

The back of a half adder – from the Virtual LEO I – not a photo, but a reconstruction.

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Message from our Chairman - Peter Byford

Welcome to the November edition of **LEO Matters**, put together as usual by our excellent editor and publisher Hilary Caminer and Bernard Behr. I should first like to thank the contributors for their articles.

Thank you to all of you who attended or sent in proxy votes for our recent online AGM. I can report that both the annual report and the accounts were approved and that, following some re-elections, we continue to have our same nine trustees. We welcome Eric Dickens as a new committee member and send our warm thanks to Mike Tyzack who has now resigned from his position as Oral History co-ordinator. Mike will continue to keep a vigilant eye on our LEO plaque in Lyons Walk, near the site of Cadby Hall.

For the past 3 or 4 years we have been concentrating most of our efforts on the National Lottery Heritage Fund project working in partnership with Lisa McGerty and the Centre for Computing History, Cambridge. We really have to thank Lisa for putting together our successful bid and for managing the project. The first article in this edition of LEO Matters is by Lisa summarising what the project, now completed, has achieved.

I attended the BCS Hertfordshire Branch Fair in September along with Chris and Richard Monk and Philip Cleary. The Monks brought the newly released Virtual LEO I to show to visitors – I give an account of the event.

The Society is always really pleased to welcome new members and - starting from this issue - we will publish a list of the names of our newcomers.

Of course, we also have to report the sad news of members

who have passed on recently – all will be missed. We feature the careers of two prominent LEO figures – Doug Comish who is remembered by colleague Rodney Hornstein and Mike Hancock of Shell Mex and BP who is remembered by his daughter Nicky Moorey. Another recent

loss is Roy Farrant who worked in operations at Hartree House on LEO III/I. We do not yet have a full obituary for Roy, but I would like to note that it was he who organised the first two full LEO reunions, after which he “passed the baton” to me – the rest is history.

The next article is by Dr Elisabetta Mori, who has now been awarded her Middlesex University PhD based on researches into LEO. Elisabetta, as many of you will know, was supported by the David Tresman Caminer Scholarship generously funded by the Association of Information Technology trust. All of us at the Society are truly delighted with Elisabetta’s achievement and pleaded that she continues to help the Society in making LEO’s story better known.

Our final article is a reminiscence from Bob Craven in Sydney. Bob worked on LEO III at Tubemakers – a firm associated with Stewarts and Lloyds in the UK. It is always good to have contributions from members around the world. If Bob’s piece inspires you to write up your memories of time with LEO, do please get in touch.



Peter speaking at the Celebration event at CCH

Finally, an important message about our recently-launched survey: as Trustees and committee members, we want to hear your views on our future activities. For example, we had to pause our reunions during the Covid pandemic, and now we want to understand whether the time is ripe to re-launch them – or whether there are other activities you might prefer. The survey is easy to complete and may be found here:

[Members Survey](#)

Thank you to those who have already responded – but we really do want to hear from as many members as possible. We will report back to you on the results of the survey.

I hope you enjoy reading this edition of LEO Matters. I look forward to seeing more of you at our regular Zoom forums.

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!'



Swiss Rolls, Tea & the Electronic Office

Lisa McGerty



As most of you will know, since 2018 the Society has been working in partnership with the Centre for Computing History (CCH) on our joint lottery-funded Swiss Rolls, Tea & the Electronic Office project. In short, the project was conceived to provide a long term, centralised home for the Society's collection of LEO documentation and artefacts and to make that collection accessible to the general public. The formal project ended in June 2023, so this article takes a look at many of its achievements.

CCH now looks after and keeps safe many thousands of individual items on the Society's behalf. The museum took the collection in on loan as it relates to the early development of computers in Britain, so it is historically important and internationally significant, and the project we built around it has allowed us to bring the human and social stories contained within it to the fore. We could do this largely because of the Society's work over the years to keep memories of LEO alive and it is also due to the fact that the staff of J. Lyons & Co. and LEO Computers were meticulous record keepers, recording not just the decisions that were made at every step of their journeys but also the reasons for, and the consequences of, those decisions, and even the wider context in which they were made. It really is a unique collection of historical artefacts.

For CCH, the majority of our other collections and our displays relate to the 1960s onwards, but the LEO material offers our visitors chronologically earlier perspectives, and importantly for a museum in Cambridge, it sits alongside our EDSAC material. While as a museum CCH focuses particularly on personal computing, the LEO archive, resources and displays lend a unique insight into how personal computing could come about; without the early successes of companies like Lyons and LEO Computers Ltd, the subsequent developments just wouldn't have happened.

