



Rutherford
Laboratory

COMMON/CSCAL/IBM, NERR, NCH, NGAP, ISCAN, NBR, NGR, NSCAN1, NRO
IYSEL, TYSEU, TYMAX, NTRACK, NSCAN, NES, NFAIL, MAXTR, AX, IA
ZNBEGIN, NTK, NTRY, NMISS, NSSR, NFIC, MAXMIM, NFIRST, ND
COMMON/CHIO/MFX(20,3), MFY(20,3), NFDX(10,3), NFX(10,3)
TAB(2,20,3), NX(100,4), NY(100,4), XN(2), YN(8), IB(100,1), ID
R, IDY(100,2), JDX(4), JDY(4), IHS(4), IGV(4), DE(4), I
S, NCF(16), IFS, NFS, FX, FY, JK, PIC, KPIC, NCUUNT, NBIN, MAXOV, MAX
T, MAXN, CTA, CTB, MX, I, A, JD, J, F, X, Y, Z, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
DIMENSION NCTR(144), NGT(12), CTR(12), MON(21)

bulletin

10

31 MAY - 14 JUNE 1976

RUTHERFORD GOES INTO MOVIES

Unique Collaboration with Royal College of Art

Continuing to draw enthusiastic response wherever it is shown is 'Finite Elements', a 10 minute colour film from Atlas Computing Division - one of the first films to be generated entirely by computer (it's always difficult to verify these claims), but certainly the first engineering film to be made this way. Last week the film was warmly received at a presentation to the Science Research Council at Appleton Laboratory and a special premiere at the Royal College of Art, London, which was attended by press, members of other research councils and specially-invited people.

As well as introducing the engineering technique of Finite Element Analysis, the film sets out to demonstrate to as wide an audience as possible the potential usefulness of the computer in solving practical engineering problems. It also illustrates the use of computer animation and film making as a general research tool, showing how masses of numerical information can be analysed and how models can be tested in all sorts of possible situations.

To make such a film (even the sound-track music is generated by computer!) the technical skills of computing had somehow to be combined with the professional arts of visual presentation, and this unusual combination of scientific and artistic skills is now provided by a long-standing and unique collaboration between Atlas people and the Royal College of Art in London.

'Finite Elements' was made using a Stromberg Data-

graphix 4020 microfilm recorder, which could produce only black-and-white film. Colour film was made by producing three black-and-white copies and then using the Technicolour process. Now that the SD 4020 has been replaced at Atlas by the more sophisticated FR80 unit, colour film can be produced directly, and more economically.

The techniques of computer animation are still only in their infancy, but now that a prototype film has been made, the collaboration between the Royal College of Art and the Rutherford Laboratory could, with the help of the computer, go on to investigate much more sophisticated applications such as those involved in visual identification.

Speaking at the special premiere showing at the Royal College of Art, Atlas' Jim Hailstone said 'there are few opportunities to convey the complexities of computers used in scientific research, and I hope the film may contribute something to the problem of communicating engineering and scientific ideas and applications. It may also help to explain to a wider audience what the expensive computers in research are used for!'

'The possible use of cine film under computer control has long been considered as a potentially useful way of conveying a mass of numerical information,' he continued, 'but it is only recently, however, that some of the technical problems involved have been solved.'

70 MeV INJECTOR - FULL ENERGY REACHED

The proton beam in the new injector in the Nimrod complex has now been accelerated through all four of the linear accelerator tanks, and on Wednesday May 19, output energy first reached 70 MeV. Beam from the pre-injector was accelerated to 10 MeV in the first 'tank', and increased to 30 and then 50 MeV in the next two tanks before finally reaching 70 MeV in the fourth. Work is now concentrating on establishing reliable running conditions with minimum beam loss before attempting to achieve the designed output beam intensity.

SALES TO EMPLOYEES

Sales of scrap metal/plastics as set out in RLN 12/73 will be made on 4 and 18 June.

SALES OF GOODS TO EMPLOYEES

As notified in RLC 10/76, Tender documents have been opened. Successful offers have been accepted and individuals notified accordingly.

MISSING EQUIPMENT

The following item of equipment has been reported missing:-

"Themophil" Electronic Thermometer (Headland Eng Type 4421) - Ser. No. 211706 - Loan Pool No. LP1207.

Will Anybody who knows the whereabouts of this instrument please contact V A Thorp, R18, Ext. 382.

The following item of equipment has been reported missing from S.W. corner of R25 Heavy Lab:-

Large Drawing Board on Metal Stand

Anyone with information on the present whereabouts of this item is asked to contact C Halliday Ext 483/374 or J Reader Ext 424.

Book accidentally taken from R12 Xerox Room - "Dangerous Properties of Industrial Materials" by Irving Sax. This book has a Safety Section stamp on the fly-leaf. Please return to Safety Section as soon as possible.

FILM BADGE NOTICE

It is Period 6. Colour Strip - PURPLE for $\beta\gamma$ films and neutron packs. Please check that you are wearing the correct dosimeter and that all old ones are returned.

