LEO COMPUTERS SOCIETY

Registered Charity No. 1182253

LEO COMPUTERS SOCIETY
WORLD'S FIRST BUSINESS COMPUTER

LEO MATTERS

75 Years

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1951—LEO I Operational



Chris Monk (standing at back) demonstrating the virtual LEO I at CCH—See page 6

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Message from our Chairman - Peter Byford

2026 marks a special anniversary for us – it will be 75 years this November since LEO started its work in earnest. In this edition of LEO Matters, we will tell you about the events we are planning to celebrate this important milestone and also consider its lasting importance. We hope very much that as many as possible of you will take part - whether in person or online.

We start the newsletter with an article I have written reflecting on the way LEO was developed and the long run up to its first operational run back in November 1951.

Trustee Jeanette Garwood, who is leading a group planning our celebrations, explains what has been scheduled so far. Jeanette is still looking for more suggestions and ideas – so please send them in to us. At this point, I would like to thank the AIT Trust for once again supporting us financially, this time with a grant towards the realisation of our celebration plans. The AIT trust have said that as well as supporting our events in Cambridge and Bletchley Park they would be willing to fund an event that we might arrange further North, for example in Manchester.

As you may remember, the AIT Trust is currently funding the Land archivist post at the Centre for Computing History. Kate Stockwell who holds this post reports on her progress. She has been working on the notebooks kept by engineer Ernest Lenaerts who was in the LEO team from the start. His notebooks were handwritten and Kate reports that they have now been transcribed and digitised – and are available to view online on the CCH website.



Peter speaking at the Celebration event at CCH

Hilary Caminer, our Secretary, then writes a tribute to Chris Monk who sadly died last year after a long illness. Chris had devoted much time in his last years working on the ground-breaking – and award-winning - Virtual LEO I and he also played a key role in the LEO film. His contribution to LEO was outstanding.

Hilary then writes of the great debt of gratitude the Society owes to Lisa McGerty, who was, until recently, the CEO of CCH. Lisa has stood down from CCH for personal family reasons , however she has joined the Society as a full member. Hilary says that it was through Lisa that the Society and CCH first worked together and from that beginning a lasting partnership has been forged.

Finally, I would like to remind all members that June is AGM month – we like to see as many members there - online. This year it will be on Wednesday 17th June at 15.00 BST.

Also a further reminder for our Social event at The Queens Head, Brook Green on Saturday, 19th September. Full details will be issued in the next few weeks.

As usual, I repeat my invitation to any of you who would like to volunteer to help the Society to get in touch. Or if you know of anyone else who might be interested in working with a Computer History charity, please get in touch.

I look forward to seeing you soon in this anniversary year.

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!'

The Road to LEO I's Historic First Run.

***Peter Byford** describes how a catering company, a university lab, and a visionary management team created the world's first business computer.*

Long before LEO I made history on 29 November 1951, the seeds of its achievement were being quietly sown in boardrooms, laboratories, and teashops across Britain. The story of LEO's buildup is one of curiosity meeting opportunity — and of a company willing to invest in ideas that most businesses of the era would have dismissed as science fiction.

This is the story of how J. Lyons & Co. prepared the ground for the world's first operational business computer.

A Company That Thought Differently

In the late 1940s, Lyons was already known for its efficiency. Its teashops, bakeries, and distribution networks ran on meticulous planning and a culture of continuous improvement. But the company's leaders — particularly John Simmons, Oliver Standingford, and Raymond Thompson — saw something more: the possibility that emerging electronic computers could transform business operations.

While most firms viewed computing as a scientific curiosity, Lyons saw a tool for management control, cost reduction, and strategic advantage. This mindset was the first essential step.

The Cambridge Connection

The turning point came in 1947, when Standingford and Thompson visited the University of Cambridge to see the early work on EDSAC, the Electronic Delay Storage Automatic Calculator. What they witnessed was crude by modern standards — but revolutionary for its time.

They returned to Lyons with a bold proposal:

- Fund the completion of EDSAC
- Learn from the Cambridge team
- Build a commercial version tailored to Lyons' needs

This was unprecedented: no other company in the world was investing directly in computer research. Lyons became the first.

