Bulletin
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A Christmas Message

I am pleased that my first task as acting Director is to write this Christmas Message. Not many days are left in 1986 and it is natural that we should look back at what we have achieved in the year. I believe that we have reason to be proud of our achievements; in all the areas of our programme your commitment to excellence has brought success. I am confident that this solid record of achievement forms a secure foundation for the future activities of the Laboratory.

1986 will be remembered as an outstandingly successful year for the programme but much more as the year in which our Director Dr Geoff Manning left the Laboratory. To say that he will be missed would be the understatement of the year. To a very large extent the programmes of the Laboratory, its structures and success are of his making. He guided RAL through a period of rapid change to build the broad-based programme that is now such a unique feature of this Laboratory. We send our Christmas greetings to Geoff and his family and wish him success and happiness in the exciting new venture which he is leading. We must continue, in the mould that he has set, to welcome change to demonstrate flexibility and to build closer and broader links with Britain's academic community. Inevitably many changes lie ahead but we will take them in our stride.

Thank you for 1986; I congratulate you on an outstandingly successful year, let's make 1987 even better. I wish you and your families the joy and peace that Christmas brings and I hope that together we will have a very happy New Year.

Paul R. Williams

The Human factor

The problems involved when people are required to use complicated pieces of equipment have been around for some time. During the second World War it was noticed that many aircraft accidents were caused by pilots' or engineers' errors. A significant proportion of these were due to seemingly simple items such as layout of controls and instruments - similar looking switches often controlled very different functions, and frequently controls were badly placed so that operation was difficult or interfered with other cockpit activities. Controls have even been placed under pilot's seats!

The whole area of Human Factors - the study of how equipment etc should be constructed to take into account the needs of the human operator - received a considerable impetus in this period. Similar problems have also been experienced in other areas, such as industrial process control, in, for example, layout of control panels.

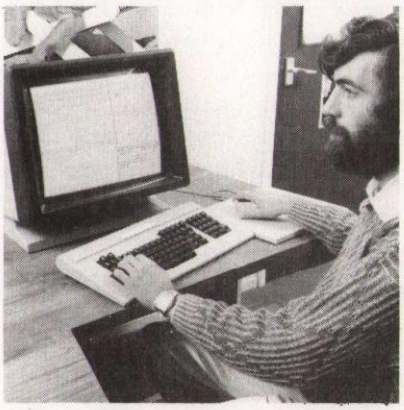
Human-computer interface (HCI)

Computers too have not been immune. HCI is concerned with the study of how computers are designed and programmed to provide a good user interface. This is necessarily a complex problem (since people and how they function, are involved), further complicated by the problems of working with a relatively new, and still rapidly-changing technology. To show how important the area is, the accident in the nuclear power station at Three Mile Island was primarily due to poor interface design (one of the valve indicators was interpreted as showing it as closed, whereas in fact the indication was that a request had been made to close it - but it had failed).

In the early days of computing - only 20 or 30 years ago - the emphasis was necessarily on (a) keeping the (very expensive) equipment in operation and (b) subordinating the needs of the programmer to the requirements of the equipment, as programmer time was much less expensive than machine time.

By the mid-80s this position had changed quite markedly with the increase in power of the computer allied to a massive decrease in cost. As an example, the 1960 ICT Atlas (costing £15M at today's prices) considered so powerful that SERC built a special Laboratory to house it, was about one-eighth as powerful as the typical SUN3 workstation used today by many researchers, costing about £25k!

These new workstations differ from earlier computers primarily in the way they can help the user to interact with and hence control, the computations being done on his behalf. The major differences lie in the high quality graphics facilities now available - high resolution text and pictures can be presented, and manipulated with ease with the aid of a mouse, a small hand-held device which can be used as an effective pointing device to locate (and hence operate on) objects on the screen.



Using the window manager with a mouse.

These two developments have led to a new style of user interface. This style of working enables the screen to be divided into independent areas usually called windows, under the control of a piece of software known as the window manager. These windows can be created, destroyed, moved, resized, and put in front of or behind other windows. By means of this technique, the user can work on more than one task at once, perhaps using information from one task to aid in the performance of another. Alternatively multiple simultaneous views of an object seen from different directions can be presented, easing the way to understanding the structure.

While giving the user great power over the computer, window management has caused three major problems. Each supplier has developed a different window manager, with different ways of performing window operations. The application programmer, whose job it is to provide software for the end user, also has a completely different programming interface on different equipment. Finally, there is a lack of suitable tools for the application developer in this windowing environment.

These problems are being tackled within Informatics Division with the aid of funding from the Alvey Programme. This Programme, a £359M initiative in various aspects of Information Technology, has four major thrusts, and one of these is the HCI area (the others are Intelligent Knowledge Based Systems, Software Engineering, and Very Large Scale Integration).