INTERNAL EVENTS

NIMROD LECTURE SERIES

Thursday 3 June
11.30
Lecture Theatre

The Phenomenology of Neutral Currents

L Wolfenstein/Carnegie - Mellon University

USERS MEETING

Monday 7 June
11.00 - 17.00
Lecture Theatre

The agenda is as follows:-

1. Introduction by the Chairman of the Standing Committee on CERN/J D Dowell
2. Rutherford Laboratory Reorganisation and the Financial Outlook/G H Stafford
3. Inclusive Hadronic Processes at Large p_{\perp} /B G Duff
4. Experiments with High Energy Charged Hyperons/R J Ott
- LUNCH
5. Experiments with Tagged Photons in OMEGA/R J Ellison
6. Hadron Experiments in OMEGA/I Hughes
7. Exclusive Reactions in πp and $K p$ Interactions/C J S Damerell
- TEA
8. Bubble Chamber Experiments/D C Colley
9. The European Muon Collaboration/E Gabathuler

NIMROD LECTURE SERIES

Monday 14 June
11.30
Lecture Theatre

Pathological Science

Dr D Morrison/CERN

EXTERNAL EVENTS

SEMINAR IN THEOR. HEP/NP DEPT. OXFORD - 1430 hrs.

4 June: Dr E Corrigan/Durham - Subject to be announced.

NUCLEAR PHYSICS SEMINARS/NP LAB. OXFORD - 1430 hrs.

7 June: Prof C Rolfs/Marburg U. - Date & title to be confirmed.
14 June: Dr R G P Voss/Daresbury - Progress in the Construction of the Nuclear Structure Facility.

THEORETICAL PHYSICS SEMINARS/CLARENDON LAB - 1615 hrs.

3 June: Prof P Pincus/Paris-Sud - Phase Transitions in Quasi-one Dimensional Systems.
10 June: Prof R Loudon/Essex - Photon Coherence
17 June: Prof D Robson/Florida - Isospin - a Quantum Number for all Nuclei.

SEMINARS IN COMPUTATION/NP LAB. OXFORD - 1630 hrs.

3 June: Mr A Hutt/Soton - ICL - The Southampton Relational DBMS.
10 June: Mr B Green/DEC, Epsom - PROTOS, an Implementation of a Commercial "real time" System using a hierarchical database.
17 June: Prof M L Vertozos/Director of Lab, for Comp. Sci., MIT - Provisional Topic - Obtaining Information from Noisy Strings Using Knowledge about Contained Message.

HALLEY LECTURE/Lect. Th., Univ. Museum - 1700 hrs.

4 June: Prof G H Townes/California - Title to be announced.

COLLOQUIUM/CLARENDON LAB - 1615 hrs.

11 June: Prof Sir Denys Wilkinson - Inside the Nucleus Today.

LOW TEMP & SOLID STATE PHYS. SEMINAR/CLARENDON - 1430 hrs.

10 June: Dr C J Adkins/Camb - The Anderson Transition in Silicon Inversion Layers.

SPECIAL HEP SEMINAR/CAVENDISH LAB - 1500 hrs.

18 June: Dr D Aschman/Princeton - Radiative Decays of ψ and ψ' at SPEAR.

DARESBURY LECTURE SERIES/L.TH. - 1400 hrs

1 June: T Sloan/Lancaster - Evidence Against the Presence of A2 Exchange in Omega Photoproduction.
8 June: M A Van Hove/Wisconsin - Recent Crystal Surface Structures Obtained from Leed Calculations.
15 June: A Donnachie - Hadronic Production of J/Psi and Charm.

LECTURE AT DARESBURY/CONF. RM 3 - 1400 hrs.

14 June: Dr M J Jamieson/Glasgow - Time-Dependent Hartree-Fock Theory.

THEOR. PHYS. SEMINARS/MANCHESTER U. - 1430 hrs.

2 June: Dr C Todd/P.O. Research - Probing the Building Forces at Solid Surfaces.
9 June: Prof R F Streater/Bedford Coll. - Quantum Solitons.
16 June: Dr J G McWhirter/RRE - Inverse of the Laplace Transform & other Fredholm Equations of the First Kind.

THEOR & HEP SEMINAR/SOUTHAMPTON U. - 1430 hrs.

4 June: Dr C B Thorn/MIT & Camb. - Pomerons, Reggeons and other distorted Bags.

THEOR. PHYS. SEMINARS/SUSSEX U. - 1615 hrs.

3 June: Dr T D Clark/Sx. - Some Aspects of the Josephson Effect.
17 June: Prof R F Streater/Bedford - Quantum Solitons.

NP DIV. COLLOQUIUM/CONF. RM., HANGAR 8, AERE - 1530 hrs.

10 June: Dr I Woolsey/CEB Labs - Ion Beam Analysis of Corrosion Films.

THEOR. PHYS. SEMINAR/CONF. RM., BLDG 8.9 AERE - 1415 hrs.

11 June: Dr A B Lidiard/Harwell - Theory of Pressure Vessel Reliability.

RUTHERFORD LABORATORY BULLETIN

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CHINESE CHECKERS

Computers are no-longer merely number crunching machines, their applications are spreading into an area of business and administration, particularly those concerned with word processing.