From Idea to Blueprint

By 1949, Lyons had committed to building its own machine. The project was named LEO — Lyons Electronic Office. The goal was not simply to replicate EDSAC but to create a system capable of handling realtime business data, complex scheduling, and routine operational tasks.

The buildup involved several key breakthroughs:

- Designing a machine for business logic, not scientific calculations
- Developing new programming methods suited to commercial workflows
- Creating the world's first systems analysis discipline
- Training operators and programmers before the machine even existed
- Mapping business processes into programmable steps — a radical idea at the time

This was the birth of modern IT practice.

The First Test Runs

By 1950, LEO I's hardware was taking shape at Cadby Hall. Early test programs were simple: arithmetic routines, memory checks, and timing tests. But the team quickly moved to more ambitious trials:

- Stock control calculations
- Bakery output simulations
- Payroll prototypes
- Delivery route optimisation

Each test brought the machine closer to its intended purpose: running a real business process end-to-end.

The team worked long nights, often surrounded by the warm glow of valves and the smell of Lyons' nearby bakeries. Every successful test run strengthened their confidence that they were on the brink of something extraordinary.

By mid-1951, the program was ready. The team had rehearsed it repeatedly. The operators were trained. The business processes were mapped. The machine was stable.

Choosing the First Application

David Caminer selected Bakery Valuations for LEO's first operational run. It made relatively low demands in terms of volumes of data, yet it produced information that was useful

to managers. It involved calculation of the value of the week's output of bread, cakes and pies from Cadby Hall bakeries. It took account of direct and indirect costs etc. This process was conventionally done as three separate operations, occupying 50 hours of clerks' time each week.

Caminer specified the requirements of the job and drew up a flowchart of the work to be done. This is believed the first use of charting for operational programs. The program first ran successfully on 5th September 1951 as an experiment,

LEO I made history on on Thursday, 29th November 1951, when LEO took over from the clerks and ran the Bakery Valuations job. This application calculated the daily costs of ingredients used in Lyons' bread, cakes, and other baked goods, drawing on data from the company's large-scale bakery operations. The job was completed on Friday, 30th November.

When LEO I successfully completed this run, it became the first computer in the world to carry out a regular, operational business job. This is the moment recognised today — including by Guinness World Records — as the birth of commercial computing.

A Revolution Years in the Making

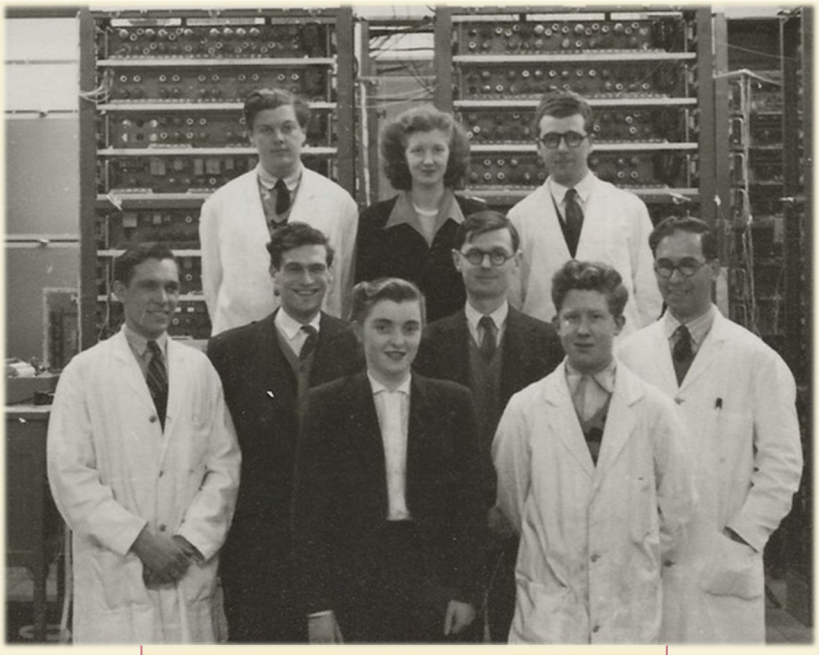
When LEO I completed its first operational run, it was the culmination of:

- Four years of planning
- Thousands of hours of engineering
- A pioneering partnership with academia
- A company culture that embraced innovation
- A team that invented commercial computing as they went along

The buildup to that moment is as remarkable as the moment itself. It shows that LEO's success was no accident — it was the product of vision, courage, and a willingness to invest in the future long before the rest of the world caught up.