Alvey HCI funds are being used to develop and implement, with UK industry

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First "light" for the James Clerk Maxwell telescope

On Thursday 4 December the first radio signals were received by the James Clerk Maxwell Telescope (JCMT) at the Mauna Kea Observatory in Hawaii.

This is exciting news for astronomers in the United Kingdom and the Netherlands, who are preparing to make observations with the telescope starting in 1987; and for RAL staff who have been heavily involved in the design, development, construction and commissioning phases of the project since 1980.

To test the new telescope it was first pointed at the Moon with a receiver tuned to a frequency of 230 GHz (1 GHz = 1,000,000,000 cycles/second), which is approximately a thousand times higher than the frequencies used for TV and FM radio transmissions. A strong signal was received. This was as expected since all 'warm' objects emit signals at these high frequencies and for an object as close as the Moon they are easily detected by the very sensitive detectors used by astronomers. The telescope was then pointed at the planets Jupiter and Mars, and again strong signals were detected.

These events mark the end of the first phase of the commissioning, in which engineering tests of the telescope and its drive systems were carried out and the reflecting surface (consisting of 276 individual panels) was measured and adjusted to the correct paraboloidal shape. The next phase of the commissioning, which is now beginning, will test the sensitivity of the telescope on far more distant objects and check its performance over a wide range of frequencies.

The construction of the 15 metre diameter radio telescope, which is situated at the 4,000 metre high Mauna Kea Observatory, by an arrangement with the University of Hawaii, began in the early Summer of 1983. The foundations for the telescope and its co-rotating enclosure were completed by the Autumn of the same year with the enclosure itself being constructed in the following year. (Bulletin 20 1983)

The major components of the telescope and its control system were delivered during 1985 and the assembly of the facility completed in June 1986. (Bulletins 2 and 4, 1986.) The testing and commissioning of the major sub-systems began before that date and has intensified since, culminating in its first operation as a radio telescope. Steady progress is being made towards the provision of a fully operational facility for astronomers from the United Kingdom, the Netherlands and the University of Hawaii.

The James Clerk Maxwell Telescope will be the world's largest instrument capable of observing at frequencies above 300 GHz. It will give astronomers an opportunity to study a relatively unexplored part of the electromagnetic spectrum in which star formation and the microwave background radiation are but two of the exciting fields of interest.

Ron Newport

A Memorable Tenure

At a Farewell Ceremony held on Friday 5 December, RAL said goodbye to its Director, Geoff Manning.

"We all hoped, with heads firmly stuck in the sand, that the threat of Geoff's departure would just go away," said Paul Williams (Acting Director, RAL) "It hasn't and so, unbelievably, we are gathered to say goodbye".

His loss to SERC and the UK scientific community will be immense but it is we here at RAL who will feel the pain more than anyone else. It won't be the same place but we will continue to strive to preserve the standards of excellence he has set, Paul promised.

Geoff's career as a physicist properly began at Tottenham Grammar School, the most formative period of his life, you could say, for it was at this time he met his wife Anita. A year as RAF Sergeant, Education Corps was followed by six years at Imperial College where he was awarded his Ph.D in 1955. He then joined GEC for a year but the industrial life was not for him. And so, off across the Atlantic to Chalk River and Caltech before returning to Harwell in 1959. Here he worked in HEP which included 2 years at CERN, before transferring to the Rutherford Lab. in 1966. By 1969 he had become Deputy Director, a wise and courageous appointment by the then Director Godfrey Stafford, who bears the responsibility of hiring him in the first place.

As Deputy Director, Geoff was also Head of HEP division. In 1975 he moved to head Atlas Computing Division, overseeing its integration into Rutherford - and as if this was not enough also became project leader for the SNS project. With the merger of Rutherford and Appleton Laboratories in 1979 he became Director, Rutherford and on Dr Stafford's retirement as Director General in 1981 became Director RAL. In November this year he finally realised his industrial ambitions by becoming Chairman AMT Holdings.

To enliven this recital of Geoff's life history Paul proceeded to present a slide show, with full audience participation; hilariously funny, a touch scurrilous, for RAL viewing only and so censored.

"One final slide," he said showing the quotation from the entrance to R1. "Everyday I see this quotation and now I know what Newton meant. When I look round this Laboratory with its diverse programme and the even more diverse nature of its people, I find it remarkable that it holds together as a coherent whole. There is of course an agent holding it together and for five years at least it has been the Geoff Manning particle. He has stuck together many diverse bodies into a tightly bound laboratory and we are grateful. We wish you great success in your exciting new enterprise, Geoff."

