



Panel at the CCH (Centre for Computing History) Celebration - 18th May 2023

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Message from our Chairman - Peter Byford

Welcome to the 13th edition of LEO Matters, which is divided into 3 sections, the first is **News and Updates**.

I hope those who went to the end of the National Lottery Heritage Fund Project event on 18th May enjoyed it. If you weren't able to be there, you will shortly be able to see a recording of highlights from the day. Hilary Caminer contributes a report of the day. We were pleased to see our most recent archivist, Luke Thorne, there.

I am sure you must have seen the LEO film, you haven't? Just go to YouTube and use this link: [LEO Film](#) - it is only 26 minutes long. Richard Hollingham, the filmmaker, tells you how they went about making this wonderful film. It has been viewed over 11,500 times so far.

We now move on to Neville Lyons, one of our trustees and our talks organiser and main speaker. His retirement occupation seems to have gone on for some time. He tells you about it – and please remember, we are always interested in hearing about places/organisations where we can present a talk.

The next section is **LEO history and heritage**. We start with a LEO advertisement from a Cambridge University Handbook, dated 1958-9. It was sent to us by Eric Dickens who was an undergraduate there at the time.

Now we have five more LEO people describing their experiences with LEO. Steve Farrow (an experienced engineer on both LEO II and LEO III), John Parker (a programmer on LEO II) and then Tony Ayres (worked in the LEO design department during his school and university holidays) writes about his time at Minerva Road, LEO's factory. Roger Belbin tells us about his interesting LEO career. Finally Mike Cowlard, who started in operations but then switched to programming, tells us about how his IT career started.

Our last section includes a reminder that our most recent book LEO Remembered 2nd edition has had great reviews from all around the World. Hilary, our ever busy secretary, was co-editor of the book and tells you a bit more about the reviews and how to buy your copy.

We then appeal for more volunteers among our members to join us in our ongoing work to preserve and promote LEO's heritage. Perhaps I can also ask whether any of you might like to consider joining our board of trustees. Our AGM is due in the Autumn and we would very much like to welcome some new trustees.

I hope you enjoy reading this issue of **LEO Matters**.



Peter speaking at the Celebration event at CCH

Peter Byford

Peter started work as a programmer on LEO III/1 at Hartree House in 1961 where he remained until 1965. He went on to a long career in IT at various companies including 25 years at British Gas-Eastern.

He writes: 'I became involved with LEO reunions and, in 1981, their organiser 'passed the baton' on to me. The LEO Reunion Society (later LEO Computers Society) was formed and despite many committee changes, no one has yet volunteered to take over as chairman. I have had excellent committee members (now trustees) over the years: I am just a figurehead touching the tiller from time to time!'

A Very Special Event

A report of our end-of-project celebration at the Centre for Computing History, Cambridge on Thursday 18th May 2023

Hilary Caminer



Around 60 people gathered at the CCH in Cambridge to celebrate the conclusion of our joint lottery-funded project 'Swiss Rolls, Tea and the Electronic Office.' Among those present were, of course, members of the LEO Computers Society and staff and volunteers from CCH, and in addition we were delighted to welcome several guests, many from organisations connected with computing and those who have worked with the Society.

The day started, after time to recover from long journeys over a coffee and a pastry (we had people there from as far away as Italy, Devon and Cheshire) in the main exhibition area of the museum which had been transformed for the day into an excellent conference space. We were welcomed by Lisa McGerty who has managed our project (and is now CEO of the Museum) who in turn introduced Gareth Marlow, chair of the CCH trustees and our own Peter Byford, chair of our trustees and a major figure leading the project for the Society.

The morning's proceedings took the form of a series of lively and well-illustrated presentations by the people who had carried out the main 'products' of the project. Lisa outlined the archiving work – the real heart of our project – and thanked in particular Jude Brimmer and Luke Thorne, our two professional archivists. Both have contributed an enormous amount to the success of the project and have now moved on to other projects, and Luke was at the event to help us celebrate. The value of the archive to researchers was vividly portrayed by Dr Elisabetta Mori. Elisabetta described how the richness and easy accessibility of the new LEO archive at CCH had facilitated her researches into LEO and made it possible for her to speak and write with authority on the early days of business computing in her recently-completed thesis. We are delighted that Elisabetta has gained her doctorate from Middlesex University – supported by the AIT Trust - and indeed we hope that the archive will support many more researchers in the future.