David Caminer (right), pioneer of systems engineering; Ray Shaw (left) and Graham Gibbs (front), engineers



The early build team, in front of LEO I



John Pinkerton, lead design engineer

What we want to share and celebrate: Why the LEO computer line still matters.



Jeanette Garwood *outlines how the 75th anniversary of LEO's first*

As you know LEO (Lyons Electronic Office) represents a watershed moment in computing history, marking the transition from scientific/military computing to commercial enterprise. Unlike contemporaries such as ENIAC and UNIVAC that focused on scientific computation, LEO was built from the ground up for business applications—accounting, inventory management, and payroll. This business-centric design established the template for modern ERP systems. Further, it is a British story, easily forgotten in the context of computing history, when so much is North American.

In 1951, LEO ran its first business application calculating bakery product values, demonstrating that computers could solve real-world administrative problems. J. Lyons and Co., a British catering company, proved that a private company could successfully fund and operate a computer for profit, fundamentally changing computing from a government-only, often science-based research activity to a commercial enterprise.

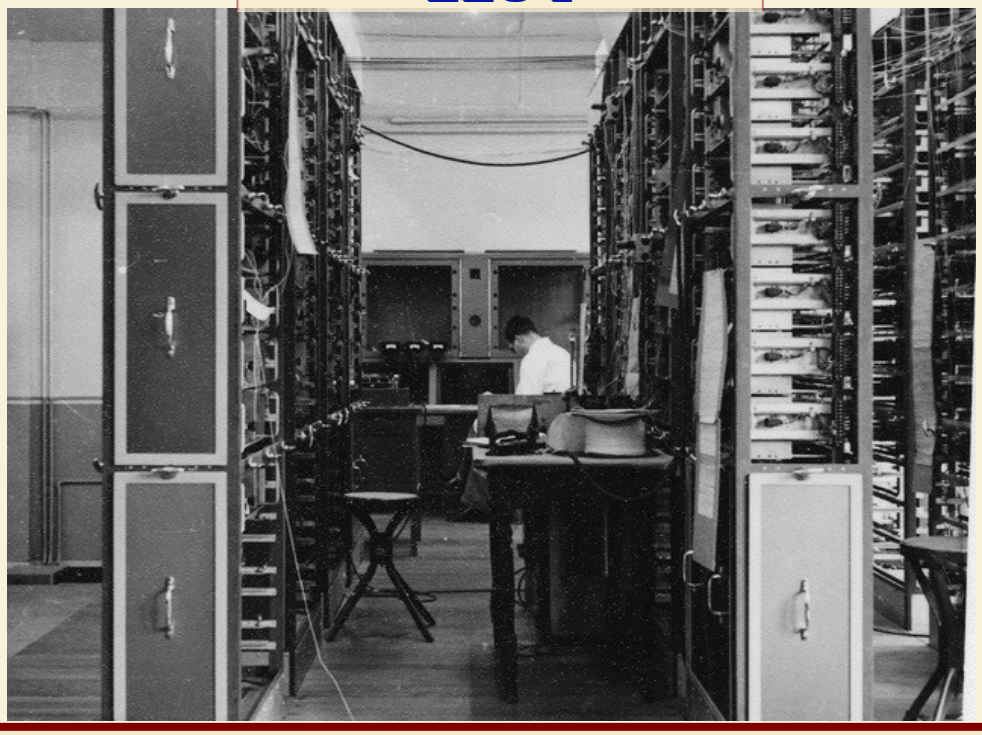
Technically, LEO's hardware evolution—from delay-line memory to magnetic drum to core memory—mirrors the broader trajectory of mid-century computer development, offering a compact case study of that transition. David Caminer's flowchart technique for process modelling became a cornerstone of systems analysis, influencing software engineering curricula worldwide.

LEO's legacy extends beyond technical innovation. It trained a generation of programmers and engineers who spread computing knowledge throughout industry. The project demonstrated that technological adoption requires both technical capability AND practical business justification—a lesson still studied in business schools today, we want wider coverage and recognition. Basically, we want more people, beyond the Society, to know about these great contributions. Getting our stories out to the community, and to students in particular is really important to mark the legacy of all of your collective work.

