

An Interview with
RICHARD C. LLOYD
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Conducted by Arthur L. C. Humphreys
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Abstract

Lloyd, managing director of the British insurance company SAMLAS (formerly Mutual), outlines the company's computerization beginning with the Powers-Samas Perseus installed in 1959. He discusses their later machines, including the Ferranti Orion 2 in 1966 and the 2900 in 1976. For each computer Lloyd describes notable hardware and software features, comments on its operation, and points to the company's increased information processing ability.

RICHARD C. LLOYD INTERVIEW

DATE: 26 September 1980

INTERVIEWER: Arthur L. C. Humphreys

HUMPHREYS: My name is Arthur Humphreys and I am Deputy Chairman of International Computers Limited in the UK and I am talking with Mr. Richard Lloyd who is the Managing Director of SAMLAS, the Old Mutual. Today is the 26 September 1980 and I am asking Mr. Lloyd if he would be good enough to give an impression of his recollections of the past in relation to the use in the Old Mutual of computers and his own direct and personal interest and responsibilities with regard to them. Now Dick, if we may call you Dick, can I ask you to say what was your very first sort of introduction to the use of a computer in the Old Mutual?

LLOYD: Well, Arthur, I first became interested in computers in 1954 when I was actuary of the company and I read a paper in the journal of the Institute of Actuaries by a man called, Ronald - I think it was - Michaelson, who worked for the Hollerith Company. He was an actuary and was seconded and he wrote a paper on using a computer-like device to calculate bond redemption schedules. It was a pretty prosaic activity by today's standards but at least it showed me what computers could do and that's what was my first introduction.

HUMPHREYS: I see, now what then prompted you to place an order for a computer with the company that you did and when did you actually do that?

LLOYD: Well, the order stemmed from the fact that at around about the same time as I was reading this article there was an international actuarial congress somewhere in Europe at which our Deputy General Manager, Dr. Dommissie, was present. A number of papers were presented by the Americans, particularly I remember the name, Malvin Davies, who was a head of computing in the Metropolitan Life and he had written a report on behalf of a committee in the States of life insurance companies on the use of computers. They were in fact using some Univac 1 computers in their actuarial department and when Dr. Dommissie came back we swapped notes and we decided then that we had better do something about computers.

HUMPHREYS: Well, Univac 1 came out at a particular moment in the very early 1950s and there has been a sort of friendly controversy between Univac and Ferranti as to who actually was the first one to come out with a computer unit in a commercial environment to solve the business and commercial problems. I think both companies decided that they were at about the same time but you decided to give your order for a computer to Ferranti Limited, so how did that happen?

LLOYD: Well, we first of all were interested in a PCC from Powers and we actually placed an order for one and then we sent one of our people, Peter Bieber, who was my immediate assistant, overseas to learn to program this thing. We said while you're over there go and have a look and go to the States and see what they've got and he went to the UK first and had a look around and he couldn't find anything that he wanted to propose rather than the PCC. He went to the States - he actually did a Univac programming course - and then when he came back to England he went back to Ferranti and they had just decided to announce a machine that had magnetic tape input. When he came back he was sufficiently impressed with this concept to tell us all about it and we then decided that this was the way in which we should start. And that's how we ordered our first Perseus computer.

HUMPHREYS: Right, before that and before you were using the computer for the business of the Old Mutual you were using, I assume, punch cards?

LLOYD: Yes, we've been using Powers punch cards since the middle 1930s and we had a very substantial installation of equipment.

HUMPHREYS: Yes. It's interesting I find reflecting back on what you've just said, Dick, that I trained, myself, on the British Tabulating Machine Company which was Hollerith and we'd had a number of friendly talks with Ferranti but we somehow were not able to impress ourselves as a company on Sir Vincent Ferranti or Basil or Sebastian and they tended to, sort of, have more affinity with the Powers company and of course as you were using Powers equipment that was a factor, I assume, in your decision to acquire a Perseus because it had Powers equipment as input and output, particularly the Samastronic printer. But in 1958/59, when Powers Samas and the British Tabulating Machine

Company merged to form ICT, then the Hollerith company in its new role acquired the responsibility for this Perseus installation and this equipment that Powers Samas had been committed to supply to Ferranti and then in turn to you. So I think I remember it personally very clearly but Perseus was delivered when, about 1961?