Then Richard Hollingham from Boffin Media gave us an insight into the making of the 26 minute film about LEO now openly available on YouTube. Link : [Here](#)
He explained how, despite the limitations imposed by the Covid pandemic, he and his colleagues had succeeded in recording the interviews with pioneers needed for the film, how he had used every inch of newsreel footage and how

his team had created an animated simulation of an 'electronic brain' to illustrate just how LEO worked. He was pleased that the film had won the prestigious Association of British Science Writers video of the year award. (There is an article by Richard about the making of the film later in this edition.)



*Richard Hollingham gives his presentation at the CCH celebration
18th May 2023*

Next up, was the much-anticipated launch of the virtual 3D LEO I – the brainchild of Chris Monk and his son Richard. This is a truly extraordinary recreation of LEO I – not as a reproduction of a tangible machine, but as a highly realistic online recreation in 3D which a user can move around at will on an electronic device. Chris explained the great lengths that the team had gone through to obtain detailed and accurate information about the dimensions and of the computer room at Cadby Hall, how they had gathered as many contemporary photographs as they could and how they had used as a major resource the memories of our members who were early LEO workers. They illustrated the ongoing progress of the project – and the way it is being made as realistic as possible. For example, there are images of genuine documents, programs and engineering plans on the desks, notices on the boards and even clear views of the surrounding streets from the windows. They explained that final touches are being made so that the project can be launched to the public and made available on people's portable devices. During the rest of the day, many guests tried the 3D recreation out for themselves – with guidance from Chris and Richard.

After that series of presentations, the morning was concluded with an enthusiastic and supportive response from Brittany Archibald who gave us the perspective from the viewpoint of our generous funders, the National Lottery Heritage Fund. Brittany was admiring of the way the project had continued to keep momentum going through these very difficult Covid years and pleased that we had succeeded in creating in so many lasting products. These included teaching and learning materials for use particularly with children and young people. Although we have yet to submit our final report to our funders, it seemed from Brittany's talk that we have satisfied their requirements!

Then there was a much-needed break for a buffet lunch and the opportunity to talk to colleagues, try out the 3D LEO, watch the film, browse the teaching materials and have a quick view of the museum itself. Several guests said that they will now certainly come to visit the museum 'properly.'

The afternoon session was dedicated to a discussion on some of the issues arising from the project. This was chaired by the Society's historian, Professor Frank Land with a panel which included Professor Martin Campbell-Kelly, Georgina Ferry (author of 'A Computer Called LEO'), Professor Jon Agar, Professor Tony Bryant and Richard Hollingham, who made our film. Each panellist started by outlining their personal connection with LEO and why they thought it important to preserve and promote its heritage.

Professor Martin Campbell-Kelly said that he felt the LEO archive was a particularly rich source of information from the very early days of computing. All our panellists expressed their praise for what the project had achieved – and encouragement for what we do next to ensure that the material gets to as wide an audience as possible. There followed some questions and comments from the audience. A full recording of the day's proceedings will shortly be made available online.

Following the discussion, there was time for a cup of Lyons tea and a slice of Swiss roll – in true tea-shop fashion.



At the event a 12 page illustrated leaflet was given out full of detail and illustrations of the project's work – here is a link to it online: [Leaflet](#)

Hilary Caminer

Hilary Caminer is probably the only Trustee with a totally non-technical background. Now retired, her career was teaching English in higher and further education, most recently at the OU. As the older daughter of David Caminer, a LEO pioneer, she has lived alongside the LEO story all her life and, wanting to help preserve the heritage of this amazing invention, accepted an invitation to join the committee. Her work for the Society includes acting as Honorary Secretary, co-editing the 'LEO Remembered' anthology, editing 'LEO Matters' and being a member of the Steering Group for our joint Lottery-funded project with The Centre for Computing History, Cambridge.

Making the LEO film

Richard Hollingham of Boffin Media is the producer of our Lottery-funded and award-winning film on LEO.



How do you make a film about a machine that no longer exists? For me and Jamie, the filmmaker I work with, that made our job easier. This was never going to be a film just about LEO but the story of the people who made, programmed and operated LEO as well as its remarkable legacy and relevance today. Oh, and cakes.