The museums National Museum of Computing at Bletchley Park and the Centre for Computing History in Cambridge, have offered us support and events for the anniversary, including two day events over the weekend of the 28th and 29th of November, and others for school children and adults, provided that they get the funding from us. If you have any ideas for events or venues further north, I would be grateful for any practical suggestions of other venues which might want to be involved in November and December his year.

On the academic side, in trying to keep the historical and practical legacy of the LEO and CLEO family of processors in the public eye, we are arranging an event at the Worshipful Company of Information Technologists (WCIT), in London, as a Hybrid Event, on the 30th November. We are focusing on the idea of responsible computing. We are still calling for papers, and Prof Tony Bryant at Leeds Beckett University is in negotiation with interested journals, with the hope of a special issue to support the legacy. If any of you would be interested in joining a panel to share your experiences, we are interested.

LEO I



Archivist Progress Report

***Kate Stockwell** reports on progress in the LEO archives*

Cataloguing

All of the cataloguing is now complete. This includes paper as well as digital, with the exception of a large digital file donated by *Peter Byford*. *Ernest Lenaerts'* notebooks are now all catalogued and available online as well as all oral history interviews and written reminiscences.

https://www.computinghistory.org.uk/sec/55629/Lenaerts-Notebooks/

Volunteers

I have engaged two volunteers for transcription jobs. *Ruth Dunn* is very kindly transcribing the Lenaerts notebooks so that the transcription is available to view alongside the scanned original. *Jon Hales* has taken on the role of transcribing the oral history interviews that were not already done; there are 13 left. He has been enquiring into transcription software that he might use. I recommended Turboscribe, as I have used it before, but it does come with a subscription. If anyone has another free way of conducting audio transcription please let me know!

Conservation and Digitisation

I have made arrangements for a book conservator to unbind some committee minute volumes. A previous archivist had started to unbind them but unfortunately only got half way through. I don't have the tools or skills for this job and so have used a contact of mine to finish the process. I have also made some enquiries into a digitisation service for all the CDs, audio cassettes, VHS tapes, and mini discs we have in the collection. Essex Records Office is the best place for this service and I have received a quote from them for £853. This is actually a very good price as they complete the digitisation to archival standards and provide us with master file and access copies for each item. Our head of finance informs me that there is enough money left in the budget for these services.

Digitisation of the open reel tapes and one other smaller Kodak Recordak reel needs specialist conservation. I am enquiring into these services and have been given a couple of recommendations on who to contact. I will let you know of my progress.