The Collection

Over the course of the project, there were more than 50 separate deposits of LEO material made to CCH by Society

members, some consisting of a single document or photograph, but the majority were of multiple documents – in some cases boxes of them - and there were some objects too, such as small pieces of various LEOs, tape reels and logic boards. The project archivists, Luke Thorne and Jude Brimmer, along with some volunteers catalogued, digitised and in some cases transcribed these, making more than 1,600 separate items available online to all, via the CCH website. These incorporate almost 13,000 scanned pages of documentation in total. On our website these sit alongside the CCH version of LEOpedia, extending that fantastic resource in a wholly searchable and search engine optimised way. (Whereas LEOpedia lists references to secondary sources of information on LEO in books, journals and in the media etc., the archive catalogue lists and makes available the primary material, the Society's own collection of LEO artefacts.)

The digitised LEO collection and the CCH version of LEOpedia can be found at: [LEOPEDIA](#). Please do take a look.

Finding aids are also available and are being extended all the time so that the collection can be searched easily by people who know nothing about LEO, for example by subject – see:

[Leo Computer Collection](#).

Visitors to our website can also search our whole site for LEO material by using the search tool available at the top of every page on our site. Feedback on it is always welcome too; feel free to email leo@computinghistory.org.uk with any comments.

Some of the highlights of the archive include:

Reports from visits Lyons staff made to Cambridge at the very beginning of the Lyons-Cambridge University partnership - during the development of EDSAC;

Photographs of the construction of LEO I, particularly those that point to the experimental nature of the early machine;

The notebooks of Ernest Lenaerts recording the development of LEO I – these are currently in the process of being transcribed and digitised from his own handwritten entries;

Documents that make clear how widely even LEO I was used by organisations other than Lyons;

Memo from TRT reporting on the first fully successful and complete run of the world's first commercial computer job, Lyons Bakery Valuations, which was completed at 2:35pm on 30th November 1951;

Extremely rare BBC film footage of LEO I running the Lyons payroll as well as other snippets of film;

John Simmons' 'masterplan' for LEO IIs to serve all elements of the Lyons business;

Photographs and documentation of visits to see various LEO machines by notable and important people such as Prince Philip, Edward Heath and the then Princess Elizabeth;

Over 60 oral history interviews and more than 200 written reminiscences collected by the Society during the project and over the years.

LEO Documentary Film

As you know, the project funding allowed us to create and make freely available a short documentary of the LEO story so we can reach as many people as possible with it. The film is available on YouTube and can be found via the CCH website ([LEO Documentary Film](#)). It was launched to much acclaim in 2021 to coincide with the 70th anniversary of LEO I's first fully successful complete program run and to date it has been viewed more than 12,000 times! It is also pointed out to all school groups who visit CCH.

Thanks to Boffin Media, who produced the film for us, it also won the Association for British Science Writers (ABSW) Video of the Year Award in July 2022. The judges commented that the film was "an absorbing and textured piece with excellent and evocative archive footage". I couldn't agree more!

Virtual LEO I

The most innovative part of the project was our digital 'rebuild' of LEO I. In May 2023, a PC-based version of this was installed in the LEO display at CCH and watching visitors of all kinds use it since then has been a real joy for me. Developed by Chris and Richard Monk, the virtual LEO is an historically accurate digital representation of the first LEO machine. Unlike a physical rebuild, it also points to the social context of post-war London and the Lyons company context within which LEO I was constructed and it links directly to the LEO archive. These were key aims for this part of the project.

More recently, the Virtual LEO has also been released for access via an iPad from anywhere in the world, as we recognise that not everyone can travel to Cambridge to use the PC version installed in the museum. For further details on what it is and how to download it, visit our [LEO I website](#). An Android version of the app is currently in development, and we hope to release it soon.

Using the Virtual LEO I (either version), it is possible to 'wander around' the LEO room in Cadby Hall. You can see the



Using the Virtual LEO on an iPad

racks of valves that made up its racks, hear all the peripherals and you can even look out of the window at the smog. Within the app, there are 35 interactive objects that you can 'pick up' and explore, such as a half adder and a mercury delay line, there are 44 documents, 6 film snippets, and many photos from the archive, accompanied by over 40,000 words of explanatory text (divided into 6 themes) to accompany it all. It has been purposely designed in layers so that it is perfectly possible just to walk around the room and see and hear what LEO I was like, but if you're interested in the details then they are there waiting for you to enjoy.

Again, your feedback on the app would be gladly received.

As with the film, the unique Virtual LEO I has also been entered for an Award, the UK IT Industry Awards Charity Project of the Year. Chris Monk and I made a presentation to the judging panel. Just before publication, we discovered that our project gained Highly Commended in our class. Please turn to [page 10](#) for an in depth account of the award Ceremony.