We won the tender to produce the film in November 2020, in some of the darkest days of the pandemic. This added an extra element of challenge (and safety precautions) to the production, but we were clear that the film should not have any mention or sign of Covid restrictions. Our essential elements would include interviews without narration, we wanted to show how LEO worked and why it was important. The key word here is 'show' – as much as possible we hoped to convey the story of LEO in an engaging and, dare I say, entertaining manner. As for the cakes, our intention was to have them as a motif throughout – anchoring the story back to Lyons. (Funnily enough, one of my biggest challenges was sourcing Lyons branded cakes.)

Our contributors were superb. I marvel particularly at Frank Land's expertise, recall and stamina through a three-hour interview session. We were also fortunate to be able to include Mary Coombes and Ray Shaw, who are sadly no longer with us. For each interview, I had spoken to them beforehand (or in Ray's case, John Daines had kindly helped) and written out some – hopefully sensible – questions. Once we had filmed the interviews, I used AI software Trint to transcribe the answers. We ended up with pages and pages of excellent material. This is the point where we really earned our fee, as we pieced-together soundbites to tell the story of LEO.

The superb archive film we were able to use was a real help. In fact, there was very little of it that we didn't weave into the story. We also filmed the EDSAC rebuild at Bletchley and some moving elements: A printer, card reader and tape reader, which gave the film pace and punctuation. What we realised we were missing was an explanation of how LEO worked.

We had always wanted to include some animation but we were uncertain about what this would look like and how it would fit in with the style of the rest of the production. For inspiration, we started watching some 1950s animated films (I particularly recommend [A is for Atom](#)) and decided to create some 'found footage' – an animation that looked like it was archive. My initial sketches were redrawn by my wife, Sue Nelson (also a science journalist), checked by Lisa McGerty and transformed into movement by our animator Rory Davenport. If you were wondering about the voiceover, that was provided by Jamie – his dramatic training finally paying off.

The last element we filmed was the opening. We wanted to

contrast the old and new (another motif throughout). With the 1950s TV, radios and ducks on the wall, I know it looks like it was filmed in a museum but it's actually our living room. I'm sure many members of the LEO Society can empathise.

The final stage involved working with Lisa and the LEO Society to ensure everything was accurate. I won some of the arguments (we kept in the boats) and they were right about most of the others. I can only thank everyone who helped, contributed and ultimately watched the film. By the end, it had become a labour of love. We were commissioned to make a 15 minute film and we ended up with 26. I just wish I hadn't eaten so many of the cakes.

Retirement and Spreading the Word about LEO

Neville Lyons

The word 'Retirement' means many things to many people. I have been truly fortunate in my ability to focus on giving illustrated presentations as a main retirement occupation.

Tracing my family history, I ascertained that my grandfather was a cousin to Sir Joseph Lyons (always known as Joe), the co-founder of J Lyons & Co. The family relationship encouraged me to research the company history, which has led to numerous presentations. These cover not only company history but extend to the story of LEO and Art in the Lyons Teashops, a post-war project to glamorise the run-down teashops with commissioned lithograph paintings.

I have given more than 200 presentations since the year 2008, publicised only by word of mouth. Audiences have included 46 u3a's (University of the Third Age) mainly in S.E. England. The pandemic led me to give successful online talks, which now continue unabated.

u3a has recently developed a project, enabling any member to offer talks online, to which all u3a members nationwide can obtain access. In this way, I gave the J Lyons company history

talk on 23rd March and the LEO talk on 16th June.

Pleasingly, there have been spin-offs in the form of invitations to talk online to Exeter u3a and to London Regions u3a, which consist of 43 u3a's across London.

A further development has been an invitation to participate in the u3a Radio Podcast, which consists of monthly episodes of interviews on any subject of interest. My interview covering questions on the J Lyons history was released on 17th June. See link: [here](#). The second part of the interview covering the LEO story is due for release 17th September.