LLOYD: No, Perseus was delivered round about September 1959 and we took it into use, I remember well, on the 1 April 1960. We had a little ceremony, we had the machine working, we played some tunes on it through the loudspeaker and then we happily switched it off and had some champagne and a bit of a party.

HUMPHREYS: Splendid. I'm sure you can recall, Dick, the fundamental characteristics but how much memory did it have?

LLOYD: Well my recollection is that it had a work of 72 bits which was twelve 6 bit characters and the total internal memory was 1024 words.

HUMPHREYS: And it was a punch card feed, you got into it by way of punch cards?

LLOYD: Initially yes, we had two punch card inputs and that was the only way in other than, well there was some paper tape but this wasn't really useable for anything much.

HUMPHREYS: And the output was primarily the Samastronic printer?

LLOYD: Well, the output was really magnetic tape and then you took the tape reel onto the separate tape decks that fed the Samastronic printer so we had the advantage of off-line printing and I don't know how we would have got our work done if we had not had off-line printing. We had two Samastronic printers, 300 lines a minute, with matrix-type printing, and really the Samastronic printers, although they were somewhat difficult to maintain, did a tremendous job for us and they were very flexible because it wasn't necessary to edit the output from the computer. You could change the format of the printing by simply plugging up plugboards and we just put in the one that was required for

the particular run.

HUMPHREYS: Yes, it's curious how many innovative ideas there were included in the product in those relatively early days.

LLOYD: Well, in fact, that was far from the only innovation. There were innovations at the computer end where the operation of the computer itself could be overlapped with the input and output. As far as I can recall, the only limitation was that when you used the multiply/divide facility you had no overlap but for the rest you did have overlap and we had three independent magnetic tape channels so that we could be reading or writing from three tapes simultaneously, which in those days when IBM had a 1401 which had an integrated printer, and when only one thing happened at once, this was in fact technically a far more advanced machine.

HUMPHREYS: Yes. It would be interesting, Dick, to know in what language were the programs written?

LLOYD: Well, they were written in a language very close to machine language, it was a sort of an Assembler type language. It didn't pose any problems to us, in fact our people seemed to learn the language quite easily and we developed a number of programmers who were very skilled in it.

HUMPHREYS: And did the system have what nowadays we would take axiomatically as an operating system? Did it have an operating system?

LLOYD: Well, it had what I seem to remember were called initial orders which was a sort of a bootstrap and then a very small bit of operation: after all, with a 1024 word memory you couldn't have much of an operating system!

HUMPHREYS: Right. Well, now that served the Mutual fairly well for quite a number of years but then the next phase of your development of your use of computers was I think to keep laudat of the same company which was Ferranti and order an Orion. Was that an Orion 1 that you ordered?

LLOYD: No, it was an Orion 2. We actually used the Perseus from 1960 to 1967; we installed the Orion in 1966 so that we had a year's overlap, preparing for the conversion.

HUMPHREYS: And was all the work that was being done on Perseus transferred to Orion 2?

LLOYD: Yes it was, but we decided - maybe in retrospect a little unwisely - because Orion was a much more powerful machine we decided to have a much more versatile system. So we didn't convert on the basis of the same system, we converted all the same work plus a lot of additional functions and this caused us about a year of trauma in the conversion period.

HUMPHREYS: But the language in which the programs were written was the same as it applied to Perseus?

LLOYD: Well, it was a different programming language but it was more or less the same level, slightly higher level of Assembler or Symbolic, I think it was called, but it was effectively programming a step at a time.

HUMPHREYS: Yes. At that time, Ferranti, they had a rather high level language called Nebula but for some reason or other you didn't use that, did you?