The Virtual LEO I is also the centrepiece of the project's learning resources, which are aimed at people across the age spectrum. In all, the app works well for older children and adults, there is a storybook for younger children (see <https://heyzine.com/flip-book/e58bb69566.html> for an online copy – just tap the edge of the pages to turn them) and a series of lesson plans for various key stages for use in schools. Every tour of CCH we give now incorporates LEO, with many of our guides starting the tour at the Virtual LEO I



Schoolchildren with LEO display at CCH*

exhibit. And we are currently finishing off a series of 'tours' or 'routes' through the virtual LEO I, to help people who feel a bit daunted by it and to provide themed 'walk-throughs', and these will be made available in the museum and on <https://www.leo1.co.uk/> in due course.

Events

And finally, over the course of the project there have been many, many face-to-face and online events - from LEO - themed weekends at the museum to zoom forums, a YouTube premiere, talks to community groups and a final celebratory event held at CCH in June this year, as Hilary reported in the last edition of LEO Matters. This final event served several purposes; it was a fitting celebration of the project's outputs and it also gave us an opportunity to evaluate the project to some degree. Most importantly, it gave us more ideas on how we could continue to exploit the project's outputs as we move forward now the project has ended.

As time goes on we will disseminate all the project outputs further and because, gratifyingly, they all seem to cross-fertilise each other the LEO story will gain even more momentum. For example, many community talks now refer to the film and in time, such talks can also encourage people to try the Virtual LEO I on their tablet devices. When they do that, they are

encouraged to visit the archive and so it goes on... And with each new interaction with LEO, the Society and the museum gain visibility too.

I hope you've enjoyed all the things we've done to promote the LEO story. To offer feedback on any or all of it, please don't hesitate to email leo@computinghistory.org.uk.

Lisa McGerty

Dr Lisa McGerty was one of the founding trustees of the Centre for Computing History, Cambridge and is currently its CEO. She has an academic interest in the social history of computing and a personal passion for LEO computers. She curated an exhibition on LEO in November 2017, and then led work on our successful lottery-funded LEO heritage project at CCH from 2018-2023, overseeing work on the archive and the stories it holds.

Lisa also co-edited our new edition of 'LEO remembered.'

Showing off our new Virtual LEO I at the BCS Hertfordshire Autumn Fair.

Hertfordshire University, Saturday, 23rd September 2023

A report by Peter Byford

The fair was advertised as showing vintage computers of the 60s, 70s and 90s. In practice, though, it included a drone and our virtual display of LEO I. We explained that our "calculator/computer" was actually using 1940s and 1950s technology although the virtual technology showing it off was somewhat more recent.

The team showing the LEO I were Chris and Richard Monk, its creators, and Peter Byford and Philip Cleary, both trustees of the Society.

We had a big screen which we linked an iPad to and three other iPads all showing the virtual LEO I. We had quite a few visitors and as usual it was only the older ones who knew about Lyons, though some of the visitors knew about LEO. We showed them how to use the software and some had iPads at home and will run the LEO I app themselves. Our visitors seemed very interested in the virtual LEO I and in fact in the whole Lyons and LEO story.

We had leaflets on the Virtual LEO I which included a briefing on the LEO story. Also we had leaflets on the LEO Society and CCH.

We had visitors from all ages from 90 to around 10 years old.



We have 5 people complete the "I want to join the Society" form, although one of those was merely trying out the pen I gave him – the c10 year old.

We had visitors from about 9.30am until the close at 2pm. I also sold 3 of the books (one of each) to one of our visitors.

Thank you Richard for supplying the photos.



A warm welcome to the following new members who have joined the Society over the past year

If you would like to make contact with any of these new members – or indeed any member - please email us at Secretary@leo-computers.org.uk and we will try to arrange the introduction! Many apologies if we have omitted your name in error.

- ◆ Martin Alcock, Programmer on LEO III/2 at Smith and Nephew
- ◆ Afraz Bahar, Cybersecurity analyst
- ◆ Aleksandr Barmin, Academic
- ◆ Brian Baverstock, Engineer on LEO 326
- ◆ Roger Belbin, LEO customer and programmer at Standard Triumph
- ◆ Jim Burns, LEO III
- ◆ Colin Browell, Academic
- ◆ John Cooper, LEO customer, shift leader at George House, Kensington