I can understand that public speaking is not every person's favourite occupation. But for those members who are happy to spread the word about LEO, I should mention that some time ago, I offered a package, consisting of script and slides for the LEO Story. A considerable number of members took up the offer and I would be happy to provide updated versions for any members who may request them. Just email me on:

neville.lyons@leo-computers.org.uk



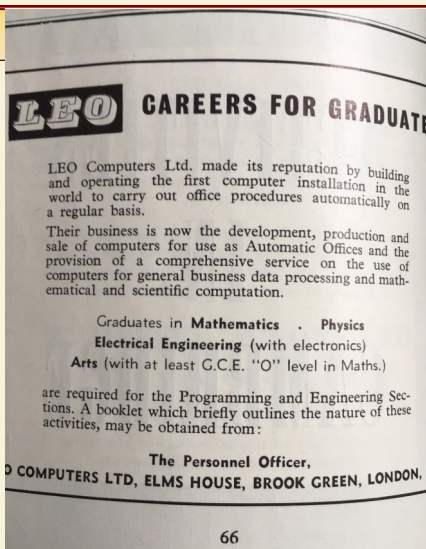
Neville Lyons

Neville's grandfather and Sir Joseph Lyons, co-founder of the catering empire, were cousins. The family relationship inspired Neville to research the history of the company and the story of LEO, resulting in the talks he has been giving for the past 11 years, mainly to retirement organisations. He joined the LEO Computers Society in 2014 and is now a trustee.

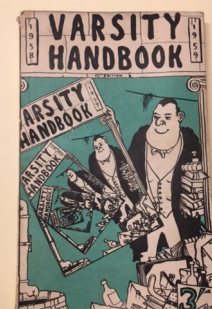
Careers for Graduates

Eric Dickens contacted us in January writing: 'Attached is a photo I took of the advertisement in the Cambridge University Varsity magazine when I first saw it. This was 1959 and I joined LEO in 1962, although it was my last year at Cambridge at the time of the advertisement. I was a Rolls Royce (Cars) scholar so went back there to complete my apprenticeship.' Having joined LEO in 1962 as a LEO III programmer, he became a chief programmer and then later went on to work on ICL installations and became Chief Executive of a Computer Training Centre in Peterborough where he lives.

If YOU have copies of the advertisements which first drew you to LEO – or indeed any other LEO memorabilia, please do get in touch! Secretary@leo-computers.org.uk



Cambridge Varsity Magazine—1959



Happy Memories of LEO

Steve Farrow

I attended the first LEO II training course in Spring 1957, with the engineers from W. D. and H. O. Wills who went with LEO II/2 to Bristol and joined LEO II/1 in the Autumn. I was not there long enough to become a shift leader. But I did collect and test and optimise 64 + LE 1 mercury delay line storage units which were eventually all swapped with LD 1fs in one major exercise (bit - by - bit did not work ! Surprise, surprise).

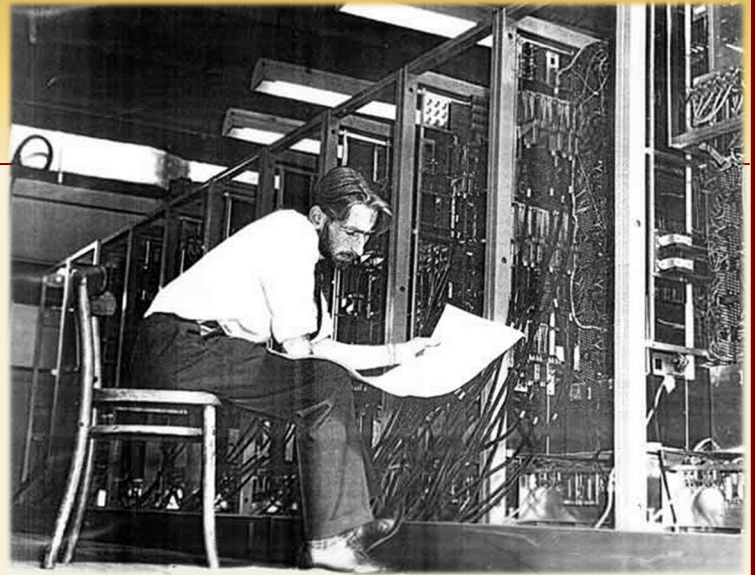
I commissioned the innovative Bull alpha decimal printer on LEO II /3 in Spring 1958 and was chief commissioning engineer on LEO II /4 from Spring 1958 and installed it at Fords, Aveley in the Autumn. This had a Powers printer (as did II /2 perhaps)

I watched the Research department engineer commissioning the experimental 1024 word core store. I commissioned the 4096 word core store on system II / 8 (not trivial. The step from 1024 to 4096 gave problems). This was our first use of transistors. The machine was a hybrid of valves and transistors: digital and serial / analogue. Tony Morgan effortlessly commissioned the rest of the machine. I watched and helped with Research commissioning their experimental, prototype transistorised computer.