Bearing gifts

Paul then presented flowers to Anita with thanks for the tolerance with which she had accepted Geoff's erratic life for so many years.

Geoff, Anita and Paul

To Geoff he gave, as new President of RecSoc, life membership; from the Laboratory, an album of photographs of his life at RAL and the traditional 'Ray Roberts' card (this time, more a book); and from friends and colleagues a briefcase, desk lamp and answerphone.

Chairman of RAL RecSoc, Tudor Morgan presented Geoff with a paper weight embodying a left handed golf club head.

"I really haven't looked forward to this occasion" said Geoff in reply, "Even now it doesn't seem real."

Hearing his life story had brought back many memories and he did owe so much to so many people at RAL and to Godfrey Stafford in particular.

"I had 21 years as a research worker which gave me great joy," he remembered. Project work brought joy and pain and management pain with some joy. "I still get withdrawal symptoms when I see research projects, he said, but I am proud of the Laboratory. It is an excellent place both for science and colleagues. It is, for me, the best in the UK and stands comparison world wide.

I shall have regrets about leaving, but I'm sure it is the right time for us both. I wish you all every success and I'm confident that with Paul you will be in good hands."

It's HERE

Paul Williams, Acting Director RAL, welcomes the Advisory Board for Research Councils' Cray X-MP48 computer to the Atlas Centre, RAL on the evening of Wednesday 3 December. On his left is Gordon McBride of Cray.

In all their glory

The RAL Sunday XI club in their new strip of blue shirts with yellow pinstripe and yellow shorts. The RAL logo is in yellow.

Pictured from left (top row) Tony Kershaw, Dave McPhail, Simon Lees, Steve Morley, Mike Dew (Manager), Barry Brett, Shane Miller, John Eggleton, Melvin Simpson and Brian Wheeler (Chairman). Bottom row, Ronnie Brumfit, Andy Wells, Ken Chapman (Captain), Nick Moore, Alan Saxby, Duncan McClure and Dave Rippington.

Unbeaten joint top of the Autotype, Upper Thames Valley League, their success is attributed by their manager Mick Dew, to brilliant teamwork and everyone working towards the same end - promotion.

Results

19 Oct.	RAL	5	Bowyer Sports	1
26 Oct.	Norman Knights	2	RAL	3
2 Nov.	RAL	2	Didcot MOD	1
9 Nov.	Red Lion (Abingdon)	2	RAL	4
16 Nov.	RAL	5	Oxford Exiles	0
23 Nov.	RAL	5	Pickerings	0

The human factor

(cont'd from p2)

help, a standard Client-Server Interface to be implemented in the same way on a range of computers. This will provide a common programming interface on a variety of machines for window management functions. A further development is of a layout manager, using the CSI, to provide a standard user interface on the same machines.

The third problem has already been partly tackled by developing a graphical library which acts as a 'toolkit' for the application program developer. This toolkit is written specifically for highly interactive use, and is available on a number of machines by driving manufacturers' window management software directly, thus giving the application programmer a measure of independence from vendor equipment. The next phase of development in this area will see the provision of the toolkit on the CSI.

What of the future? In the short-term, much work needs to be done to further the general acceptance of these developments by the academic and industrial communities, and to enrich further the program development environment. In the longer term, the vast range of problems in the HCI area will ensure a busy and interesting future for staff in the HCI Section in Informatics Division.

Ken Robinson

RAL Lectures

The 1987 series of lectures begin on Thursday 15 January. As usual they are held in the Lecture Theatre at 3.15 pm.

The first talk of the series is entitled:

"VEHICLE SAFETY"
by
Dr I Neilson
Transport and Road
Research Laboratory

Jump to it!

Would whoever borrowed the jump leads from Transport please return them immediately.
We got you out of your mess, we'd like to do the same for others.

Weight training club

We now have a York multigym.

If anyone is interested in joining the Club (including those who already use the facilities) will they please ring Jimmy Darius, Ext 6339 or Fran Childs, Ext 6499.

When we know how many people are interested, sessions can be organised.

Poppy Appeal '86

RAL collected £245.13 for the Royal British Legion Poppy Appeal this year.

The Legion thanks all contributers and collectors who so kindly supported this worthy charity.

Seasons Greetings

Heartfelt thanks to all who have helped to ease the Editor's path through a busy and eventful 1986, and a truly Happy Christmas to everyone.

Harwell Rec. Assn.

Subscription increase

The increase of 25% in the subscriptio rate of the Harwell Recreational Association due to come into effect on 1 Jan 1987 has been cancelled.

However a 10% increase will be charged from that date.

This makes the rate for ordinary membership 23p per week or 99p per month.

Bulletin

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