- ◆ Ann Edet (nee Benoy) Programmer, LEO 326 at NDPS, Charles House
- ◆ Jeremy Evans, Programmer on LEO III and LEO customer
- ◆ Derek Gardiner, LEO career
- ◆ Georgina Garfit (nee Joseph), daughter of a Lyons director
- ◆ Chris Gray, LEO II, Charles House
- ◆ John Kappler, LEO customer
- ◆ Jim Keating, Operator on LEO III/1
- ◆ Hamish Mackenzie, Operator on LEO III/32 at Colvilles Steelworks, Motherwell
- ◆ Roger Maynard, Maintenance engineer, LEO III/23 and III/27
- ◆ Ann Moffatt, Academic
- ◆ Nick Moffitt, Interest in early computer history
- ◆ Jeremy Packman, Academic
- ◆ Allen Patrick, LEO III/9 and III/10
- ◆ Laurie Ridler, Operator on LEO 326 at NDPS, Charles House
- ◆ Robert Roche
- ◆ Adam Sampson, Academic
- ◆ David Swinscoe, LEO III/42
- ◆ Luke Thorne, LEO archivist at CCH for our lottery-funded project
- ◆ Max Trist, Operator and shift-leader LEO III/15 and III/49 Shell Australia
- ◆ Bill Ward, Programmer at Hartree House

Doug Comish

Early Days Marketeer of Business Computing.

An Obituary by Rodney Hornstein

My one-time boss and long-time friend, Douglas (Doug) Comish who has died aged 97, was one of that select group of people in LEO who were the first in the world to pioneer the application of computers to business.

He was a Liverpudlian, ruddy of complexion with a pugnacious, direct in-your-face manner. Looking somewhat like a prize fighter, this concealed a powerful intellect which many people learnt to their cost when negotiating with him.

Born in Liverpool in March 1926 to John, a salesman and Mona Isabel, a housewife and of Isle of Man heritage, he read Maths at Kings College Cambridge followed by National Service in the army where he finished with the rank of Captain.

He was an active sportsman playing soccer for Cambridge University and he was also a keen cricketer. In later years, he was an ardent enthusiast for playing golf.

On completing his National Service, he joined the J Lyons company in 1949 as a management trainee. He rapidly rose to management rank in the Lyons Work Office as cost accountant and from there to Statistics Office managing a



A 'pride' of LEO pioneers, Summer 2005. - David Tresman Caminers's 90th birthday party. L to R Doug Comish, John Aeberhard, Peter Hermon, Ralph Land, Frank Land, DTC (seated). Rodney Hornstein and John Aris

team responsible for the cost accounts of a group of Lyons departments.

Doug had made a most fortuitous choice in the company he had joined. J Lyons & Co was famous for its over 150 tearooms, Corner House restaurants, hotels, tea plantations, laboratories and bakeries all run from Cadby Hall in West London. The Board of Lyons recognised that the ever-growing army of clerks helping to administer the business was costly and potentially an unsustainable way of running the business.

Furthermore, the office equipment manufacturers at the time did not have any viable solution for Lyons.

So, with the support of academics at Cambridge who had developed an electronic computer, for technical computations called EDSAC, they put together a team to develop what was to become LEO (Lyons Electronic Office). LEO I was to become the first electronic computer in the world to perform large complex business applications. On the 15th February 1951 H.R.H Princess Elizabeth visited the Lyons Head Office to see the LEO I running through its initial paces.

Such was the interest being shown by other companies in what Lyons was doing that the Board decided to set up a subsidiary, Leo Computers Ltd, to build, market and sell electronic computers. Doug was selected to join the team at Leo Computers as a programmer in 1956. Doug told me he was a somewhat reluctant recruit as at the time he thought there was not much future for him in computers.

By the time I joined LEO in October '62 Doug had risen to be one of the key senior managers reporting to David Caminer actively marketing the LEO 3. He was a tough, tenacious combatant. Once he accepted you as capable member of his team you could be sure of his absolute support. If a member of his team messed up he would make his displeasure clearly known: to the outside world he would take full responsibility and defend his people from criticism. He demanded very high standards and his maxim was to never go into a meeting without being fully briefed and knowing at least as much as the other participants.

Doug seldom accepted defeat and a wonderful example was a case where we had appeared to lose a customer. I had the

misfortune to have to tell him that Coventry Corporation, a LEO user had opted to go IBM. After a detailed briefing he insisted that he and I visit the treasurer of Coventry. At the meeting he proceeded to ask a number of detailed questions as to why Coventry had come to their conclusion. I was amazed to see that by the end of a lengthy meeting he had managed to cast sufficient doubts in the treasurer's mind that he agreed to reconsider. We went on to win the contract.

He battled his way through many company mergers, notably that with English Electric which was essentially a takeover of LEO. Intensely loyal to the team of people he had built, he ensured that they were justly dealt with in the turbulent times that company mergers and takeovers create.