Being a nit-picker and small minded I worked my way into the position where I was the final check on the accuracy of the logic of the hardware micro programmes built into LEO III. Very necessary, as it turned out.

I was chief commissioning engineer on LEO III / 1. During this time I applied to Loughborough College to work on ergonomics. I was reliably (?) informed that Lyons, who were supporting work at the college, let it be known that they would consider it an un-friendly act if I was accepted.

I spent a year from Spring 1963 'having' III / 1 every afternoon at Hartree House to iron out the bugs (particularly on the magnetic tape system with FR 300 decks).



Steve Farrow commissioning LEO III/1 at Minerva Road

I commissioned Research's experimental prototype LEO IV. Only to see it go nowhere because of the in-fighting between LEO and English Electric as to whose machine should be next. Eventually, so much time was lost that the design of RCA's Spectra 70 had to be surreptitiously obtained before they realised what was happening.

A soft-ware colleague and I (hardware) spent a few days at the Patent Office reading all the IBM patents to see which, if any LEO were infringing. We were told that IBM had requested that it be done. As I remember - perhaps four hardware patents were relevant. But they were all 'state of the art' as I saw it.

I never worked on LEO I. But I heard tales of how it was used to calculate secret things (Blue Streak rocket) and how it was decreed that before the engineers could look at the store contents in the (frequent) event of a computer failure - the store had to be cleared. As failures were often idiosyncratic and pattern sensitive that made life very difficult. T.R.Thompson did not have security clearance. So when the engineers wanted to keep him away from 'uselessly ' interfering and confusing with their fault finding they used to put up the security barrier.

Steve Farrow

Following a science degree from Imperial College and National Service in the RAF, Steve joined LEO in 1957 as a commissioning engineer. He remained in this role working with various companies until he left in 1964/5 for a long career in computing at the Medical Research Council working on cervical smear screening and chromosome analysis. Now 91, he looks back at his time with LEO as a very important stage in his life. If you remember Steve and would like to contact him, please let us know. Steve has 20 descendants – with another expected soon!

My time at LEO programming a LEOII

John Parker

I was recruited from Bristol University where I was studying Chemistry, graduating in 1960. I was interviewed by John Smythson – in the days when firms came round to universities looking for graduates to employ. An aptitude test was arranged and, knowing that LEO was based on the Cambridge University EDSAC, I borrowed a book from a library and read up on it including how it was

programmed. This helped my performance in the aptitude test and I was offered a job at £700 per annum.

I was based in London in Hartree House which occupied the top floor of William Whiteley's department store in



Queensway, Bayswater. This was where the LEO II/I Service Bureau was located.

The programming course started by explaining how various parts of the computer worked. Of particular interest was the 'Mercury Delay Line Store'. Individual binary digits were held as $\frac{1}{4}$ micro second pulses of sound travelling along mercury held in a 15" steel tube. Each pulse took 320 micro seconds to travel down a tube and there were a total of 64 tubes giving a total storage of 2048 20 bit numbers. A system of 'phasing' (4 phases) enabled there to be a longer (2 micro second) gap between the pulses making up a particular number.

The logical way in which the Arithmetic Unit and Coordinator worked was also covered in some detail. The computer also had annexes (buffers) located between it and its peripherals that functioned to reduce delays that would otherwise be caused by the slow peripherals. The Powers Samastronic printer (standing about 7 feet high) was possibly the world's first dot matrix printer and printed at 300 lines per minute. The layout and control of the printer was achieved by means of a quite complex plug board system which routed data from the Annex.

John Parker

Shortly after starting my job at Wills, I got married and bought a house with a large garage so I could continue my hobby of keeping old cars on the road. I cycled to work most days and rented an allotment. We moved once within Bristol to a larger house with a large garden so I no longer needed an allotment in which to pursue my other hobby of growing things to eat.

The job with Wills turned out to be my second and last job ever, taking the early retirement offered at the age of 50 and taking a trip to Italy and back on the Orient Express (see photo) to celebrate. Our two children, Gary & Judy have left home long ago but my wife Wendy and I, now both 84, continue to live in our large house.

Most of my work was for jobs to be run on the bureau machine – though I do not remember any specific job. In due course I rose to the rank of senior programmer.