LLOYD: Well, we studied it very carefully Arthur, and in fact we had our people go through a programming course - I went through it myself and I was very impressed by the language. What seemed to us to be the basic weakness of it was that the Orion had no direct access storage and the compiling system was a horific tape-based system which really couldn't produce effective compiling and because of that we never really got onto it although the Prudential in the UK, I know, did make use of the language to an extent.

HUMPHREYS: It was a good language, I think, but of course it suffered from the fact rather like Esperanto it didn't have any international acceptance.

LLOYD: It seemed to us to be a very good language indeed, it had tremendous facilities, it wasn't too complicated, it was a language that we felt we could use but we didn't feel that we would have got the job done on the machine, the machine itself was not powerful enough to exploit the language.

HUMPHREYS: The next stage of the evolution was to also acquire a 1900 system which I think ran alongside Orion for quite some time?

LLOYD: Well, now, the thing that one must remember is that our original punch card system covered a lot more functions that Perseus actually took over. There were a lot of things like payroll and agency statistics and this, that and the other; in fact there were some 30 separate systems that were not really in the same stream as the main work that was done on Perseus and we left these on punch cards and over a period we used various devices. We in fact at one stage had two ICL 1004 punch card devices which we used with the punch card equipment. Eventually we decided that, because Orion had a one-inch magnetic tape which was not industry compatible and because the banks were making noises about magnetic tape interchanges and so on, and also because we wanted to make use of key-edit type equipment for data input, instead of just punch cards, we felt that we needed a half-inch tape compatibility. This led us to get a 1902A, onto which we put all the work that had been left on the punch card equipment. Then, over a period of time that developed into a 3A and eventually a 4A.

HUMPHREYS: The programming language that you used then was PLAN?

LLOYD: No, we then went straight to COBOL. This gave us a very good introduction to the use of COBOL and it also gave us a good introduction to some on-line systems because the 1900 could take disc files. I don't have a date but I seem to remember that it was fairly early in our 1900 work that we did have discs and we were certainly using them for perhaps three or four years before we stopped using the 1900.

HUMPHREYS: They were probably rather simplistic disc drives, the capacity was not very large, was it, the first

manifestation of them?

LLOYD: No, I think they were something like 30s and then eventually 60s something of that order, that was about the maximum.

HUMPHREYS: Yes, well now Dick, you have one of the largest installations of the 2900 Series Computer and I think it would be interesting just to record your memoirs or recollections about the installation of that and how you were able to transfer the work from your existing equipment onto it.

LLOYD: Well, we got our first 2980 in September 1976 - four years ago - and the first thing that we did was to transfer all the work from the 1900, which because it was in COBOL, could be largely translated: we got some package which helped us to do 95% and then a bit of hand fiddling got us programs that could work on the 2980 and we got those 30 odd systems onto the 2980 without any real problems. Our bigger problem of course was to get the Orion work on because we were going to use Cobol exclusively on the 2980, which meant that we had to re- write the entire system from Orion.

HUMPHREYS: In terms of man years of work, what did that represent?

LLOYD: Arthur, I couldn't give it to you in man years but I know that by the time we'd finished we had something like a million lines of COBOL code! So that would give you some idea of the magnitude of the problem, because at the same time we'd recognized that the system that we had on the Orion, we'd built-up some very big systems for very big files, but the programs were entirely monolithic and we'd been finding increasing problems in making amendments because you made an amendment to one section and you had a devil of a job to see what effect it was going to have on others.

So when we changed to Orion, although we decided that from the users point of view, the system was going to do exactly the same, with the same input and the same output, the way in which it was handled within the computer was

not the same and we didn't just translate the system, we re-analysed it and we split it up into modules and we constructed our 2980 program on a modular basis.

HUMPHREYS: Now, with the equipment you now have it is possible to do more things of course than was possible before but you're going to move to virtually a substantial on-line system, are you, with terminals spread around the country and so on?