Ultimately these mergers ended in 1968 with the creation of the sole British computer manufacturer ICL, which was the combination of seven previously independent British computer companies. Initially, after the merger with ICL, Doug continued in the sales side of the Company. His drive, versatility and intellectual capacity were rapidly appreciated and he undertook several senior roles in other divisions of the Company including ensuring the completion and delivery of the vital New Range of computers, the 2900 series.

Geoff Cross, who became the CEO of ICL in the early 1970s, recognised Doug's talents and appointed him to project manage the successful acquisition and integration into ICL of The Singer Business Machine subsidiary of the Singer Company.

In his final years in the Company Doug returned to the Sales and Marketing Division. He did stints as Marketing Director, International Sales Director and finally undertook a major trouble shooting assignment before retiring from ICL in 1986.

He married Mary (nee Morgan) in 1971 who died in 2004. He is survived by his partner Sylvia (Morris), his stepchildren Martin, Carol, and Michael from his former wife Mary, seven grandchildren and four great-grandchildren.

John Douglas (Doug) Comish,
b. (23rd, March) 1926, d. (12th, July 2023)



Rodney Hornstein

Rodney joined LEO Computers upon finishing a Maths. degree at UCL in October 1962, having programmed for IBM in a gap year before going to Uni. Stayed with LEO and its successors resigning as Marketing Director from ICL in 1979. Finally ended up as a business angel investing in and chairing young software companies.



OBITUARY

MICHAEL HANCOCK

20.10.1929 – 19.2.2023

By his daughter Nicky Moorey

Mike studied Mathematics at Corpus Christi Cambridge before joining British Tabulating Machine Company in 1952 where he first developed his interest in computers. Always a modest man he said "he seemed to absorb the roles of analyst, programmer and consultant by osmosis without undue effort".

In 1957 he joined Shellmex and BP and was subsequently appointed Chief Programmer and charged with designing a sales accounting system for the company. Two LEO III computers were commissioned on his recommendation. He said that "the small Lyons company outwitted IBM and ICL by having the right machine at the time and some very able and persuasive people."

In partnership with LEO's John Aris, the first LEO III became operational in Hemel Hempstead in 1963 followed by a second one. They were later replaced with two LEO 326s when the first LEO's were assigned to a second computer centre in Wythenshawe. Having an ACMA qualification, he also took charge of the management accounting for the company. He retired in 1965.

Mike lived in Little Gaddesden near Berkhamsted for the past 30 years. He was happily married to Jill for 65 years and has two children Nicola and Robin and four grandchildren.

Nicky Moorey

This obituary was written by Mike's daughter Nicky Moorey who lives in Bath. Nicky writes: To celebrate his 93rd birthday last October my brother and I took him back to Cambridge to visit his old college as well as the nearby computing museum. He was able to share his recollections of early computers like LEO and EDSAC and said he thought there might be a chapter in a book on LEO written by him – and sure enough there it was in the museum shop. This was typical of his modesty and his extraordinary memory. His family are so proud of all that he achieved and his generosity of spirit, gentle sense of humour, kind heart and huge intellect. He was a very dear man and is greatly missed..



My time with LEO

Elisabetta Mori

The first time I heard about the LEO Computers was on a Sunday in Pisa in October 2015. It was the last day of the History and Philosophy of Computing Conference (*HaPoC 2015*), talking to Giuseppe Primiero, who at the time was teaching history and philosophy of computing at Middlesex University London. I was really fascinated by the story of a British tea shop company that started manufacturing computers in the 1950s and by their impact in the world.

A few months later a *PhD at Middlesex University* to research the LEO Computers was advertised by Primiero. I still remember the excitement when I wrote the application that spring. I happened to be in the US, attending an ACM workshop, when I received the news that I would be interviewed for the PhD position a month later in early June. I remember preparing, looking at the LEO Computers Society website, listening to the "*sounds of LEO*"; avidly reading Georgina Ferry's book.

The interview was successful and after it everything moved quickly: I was going to move to London in late September. In my preparation for the PhD interview I had discovered that there was going to be a presentation about the LEO Computers at the *London Metropolitan Archives* on 22nd June 2016. On the day of the Brexit referendum I met for the first time many of my dearest members of the LEO Computers Society.

In September 2016 I moved to London and started my PhD. This was the beginning of a personal and professional journey that led me to visit and research many archives and museums across the UK, Italy, France and Germany, while receiving invaluable support from the LEO Computers Society. They helped me establish contacts with their members and I recorded a number of oral histories on their behalf as a volunteer in their oral history project.