I did get sent to Stewarts & Lloyds (steel makers in Corby with LEO II/3) to sort out a problem with a simple program which printed details of program modifications. The problem was that the thousand digit in the listings was always one too high and being unable to determine the cause, they solved it by modifying the program to subtract one in the appropriate circumstance! I also worked on a rather complicated Multiple Regression Analysis program which attempted to correlate variables related to the properties and constituents of steels. LEO was advanced in that it allowed one to work with floating point numbers, but I fear I was not particularly successful and left before the program was got to work correctly!

I moved on in October 1963 (aged 25) to a job with WD and HO Wills who had bought their LEOII/2 for Sales Invoicing work, though I was put on to programming their new computer – an English Electric KDF9.

Reminiscences of my LEO summer job

Tony Ayres

When I was young it was quite common for firms to take on temporary staff while their regular staff were on their summer holidays. It wasn't a bit like the current system of 'work experience' – we were expected to do a serious job of work to benefit the company. When I became old enough, I started to use part of my summer holidays for this type of activity, and my first placement was with the book publisher Corgi Books, producing invoices.

The next year, I transferred to LEO, and I did summer working in the factory at Acton while I was a sixth former and an undergraduate between about 1961 and 1965. In my first year I was punching Hollerith cards with data about fault analysis. In my second year I was turning circuit diagrams into PCB layouts, and I can't remember exactly what I was doing the following year, except that I had been moved from sitting at a desk to working at a bench in the development lab. I remember the friendship and camaraderie shown to a temporary student in both LEO workplaces with great pleasure.

Then, in 1964 an extraordinary sequence of events began, which serves to illustrate how the pace of industrial life has accelerated since those days. On the day that I joined in

that year, another guy (whose name I can't remember, so let's call him Dave) also joined. Dave wasn't in the middle of a university course, and had joined from some other firm. At the time, integrated circuits and chips hadn't quite arrived. The computer we were working on was to consist almost entirely of transistor- and resistor-based three-input NAND gates on individual circuit boards about 5 cm square. These mini-boards were then to be mounted on standard circuit boards with appropriate wiring before being slid into racks.

Dave and I were tasked with devising a set-up to test the individual gates before they were mounted on the standard circuit boards. We came up with a solution that we thought quite ingenious. I cannot now remember the details, but it involved an oscillator that produced a sequence of 1s and 0s of different amplitudes which, when presented to a NAND gate would produce a single voltage output whose value would vary according as to which component in the



circuit (if any) was faulty. Depending on the value of this voltage a particular lamp would light up. All the tester had to do was to plug the unit in, press the button, and one of the lights would light up to say OK or to diagnose the faulty component.

We lashed the circuit up and tinkered with it until it worked. By that time my holiday had ended and I had to return to university. At the same time Dave's secondment had ended, so we both ended up leaving at the same time. I daresay we produced some rudimentary documentation, but, at any rate, we certainly left a working prototype on the bench and we explained and demonstrated it all to our line managers.

Fast forward a year, when I returned for my annual summer placement. I was met with long faces. "You remember that device you designed last year?" they said. I nodded. "We're afraid it doesn't work. You'd better find out why". I was a bit taken aback, given that we were now a year down the line – the computer industry was clearly not fast-moving at that stage! – but I did as I was bidden and looked at the machine the firm had made in the meantime. There it was, beautifully engineered in a shiny green hammerite cabinet, with loads of wires neatly bundled and running round the inside corners. I instantly realised that, whereas our unsightly tangle

of wires were all well away from each other, the neat bundles were going to introduce capacitative effects that would play havoc with our carefully concocted test waveform. "Ah," I said, "you will need to remove the cable ties and squiggle the wires up". They were appalled – "that would be totally against company policy," they said. "You'd better design us an alternative." !!!!!!!

I did as I was told and produced a 'sledgehammer' device that had a rotating multi-pole switch, driven by an electric motor, which presented the eight possible combinations of 1s and 0s to the inputs and checked the outputs. Very inelegant, but bombproof. I have no idea whether it was ever built, and chips were by then definitely 'in' so I imagine that the firm's direction of travel had by then altered course.

Thinking about it, I can only assume that the whole enterprise was an elaborate (and expensive) test to determine whether it would be worth offering me a job when I finished my studies. They never did, so I presume that I failed. But I did enjoy those summer holiday jobs – and, of course, I acquired a much-treasured copy of Finangle's Laws! (Finangle it was, you will recall, who observed that the most important leg of any three-legged stool is the one that is missing.)