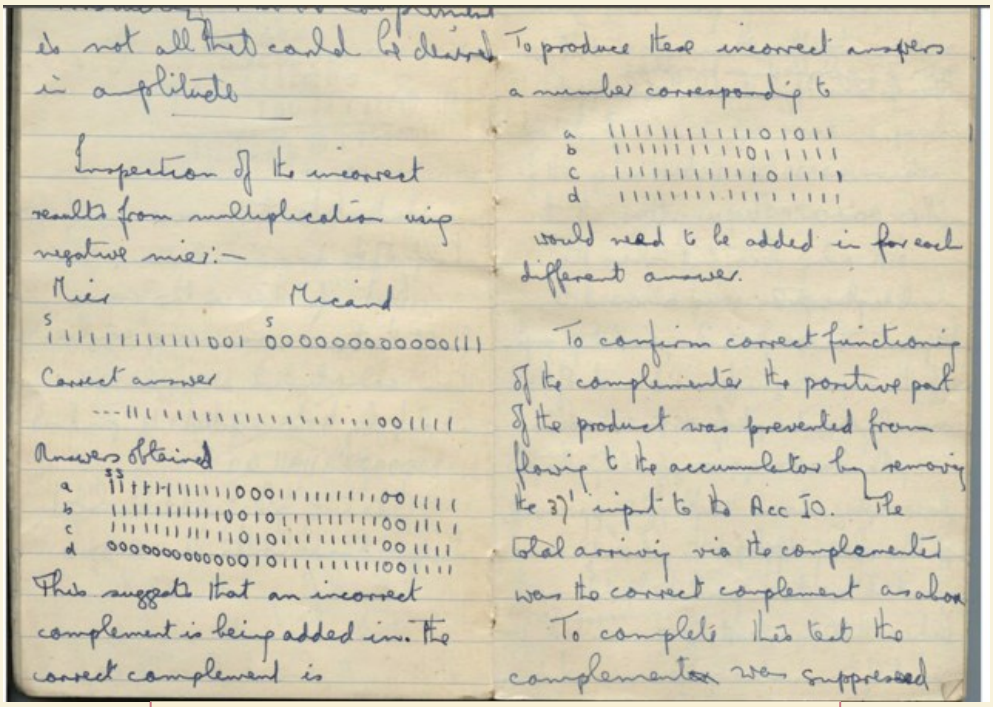
Phase 2 – Scanning

I have now started phase 2 of the project which is to scan all paper documents and make them accessible online. This is a large part of the job and will take up the most part of my second year.

Scope of the Collection and Weeded Material

As you know, I have come across duplications in the course of cataloguing and intend to hand these back to the Society at the end of the project; this also includes digital files. I have also come across documents that I would consider non-archival; I would describe them as semi-current records and contain personal information about Society members etc.

They cannot be catalogued due to Data Protection and they also fall outside of the original scope of the project, which was to archive the historical LEO records and artefacts. They are therefore organisational records of the Society and would require their own storage and arrangement separately to the LEO archive and will be handed back at the end of the project.



An example from Ernest Lenaerts' notebooks, now searchable online.

Chris Monk, an appreciation



***Hilary Caminer** recalls the man who brought LEO I back to life in virtual form.*

The Society was saddened by news of the death last summer following a long illness of Chris Monk, who has collaborated with us so outstandingly on LEO-related projects.

Chris was a talented communicator of computing technicalities to members of the public – working in education at both TNMoC and then later at CCH. He had a modest demeanour and a sure touch when explaining the objects held at these museums to visitors, including groups of school students.

When the partnership between CCH and the Society bid successfully for lottery funding, Chris and his son Richard took on an amazingly complex and totally innovative task – producing a virtual version of LEO I. As we know, LEO I was an important machine in the history of computing , but when it was decommissioned no thought was given to saving it for posterity and it would be almost impossible to reconstruct it now.

Chris and Richard set about trying to 'recreate' LEO on screen, firstly by gathering all the photos taken of it at the time – the early 1950s . Through painstaking searching, over 100 photos were found. Chris then, with the help of original layout diagrams of Cadby Hall, worked out which picture was taken where and reconstructed the computer room as it was. He was determined to strive for accuracy and harnessed the first-hand knowledge of our members who worked on LEO I for all the information they could give. He asked, for example, about the colour of the cabinets (all the pictures were in b/w) and the right shade of light blue was used.

He asked about the sounds of LEO I and he asked what could be seen from the windows! When Chris presented the draft of his work to a group of LEO people, they all remembered that in fact, although the noise of the Lyons vans in the courtyard below could be heard, very little could be seen – London was a grimy city in those days and the windows very often gave out onto smog.

Chris also researched details such as what would have been on desks and on noticeboards, even what plans might have been kept in desk drawers. All these can be seen by users navigating the virtual office.

Chris and Richard had originally sought to create a virtual LEO I that could be explored using a VR headset, but Covid put a stop to that idea – no one was going to share equipment at that time of face masks and antiseptic wipes. So the project was adapted to be used on a screen – PC or tablet. In fact, that has turned out better in many ways – more people can see it at one time and it can be more easily used in educational settings.

In 2023, Computing Magazine and the British Computer Society awarded the finished virtual reconstruction a 'Highly Commended' in their prestigious annual contest. We were all delighted and very proud of Chris and Richard's highly innovative work.

Chris was also a key figure in our partnership's project to create a documentary film about LEO. Working closely with the filmmaker, Chris provided the technical information in the film running alongside personal recollections from early workers on LEO. He explained things with clear insight – for example, in explaining the characterising feature of LEO in those early days, he drew attention to the significance of its name – Lyons Electronic Office. It was built - uniquely - to transform office work. The film went on to win an award too for its makers Boffin Films –and much of the credit for this rests upon Chris's role.