During the years of my PhD I presented my research about LEO in many British and international venues: at the *Alan Turing Institute* in London; in France, at the University of Lille and at the Conservatoire National des Arts et Métiers - *CNAM* in Paris; in Czechia, at the 4th History and Philosophy of



Elisabetta, seated with her mother Anna Rosa Proczano on her graduation day with Dr Kelly Androutsopoulos, John Daines, Peter Byford and Hilary Caminer from the LEO Computers Society standing behind them.

Computing conference - *HaPoC 2017* in Brno; in Italy, at the *5th HaPoC* conference in Bergamo; in the United States, at the *10th SIGCIS* Conference in St. Louis, Missouri; in Australia, giving an online presentation to the *Labour History Group*, at the University of Sydney.

My PhD thesis *Pursuing Efficiency in Business: The Technological and Commercial Development of LEO Computers* [1] was successfully defended on 27th January 2022. It analyses the history of LEO, and the factors that led Lyons to enter the computer industry; it outlines the main events that led to the establishment and development of LEO Computers Limited, including the relationship with the EDSAC project, developed by Cambridge University; it presents the techniques devised by Lyons to ensure the dependability of LEO; and finally it reports on a failed attempted partnership in the European computer industry which involved LEO Computers, and the consequent merger with English Electric that led to the birth of ICL in 1968.

I published three peer-reviewed papers on LEO: one was co-authored with Rabia Arif and Giuseppe Primiero, with the title "Validity and Correctness Before the OS: the Case of LEO I and LEO II" [2]. Another, "Coping with the American Giants" was published in the *IEEE Annals of the History of Computing*

in 2019 [3]. I reconstructed the history of LEO in an article in Italian in 2018 [4].

I would like to thank the Association for Information Technology Trust for funding and making my PhD possible; Middlesex University and my supervisors: Professor Balbir Barn, at the Department of Computer Science at Middlesex University, London; and Professor Giuseppe Primiero, now at the Department of Philosophy, University of Milan.

Throughout the years of my PhD studies I received constant help from the LEO Computers Society, which promoted this research. In particular, I would like to thank Professor Frank Land, Hilary Caminer, and John Daines, whose ongoing support has been invaluable. Moreover, I would like to thank Peter Byford, Neville Lyons, the late Peter Bird and many LEO/ Lyons employees who helped me in my research. Several of them also agreed to be interviewed or sent me their memoirs. I would like to mention: Patrick Ashcroft, Bernard Behr, Patrick Blakes, Vincent Bodsworth, the late Mary Coombs, Eric Dickens, Ninian Eadie, Stan Evans, Jean Elliott Cox, Mike Fisher, Valerie Grose, Gloria Guy, Michael Guy, Allan Harvey, Brian and Colin Hobson, Mike Jackson, Kathleen Keen, Cyril Lanch, Ralph Land, Diane and John Lewis, Wendy Millgate, John Paschoud, Bob Stevenson, Mike Storey, Anthony Thorpe, Mike Tyzack and the late Tony Morgan, among many others.

Moreover, I would like to thank the *Centre for Computing History* in Cambridge, and in particular Lisa McGerty, their former archivist Jude Brimmer, Chris Monk and Jason Fitzpatrick. I would also like to thank Martin Campbell-Kelly, Pierre Mounier-Kuhn, the *Computer Conservation Society* (CCS), Liesbeth De Mol and the *PROGRAMme* project (funded by the French Agence Nationale de la Recherche (ANR-17-CE38- 0003-01), the *HaPoC* community and all the scholars, friends and colleagues who supported me during these years.

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Elisabetta Mori

Elisabetta Mori is a historian of computing. She holds a PhD in History and Philosophy of Computing, gained at Middlesex University, London and a MSc in Architecture, gained at the University of Florence. She is a professional oral history interviewer, with collaborations with the Archives of IT and the LEO Computers Society in the UK, the Free and Open Source Digital Archive FOSSDA in the US, and with the Museum of Computing Machinery of the University of Pisa in Italy. She has published history of computing articles in peer-reviewed journals such as the *IEEE Annals of the History of Computing*, and in magazines and newspapers such as *IEEE Spectrum* in the US, and the *Guardian* in the UK.



A brief LEO 111/8 history

Earlier this year, Billy Dalziel, Heritage Worker, gave us a talk about LEO II at Stewarts and Lloyds, the steelmakers, based in Corby. Here Bob Craven writes about his work on a different LEO, this time at Tubemakers in Sydney, a firm associated with Stewarts and Lloyds.