Tony Ayres

Tony Ayres spent his working life as a schoolmaster, finishing up as Head of Physics and then Head of Science at Winchester College. In retirement he is a consultant with an international examining board, and in his spare time he sings, rings church bells, walks the fells, and is a keen freemason. He remembers his student days working with LEO in the summer holidays with great affection.

Notes on a varied LEO career – programming for a car firm, for furs, tyres, water and drains, immunisations and the Tote!

Roger Belbin

I was employed by Standard-Triumph as a LEO II programmer writing machine code in August 1959 after an aptitude test near Cadby Hall. The course started at Elms House and moved to Hartree House, where we lunched in Whiteley's, as there was no canteen at that time.

The Standard computer was not delivered until July 1960 and the first system for stock control was not specified until late 1959. So I had 2 weeks learning to operate on II/1 with Derek Jolly, necessary as we had to take over the machine for testing. While there I also saw LEO I, which was still providing a bureau service. Then I wrote programs for LEO in the team led by Helen Jackson, writing a system for the Hudson's Bay Co. fur auctions. Eventually I worked on the Standard system with testing at Minerva Road on our LEO until it was eventually installed in Coventry.

During this period I played in the LEO squash team in the Lyons inter-department tournament on courts in a block of flats at Shepherd's Bush. I think we got through just one round and then lost!

After 2 years I moved on to be a senior programmer at Fort Dunlop working for Peter Hermon on payroll systems. He was very thorough in managing and personally checking proposals for new applications, specifications, etc. I wrote a proposal for a share register system and he read it and immediately raised

relevant queries. I was also the person responsible for the Master Program with another programmer having the Intercode assembler. I did once report a bug and correction to LEO and a return call gave me my correction back as an official update.

In December 1963 I became chief programmer for the city of Coventry and we used CLEO for our systems, starting with rates. I think we were among the first to use CLEO for all our applications. The IBM kit replaced was punched card machines, programmed by plugboards, not a 1401, as noted by another contributor. We could get the rates bills out weeks quicker than before and save the city money by improving the cash flow.

In late 1963 the Computer Manager left and I was promoted to take his place. I used to go to LEO User Group meetings at other sites and at Kidsgrove. We developed various local government applications including a simulation of the water supply and drainage networks, where I learnt that the system could cope with a once in a hundred year rainstorm, although the statistics must have changed in recent years. We developed a system for scheduling child immunisations, which we shared with other boroughs using LEO. For this we used the multi-radix facility to calculate date of the next appointment.



In 1969 I joined ICL and had only one further contact with a LEO user. I investigated as a consultant the workload at Tote Investors and why their new computer wasn't as much faster than the LEO III as promised. It turned out the sales team had used instruction speeds for comparison and not understood about LEO micro-programming boards.

Retrospectively what impressed me about LEO was the stand-

ards and procedures taught or absorbed alongside the programming courses. The documentation, checking and testing methods seemed automatic but, as I found out later, were not necessarily found at other computer users. Also during my first few months actually working for LEO everyone assisted in getting the programs developed and, I suppose, there was a common feeling of being involved in something new and even exciting.

Roger Belbin

I lived in several parts of Greater London as a child and was educated at Latymer Upper School and, after National Service in the RAF, Jesus College, Cambridge (Modern Languages). Then I worked in computers as noted in my article and retired to the Lake District in 1995. My wife came from North Lancashire. We married in 1960 and I have two children and two grandsons but none of them have IT connections.

I got the job. Thank you, Peter Bird!

Mike Cowlard

I left school with 'O' level Maths and English. Work called and I became a Civil Servant working near Vauxhall Bridge. My role was as part of a team that took regional information about civil engineering works being undertaken all over the UK and produced national reports on a weekly/monthly basis using an adding machine. I met some great guys my age who became firm friends and some wise long-term Civil servants one of whom shaped my future.

I was what was called a clerical assistant – the lowest grade. The manager of the team, Mr. Brown, was HEO several grades above me. He was a great boss - firm but fair.

The team I worked in received reports of monies spent on engineering works throughout the UK. We took those reports and produced a weekly and then monthly report. After a while doing the reports it seemed to me that we could perhaps create the reports slightly more efficiently. My pattern matching skills that I didn't know I had were about to open a whole new world.

Mr. Brown spotted my skills and fought to have me promoted to Clerical Officer. I was too young according to the Civil Service rules but I was promoted.