The Society has much to thank Chris for. He contributed greatly to the Society's aim of preserving and promoting LEO's heritage. We are indeed sorry that illness prevented his continuing his part in our work. We remember him with admiration and affection.

The Virtual LEO link is currently being updated, but you can see the film on YouTube at:
https://www.youtube.com/watch?v=Rzu68nRVwtE



Chris speaking at CCH , May 2018



Chris speaking at Lottery project finale event at CCH

Thank you, Lisa!

Hilary Caminer pays tribute to *Lisa McGerty*



The Society owes a huge amount to Lisa McGerty, who was until recently the CEO at the Centre for Computing History in Cambridge. For reasons of family illness, she has had to withdraw from this position. In this article I want to enumerate some of the very many ways that Lisa has helped us further the cause of LEO.

Our partnership with the museum in Cambridge began when Lisa contacted Peter Byford in the autumn of 2017; she had been reading about LEO and wanted to put on a two-day exhibition about it at CCH. We provided some exhibits and both Peter and John Daines went to the museum to talk to visitors. From that small event a firm partnership developed.

It so happened that at that time, the Society had been getting increasingly concerned about finding a safe place for all the many documents, artefacts, photographs and flowcharts relating to LEO which were mounting up in members' garages, lofts, spare rooms and so on. We wanted to find not only a safe haven for them but also to promote public awareness of the LEO story by making an archive available to anyone to see online. And this is where a perfect alignment of ambitions happened: CCH offered to house a LEO archive – and Lisa started working with us to make this ambition a reality.

Lisa had previous experience of making a successful bid to the National Lottery Heritage Fund for the museum and together we put together ideas for a bid of our own – for a LEO archive and to promote LEO's heritage. It's fair to say that although we all contributed ideas for the bid, that it was down to Lisa's sure touch in making an application that we were successful. Anyone who has ever made a formal funding bid will know how demanding a task it is. Funders want to know the fine detail of how any money will be spent – the exact costs of staffing, the number of items to be archived, the ways we will be able to measure success. It's tricky work and the Lottery Fund receives far more applications than it can support. So we owe enormous gratitude to Lisa for converting ideas into precise, measurable outcomes!

We were chosen from among many contenders and started work on a three year project. Every hour that we, as volunteers, worked on the project had to be carefully logged. Together we appointed splendid professional archivists for this project - firstly Jude Brimmer and then Luke Thorne to work at CCH.

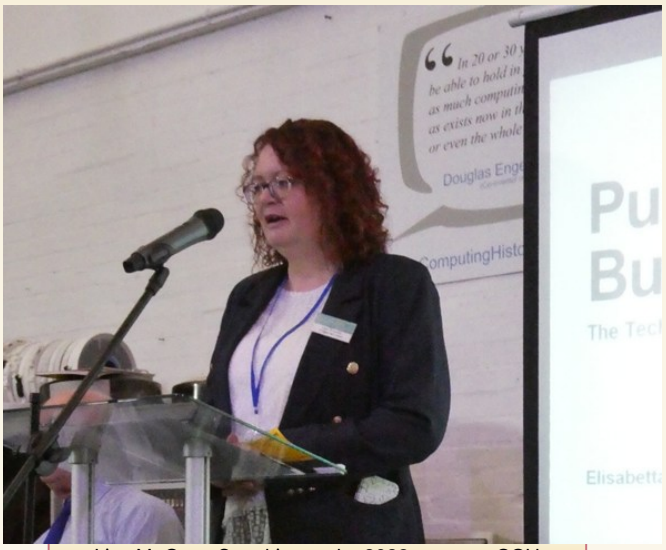
As if all the demanding funding paperwork wasn't enough at the time, Lisa also steered CCH to full museum accreditation and helped us in our successful application to gain formal charitable status.

Lisa is very adept at this kind of formal paperwork, but much more than that, she has always shown a real passion for her work at CCH, introducing wide audiences - both adults and children - to the world of computing and its impact on our lives. The archive, the LEO film, the Virtual LEO I and the educational resources were all focused on achieving the aim of promoting the history of the world's first business computer.