Bob Craven

I joined Tubemakers Pty. Ltd. based in Sydney in about 1968 as a programmer. I just loved Intercode and knew every word in volume 3. Alex Mackie was the manager and Alan Corbett his assistant. The head programmer was Graham Smith and second in charge was Graham Nicolls. Tubemakers ran a two shift machine 5 days a week, AWA supplied the operators and ran some of their share register stuff nightly. (More on AWA here <https://www.eoas.info/biogs/A000308b.htm>)

The LEO 111/8 ran the daily invoicing for Stewarts and Lloyds each night. Dispatch dockets were flown in by plane overnight from their distribution centres around Australia, punched onto paper tape throughout the day, errors corrected and the 3 hour invoicing run began about 5 -6 pm nightly.

End of month was a monster, 3 shifts per day until the run was finished. Some of the code was in Cleo and as a programmer we would make the corrections to the Intercode version in the interest of speed and apply fixes to the Cleo version when time permitted. I think the Cleo compiler had 13 overlays/passes - the Intercode compiler had only 8.

Another fun part of the job was running 6 payrolls on Tuesday and 2 more on Wednesday - those were stressful days

When the operations manager had a severe heart attack they gave me the job - I loved it but missed programming. The LEO 111/8 had 3 pages of memory, each 8k so we had to be very economical programming. It also had 5 tape decks with read errors occurring too frequently, often the quickest solution was

to open the drive door and apply a little extra pressure on the read head as a remake of the input tape was painful - always possible as we always had son, father and grandfather versions.

In the background was always the very reliable 06060 Leo supplied printing program. It only ever got busy during rewind of the tapes during those lengthy sorting runs.

I left Tubemakers around 1974 to join Unilever as Tubemakers were about to order new computing hardware and I did not see the hardware being part of my future.

Bob Craven

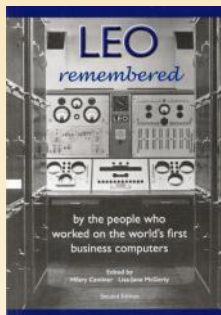
Bob worked on LEO at Tubemakers in Sydney from 1968 – 1975. He moved on to Unilever installing IBM remote access software CICS and then to TNT from 1982. Bob stayed in computers in a variety of settings. He finally ventured into Unix applications and had a lot of success with Pronto (<https://www.pronto.net/>) installations. He says he 'sort of' retired in 2005, but is still active in the pc/communications environment.

Available to buy direct from us

LEO remembered – by the people who worked on the world's first business computers

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

This edition is, as you probably know, a second, much enlarged version of the original 2016 book. This new version has well over 80 contributions from people who worked on LEO computers from the very earliest days – even before it went live- to those who worked on later machines across the UK and around the world. It is illustrated with contemporary photographs. The book has a foreword by Dame Stephanie Shirley CH, a good friend of the Society. We, as editors, are very excited about the book and feel that it really gives an excellent insight into what work on this pioneering computer was really like. The book received excellent reviews – and we hope that all our members will buy a copy!



- ❖ The book is a paperback, A5 size with 244 pages. The price is £8 per copy plus p and p – which will obviously depend on your address.

We also have two other LEO 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.

We can quote for multiple copies and for postage to overseas addresses. Please just send a note to and we will take it from there!

Finally, we still have available sturdy blue LEO bags – which make great gifts! The bags are very capacious and strong, made of hard-wearing eco-friendly jute, with comfortable cloth handles and a handy pocket on the side. Ideal for shopping, but also multi-purpose – e.g. for storing files and papers, craft materials etc.

Dimensions are: 38cm x 37cm x 13.5 (15" x 14.5" x 5") £6 each plus postage .

To buy any of these items, Please just send a note to LEOremembered@leo-computers.org.uk and we will take it from there!



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STOP PRESS

UK IT INDUSTRY AWARDS

Bernard Behr

After much encouragement to enter the UK IT Awards 2023 we were delighted but unsurprised that our project, Virtual LEO I, was selected as one of the seven finalists in the Charity Awards section. We already knew that the project was better than good, it was excellent.

The creation of Chris & Richard Monk, an exceedingly inventive and talented father and son team working with Lisa McGerty CEO of CCH (The Centre for Computing History) in Cambridge. The "App" of particular sophistication and polish was the result of many, many months of painstaking research, effort and vision. Members of the LEO Computers Society (LCS) helped by providing information and reviewing the project as it progressed. It should be mentioned that funding was provided by The National Lottery Heritage Fund as part of their overall grant to CCH and the Society for the LEO preservation project.