Soon after he took me aside and said I should look for a career in Computers. I had no idea what he was talking about but he explained and encouraged me to think about it, which would

mean leaving the civil service. Mr. Rogers found adverts for companies who were advertising for computer staff which would require taking an aptitude test – so WE applied to two companies and to my surprise I came second best in one and top in the other but I wasn't hired.

I then went for a test at J Lyons and had the same test presented to me that I had taken before and I got 100% in record time. Peter Bird the Manager interviewed me and was amazed at how I got 100% and finished so quickly? I told him the truth about having taken the test before and then we had a general chat and he asked me what newspaper I read. I answered that I didn't really read newspapers but my dad had the Mirror. He then said were you offered a job before to which I replied no and didn't know why. He said it was possible that it was because you didn't have a degree ! And read the wrong newspaper!!

I got the job !

(That was in 1968 working on LEO III - I am now 75 with a 52 year plus career in IT.)



Mike on his wedding day in 1971. It comes from an article in a local newspaper, which describes Mike as 'a computer operator from London'.

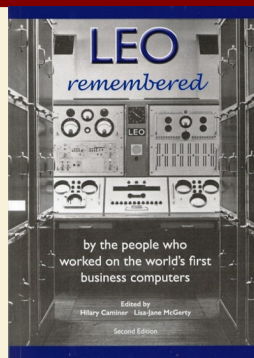
Mike Cowlard

Following my time with LEO, I worked for and with major companies primarily as a consultant. I have worked with top companies internationally, delivering a number of 'firsts'. My best first was to put a project 'live' from the luggage carousel in Barbados and when I got back the project director called me over and congratulated me not because the project successfully went live but I had broken the highest phone bill ever in Orange !! I also developed an Alternative Fantasy Football Game which was the best selling Board and Computer game sold in Virgin Christmas 1998.

LEO Rememebered

As reported in our last newsletter, we launched the new edition of this book at the end of September 2022. We have had pretty good sales since then, both online from the Society and through the CCH and TNMoC museum shops. We were particularly pleased to have received some excellent reviews of the book from some eminent journals – including articles from Mark Greenia, from Professors Davison and Bob Galliers in the 'Information Management Journal', items by Martin Cooper in 'IT Now', in the 'Events and Sightings' column of the 'Annals of the History of Computing', a mention in Resurrection, the CCS journal, a review in Australia from Ann Moffatt- and promises of others in the pipeline!

If by any chance you have not yet acquired your own copy, please do buy one – we are sure you will enjoy it and your purchase supports the Society's work.



How to buy copies of 'LEO remembered'

The book costs £8 – and for a single copy to a UK address, the cost is £10.50 to include postage and packing.

We can quote for multiple copies and for postage to overseas addresses. Please just send a note to LEOremembered@leo-computers.org.uk and we will take it from there!

This is also a good opportunity to let you know that we also have some other books available to buy:

- Peter Bird 'LEO: The First Business Computer.' Book costs £10. We can quote for postage.
- Georgina Ferry 'A computer called LEO' Book costs £8. We can quote for postage.

Again, just contact the email address above for more details.

Could you help the Society by volunteering some of your skills and time?



As you know, the Society continues to work hard to preserve LEO's heritage and the trustees and committee now urgently need more volunteers to help. We are very grateful to all of you who have volunteered in the past and would like to increase the size of the team!

First of all, we need to point out that nearly all the tasks listed below can be carried out in the safety and convenience of your own home, thanks to the wonders of e-communication! Secondly, all the tasks will be carefully explained by an experienced member of our existing team and we will offer you 'training'. We can't specify exactly how much time the tasks would take as this is flexible – but the important thing is to keep momentum going and to reach suggested targets.

So, what are these tasks – and what skills might you need? Clearly the most vital quality is an interest in LEO's heritage which your membership suggests that you already have!

1. Becoming an Oral History interviewer or editor.
2. Helping with LEOpedia listing work.
3. Helping with our membership database and our website.
4. Helping with Social Media postings.
5. Helping us in our educational work to ensure young people hear about LEO in their schools and colleges.

If you think you could contribute to any of these roles or would like to discuss them or any other areas in which you think you could help, please contact: Peter.byford@leo-computers.org.uk in the first instance.



LEO COMPUTERS SOCIETY

Registered charity: 1182253

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2023

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at LEO Computers Society

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