management tasks. This was fine by me but my family was getting worried about all the time I was now expected to spend at work, meaning less time with them at home ☹ It was also becoming evident that I would certainly have to spend more time out of the country on ITT business. I had not minded going to the UK countries and to Germany (for the AD) as I could do that by road, train, or ferry. But I had no desire to fly anywhere, for example, USA! (I am writing this in 2017 and still have never set foot in any plane.)

Early in 1972 I was sent on another management course and this time it was decided to move me to report to the SD Chief Engineer's office which at that time was still directly responsible for the Acoustic Lab. But it was implied that that was to groom me as a possible replacement for the CE who would be moving into a position within the larger ITT engineering management. I never received any contract for that as by then my family had agreed on giving me an ultimatum – give up such grand ideas, or give up any normal family life! The quandary being that in the position I was already occupying, there was no way that I could simply stand still. To refuse would mean loss of status at best, or loss of job at worst. The only possibility was for me to resign from STC. Luckily I actually had been made an offer for a new career, working for myself, and so regretfully got our AD secretary to type my resignation letter with a month's notice. Coincidentally, that expired on the very day that I started at NS, the 17th April – 1950 to 1972 got me my 22 year long service badge which I still have.

Leaving me doing the work that was being planned for me was out of the question. I ended up moving my desk into the Acoustics Lab building and finishing off some paperwork to leave it all tidy for a new assistant to Tom. I do not regret any of it, although the doubling of salary I was promised if I stayed would certainly have been useful! STC was a great company to have worked for and I learned a great deal over the 22 years that has been useful to me ever since.

Footnotes

§ - in the STC centenary book 1983 the last page says “looking forward to the next decades”

1. § - so, what did happen to STC and NS? I joined the NS and NI forums and found out.
2. Business collapsed so acquired by Nortel in 1991
3. Renamed as Nortel Networks in 2000
4. Nortel used the NS site until they closed it in 2002
5. Applied for bankruptcy protection in 2009
6. Ciena acquired Nortel optical in 2010
7. Nortel finally declared bankrupt in 2012 and closed 2013

I wonder what would have happened to me if I had not left?

§ – what did I do after STC to earn a living? It has turned out to be as varied as my work at STC had become. In April 1972 I joined up with a marquee hire firm whose owner wanted me to work with him as, in effect, a foreman for erecting the marquees he booked. I was to start a similar firm of my own (Tam Marquee Hire) and the extra advertising would bring in more orders. The deal was that after covering expenses I would get the larger percentage of the profit per hire. He then took life so easy that I got fed up with doing most of the work, so we cancelled the contract in December 1973.

After that I got I got my own marquees in early 1974 and went solo with my wife and sons until the boys left home and in 1984 we stopped most of that work, although we still have one marquee and loan it out to friends and (adopted) family in Denmark where we have lived since 1994.

Other businesses we have had have been, jobbing carpenter, part-time stage technician at Trent Park, mobile recording studio and location recording, disc mastering facility, buying and selling used studio equipment, mastering and duplicating cassettes and CDs, manufacturing specialised electronic units for mastering, small PA and lighting work and “as long as it makes more than we spend”, more or less anything on those lines!

Funnily enough, our younger son Eric got a work experience placing in the Acoustics Lab when he was at Brunel uni around 1979. He moved to New York in 1983 and runs his own business there with his American wife. Must be inherited!

Some odd bits –

A good book that I found about the RAR - here is the original link

<https://books.google.dk/books?id=x511AAQBAJ&pg=SA58-PA5&lpg=SA58-PA5&dq=moving+armature+telephone+receivers&source=bl&ots=FcvYJHk7qW&sig=sKVPKcWoDZMu2ce4rNsqtRtqIoo&hl=en&sa=X&ved=0ahUKEwidqLad8YvMAhVIFCwKHUzZBbYQ6AEINjAF#v=onepage&q=moving%20armature%20telephone%20receivers&f=false>

This is also good to read from 1961 about the Zebra

<http://archive.computerhistory.org/resources/text/Standard/Standard.StantecZebra.1957.102646083.pdf>

Note on the Welsh locations - In preparation for the War, in 1939 Creed built a subsidiary factory at Treforest in South Wales Treforest Industrial Estate, Pontypridd

Since sending this document to the NS and NI forums I have had questions regarding some comments I have made. As they regard the practices of manufacturing in the era I have described, I have written some explanatory notes which will eventually be found at <http://www.snugglebugs.dk/STC-notes.pdf>

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