Alongside the project, we also worked together to publish an enlarged version of the book 'LEO remembered' – the anthology of reminiscences from LEO workers. On this Lisa and I worked closely together online – it was during the Covid period. We greatly increased the number of articles and in particular ensured that the voices of LEO's women were properly acknowledged.

Lisa hosted a fine end-of-project day at CCH with some excellent distinguished guests as well as our members. After that batch of funding was over, Lisa helped once more in a new funding bid - this time from the AIT Trust – for a new archivist to continue the work for two years. Kate Stockwell is now the Land archivist – a post named in honour of the twins Frank and Ralph Land.

On a personal note, I have greatly enjoyed working with Lisa.



Lisa McGerty Speaking at the 2023 event at CCH

At times the partnership between a volunteer-led charity such as ours and a staffed museum has presented challenges as,

after all, our ways of working are perforce different. But both sides learned to adapt and I think we have shown a fine example of co-working. Each side has benefited – our Society by now having a well-presented archive open to all and for CCH having a unique collection to add to its portfolio.

We are sorry about the sad circumstances that led to Lisa's leaving, but pleased that the work we set out to achieve together is now well on its way, and that through Lizzie Salter and Kate Stockwell, the work Lisa started is being carried forward at CCH.

Thank you, Lisa – and we hope very much to see you at one of our 75th anniversary events this year!

SAVE THE DATE!

LEO REUNION AND SOCIAL EVENT

CELEBRATING THE 75TH ANNIVERSARY OF LEO I, 1951 - 2026

Saturday, 19th September 2026 from 12.30 till about 5 p.m.

at The Queen's Head, 13 Brook Green, London W6 7BL

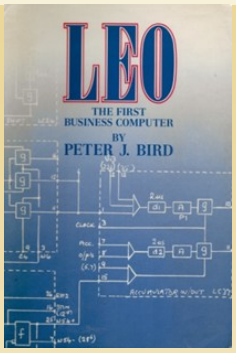


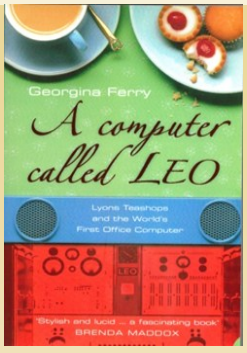
A particular focus will be a celebration of this landmark anniversary. As you probably recall, Cadby Hall was the site of LEO, the world's first business computer. The Queen's Head, a lovely historic pub, is within walking distance and is decorated with Lyons and LEO memorabilia.

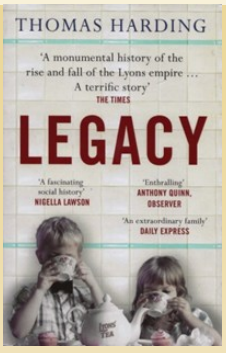
We have reserved the pub's conservatory area and there is a garden. The Society has used this venue several times before – and on all occasions the food and atmosphere **were really great. There will be a buffet lunch and tea/ coffee will be made available.**

Books to buy direct from us









'LEO remembered' - ***by the people who worked on the world's first business computers***. Edited by Hilary Caminer and Lisa-Jane McGerty **£8** This edition is a second, much enlarged version of the original 2016 book. There are 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.

'LEO: The First Business Computer.' Peter J. Bird. Special price: **now reduced** from £10 to **£5**. This hardback book gives a very thorough account of LEO's story and is illustrated with many contemporary photographs.

'A computer called LEO. Lyons teashops and the World's First Office Computer' Georgina Ferry **£8**. This paperback gives a very lively, non-technical introduction to LEO's story.

'Legacy' Thomas Harding **£8** The story of the rise and fall of the Lyons' empire and the extraordinary family behind it. Illustrated paperback, signed by the author.

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

LEO COMPUTERS SOCIETY

Registered charity: 1182253

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*We also have a group of **much appreciated volunteers** who help with a variety of activities. Examples are helping with oral histories, transcribing the Ernest Lenaerts' notebooks, looking after our LEO plaque in Lyons Walk, giving presentations on LEO and giving us specific advice on a variety of issues. Please, if you feel you can join this group of volunteers contact us at: Secretary@leo-computers.org.uk*

www.leo-computers.org.uk
newsletter@leo-computers.org.uk

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Bernard Behr
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