LLOYD: Well, we already have quite a substantial on-line system. We started perhaps three years ago with terminals at our Head Office servicing our ordinary policy business plus quite a lot of other parts, the medical aid operation and some pension scheme work and then over the last year we have established a network around seven or eight of our major branches and in the last three months we have extended this to another fourteen branches. By this time next year we will have a total of 104 service points around the country lined on-line into our system.

HUMPHREYS: And this whole system is under the control of an operating system, are you using VME/B?

LLOYD: We are using VME/B, yes.

HUMPHREYS: And, you've now achieved a reasonable sort of a productivity from it, and a reasonable time of mean time between failures?

LLOYD: Well, we've had our problems. We had problems obviously as everyone else did with a new product when we first started, but things have become a lot more solid now and we certainly are getting the work done and we're providing a very effective service around the office. The one thing that has impressed me, and I must say that it did surprise me a little, and that was how easily we were able to get the on-line systems up and running.

HUMPHREYS: That's splendid. Now I think it would be nice just to sort of round off if we may, Dick, with a sort of contrast, I think you said that Perseus had a thousand words of internal memory: what is the internal memory that

you now have on your system which is now installed here?

LLOYD: Well, we have at the moment 7 megabytes of store which we are upgrading within the next month to a total of 13 megabytes and we've got two 2980 processors which will be running in a dualled mode once we've got the total store installed at the end of next month.

HUMPHREYS: And, on Perseus there was no disc storage at all, but on the present system it's, what, ten billion bytes?

LLOYD: Well, we would expect that by about a year from now we will have about ten billion bytes of on-line storage.

HUMPHREYS: Now in that period of time, Dick, the business of the Mutual has grown so substantially that, even now you'll probably still find a need for additional capacity, but is that the reflection of the growth of the company?

LLOYD: Well, it's a reflection of the growth of the company; it's a reflection of the greatly increased type of business that we do. It is much more complicated, the products in the market place today are not the range of products that we had when we started with Perseus some twenty years ago. The business is incredibly more complicated and, apart from that, whereas when we started with Perseus, we were looking at one segment of our business and a segment of the systems for that business, today there is not a part of the organization that is not heavily involved with computers.

We have a lot of what we call scientific work done on the computers using the APL language, for example, to do modelling in the investments division, the actuarial and all that sort of thing. These things of course were quite unknown in Perseus days.

In fact, what we feel is that we've now got a very open ended system that is extensible; we can link all sort of things. We've recently linked a WANG word processor into the system; we've linked it through to our printing works for

being able to print virtually automatically, get the type-setting done, and there doesn't seem to be any development in the computer industry that is likely to come that we won't be able to slot in and take advantage off. This was of course one of the reasons why we went for the equipment that we did go for, because we believe that it was extensible and experience has proved that this has been successful.

HUMPHREYS: Well, with everything so important involved in the computer system and effecting the business of the Mutual, you must have got quite a severe challenge and problem in relation to security, don't you, to make sure that you don't lose this information that is so vital to the business? I would imagine this is taking some effort and care, and are you satisfied that it is secure?

LLOYD: Well, I think that we've done everything reasonably possible. Right from the very first start when a lot of the users had to be convinced that, in fact, the recording on the magnetic tapes would still be there a year later. We've advanced a long way from those days. As far as the particular operations of the computer go, we certainly have always had back-up files so that we could retrieve, and after all we've been using computers now for 20 years and we've never had a situation where we could not re-create the position.

HUMPHREYS: Right, well Dick, it has been very interesting and I mentioned I'd like to keep the tape and put it in the archives of the Charles Babbage Institute, which is an organization in the States which exists to protect, collect together, index records of the development of the computer business and the personal recollections of the people who were pioneers and have made a tremendous success and have now reached the stage where it would be impossible to run their business without the computers. It will be a very interesting story for the future, so I'm very much obliged to you for giving me the time to talk to me about it. Thank you very much.

LLOYD: Thank you Arthur, it has been a pleasure talking to you.

END OF INTERVIEW