As finalists we were invited to attend the presentation ceremony at the Evolution Centre at Battersea Park on the evening of 8th November. The prospect of attending enthused all of us on the Committee and especially those deeply involved in the project. When the invitation finally arrived, we were amazed at the projected cost – between £6,000 and £10,000 for a table of 10, excluding the cost of transport and accommodation. Not only did we not have the funds, it was readily agreed by all that even if we did, it was not the way we would wish to spend that kind of money. It seemed both morally and ethically dubious, especially for a charity, and in addition we had other projects in the pipeline more deserving and more consistent with aims and objects of the Society.

The only vague option was the remote possibility of sponsorship although it was generally accepted the amount involved made any such request implausible. There were regular and constant entreaties on the part of the organisers to encourage us to attend including significant reductions in price but it could not be justified. As the ceremony drew closer the organisers grew ever more frenetic and then our chairman Peter Byford, had a Eureka moment.

He would approach the Big Yellow Group PLC, the organisation who are in the process redeveloping the Cadby Hall site in Hammersmith. This being the original HQ of J. Lyons & Co. and where LEO I was both originally conceived, built and sited. Peter is in regular contact over the preservation of the diminishing LEO legacy at that site. Simon Allen, Head of Development at Big Yellow, generously recognising the significance readily agreed to the sponsoring of four attendees, despite our society not being one of their regularly supported charities.

In view of the very short notice and other issues, three of the four creative invitees, all from CCH were unable to attend. Fortuitously for me, it left Peter, John Pashoud, Vince Bodsworth and myself to make up the foursome - all of a most refined and accommodating disposition.

For some reason we were expecting the venue to be part of the new Battersea Park Power Station Development, but as it happens it was located in Battersea Park, a very large and well established event venue, known well by the cognoscenti, but not by us.

Peter and I being somewhat concerned, arrived early and were allowed in, probably because we looked somewhat older than expected.

Whilst the crowd were awaiting entry to the venue entertainment was provided by a pair of fire dancers, not what one expects at an IT award but nonetheless worth watching. The doors opened at 7:00pm promptly for a Champagne reception at one end of what is a cavernous hall.

At 7:45pm a large curtain was drawn to expose the very substantial seating area and the stage at the opposite end. There were 95 tables of approximately 10 persons per table, indicative of a very large crowd. It became apparent the more expensive tables were located closer to the stage whilst we at table 90 were furthest away. There were 10 of us at table 90 representing five organisations including one other charity. There followed two verbose albeit, articulate welcome speeches one from each of the two event sponsors, Rashik Parmar MBE, of the British Computer Society (BCS) and Tom Allen, Editor of Computing, the IT publication. Whilst being at the opposite it was difficult to actually see the speakers who appeared akin to a Lowry painting. Fortunately, the images were relayed on two very large LCD screens one on either side of the stage, so all was not lost.

A fine 3 course dinner was served during which we had the opportunity to get to know our table compatriots, comprising four ladies from three different organisations, two young men, one from Canada representing two firms and then the four of us from LCS. At about 9:30 entertainment was provided by a well-known comedienne, Ellie Taylor, who'd I'd never heard of – which says more about me than about her. Ellie was also the host announcing the award winners.

Award presentations began at 9:45pm;- there were 34 categories and it was expected to take a long time, and it did. There were no acceptance speeches which was just as well, otherwise we would have been there all night. Award winners were invited onto the stage to receive their awards in the form of a curved engraved glass plaque. Our table was much enlivened when early on the Canadian (actually from Norwich but living in Toronto) received a Commended Award.

The 9th Award was Charity (Third Sector) Project of the Year, we held our breath – the winner was..... Plant Heritage but the Highly Commended Award went to the LEO Computer Society/ Cambridge Centre for Computing History. We were all delighted, I would like to mention the Highly Commended Award was only made in a small number of categories. Plant Heritage, the winners, were also at our table, so there much was excitement. Peter & I still wonder about the connection

between Plant Heritage and IT. So, in spite of the fact that our table was on the periphery it was the recipient of three awards.

At 11:00pm the Awards Party began but four gentlemen of a certain age decided it was late enough. I should mention that, at a guess, 90% of the attendees were under the age of 50.

A most interesting and enjoyable experience, and of course, many congratulations to Chis and Richard Monk for their superb work.

There's more about Virtual LEO in Lisa's article on [Page 3](#) of this newsletter.



Pre-entry entertainment—Fire Dancing



Table 90 - John Paschoud, Vince Bodsworth and other guests



Table 90 - LEO attendees L-R John Paschoud, Vince Bodsworth, Peter Byford and Bernard Behr



The Venue - Evolution, London



Welcome — Tom Allen, Editor of Computing, the IT publication



Comedienne and host Ellie Taylor



Proud to hold the Award