Some aspects of these were discussed at the recent Fourth International Symposium on the Use of Computers in Literary and Linguistic Analysis" held at St Anne's College, Oxford from 5-9 April. It was attended by Barbara Stokoe and Kate Crennell of the Atlas Computing Division, (Kate who presented a paper at the Conference, kindly produced this report - in English!).

A number of papers discussed analysis of an author's style, others showed how to use a computer to decide between alternative candidates in cases of disputed authorship. These may be plays with authors such as Bacon and Shakespeare or more recently, police statements with the accused man in court claiming that the police wrote 'his' statement of what happened at the time of the crime.

The aspect of the conference of most interest to us was the use of computers to present data such as modern organic chemical formulae or non-Roman alphabetic texts which require something other than an ordinary card punch or teletype. Anyone who has tried to type scientific titles into a computer will appreciate the problem; how do you type $\pi + p$ on an IBM cardpunch?

In the Atlas Computing Division we are doing research into word processing by computer using an FR80 microfilm recorder, made by Information International Inc., for

the final output. The FR80 has (amongst others) a microfiche camera which can write 250 pages of text on to a 105 mm film (6" x 4"), so that large quantities of text can cheaply be sent to colleagues collaborating on experiments, who happen to live on the other side of the world.

The text can be written out using monospaced characters but these are not as elegant or easy to read as proportional spaced characters. We are experimenting with programs to produce text incorporating 'bold' and 'italic' fonts; naturally these programs need to access far more than the 256 different characters normally available to the user of an IBM computer with only an EBCDIC character set available.

This is where we use the experience gained last year from the work done on behalf of a visitor to the laboratory. He was Dr J T Yu of the University of Hong Kong, and he wanted to take back with him a method of using computers to make indexes to the books in their library using not words constructed from the Roman alphabet, but Chinese characters.

We put 9000 such characters into a font system on the ICL 1906A and managed to print some Chinese for Dr Yu to take back to Hong Kong. A sample of a poem is given below printed in rows and also in the more traditional Chinese fashion of columns, reading top to bottom and left to right.

The Symposium was reported in Computer Weekly, 20 May, and we are pleased to see this work mentioned.

Chinese poem in Columns

登
更欲黃白鶴
上窮河日鵲
一千入依樓
層里海山
樓日流盡王之

Chinese poem in Rows

登鶴鵲樓 王之
白日依山盡
黃河入海流
欲窮千里目
更上一層樓

OVERLOOKING THE CRANE MANSION

Wang Chih-huan

The sun has declined to the landscape and diminished
And the Yellow River flows as usual to join the seas
If you aspire to get a panoramic view stretching across
Thousands of miles, try one floor up!

Translated by Lee Kai-fat, a Graduate Student at Leeds University,
in this country on a Commonwealth Scholarship who occasionally
uses the Atlas facilities.

OVERSEAS VISITS Dr F E Close, to France & Spain,
4-11 June, for discussions in Paris
and to give talk at GIFT Seminar, Barcelona.
Mr C Thomas, to Vancouver, 5-26 June, to assist in
installation and commissioning of LH2 target on Prof.
Bugg's experiment at TRIUMF.
Dr J W E Lewis, to the USA, 5-23 June, to attend
Conference on Neutron Scattering, Gatlinberg and to
visit ANL, Univ of Chicago, Columbia U., BNL & National
Bureau of Standards.
Prof. F R A Hopgood, to the USA., 5-14 June, to attend
National Computer Conference in N.Y. & to visit Digital
Equipment Co and CDC.
Drs. C Comber & V K Magon, to CERN, 6-19 June, to attend
1976 CERN Summer School.
Mr R J Gray & Mr B J Saunders, to CERN, 6-25 June & 6-11
June respectively, to work on Hyperon 300 experiment.
The following will attend to the International Neutrino
Conference at Aachen, W Germany - Dr R J Phillips, 7-11
June; Dr G A Ringland, 7-12 June; Drs R L Kingsley and
W Cameron, 7-13 June.
Dr H M Chan, to Poland, 8-18 June to lecture at Dept.
of Theoretical Physics, Warsaw and Institute of Nuclear
Science, Cracow.
Dr P J Hunter, to Italy, 13-19 June, to attend Conference
on Finite Element Methods in Flow Problems' at Rapallo.
Messrs H O Normington, W Russett, A Dobbs and J F Wells,
to CERN, 14 June - 2 July for installation work on
Hyperon 300 experiment.

SOCIAL NEWS

CHRISTIAN FELLOWSHIP All are welcome to attend the
monthly prayer meeting led by
Jimmy Darius of R12 on Friday 4 June in the R12 Conference
Room at 12.30.
Bible Study, on Friday 11 June, will be led by Denis
Williams and will be a continuation of the study in
Colossians. All are cordially invited to come along
at 12.30 in the R12 Conference Room.

HEP SUPPER DANCE An HEP Supper Dance will be held
at the Didcot Conservative Club
on Friday 25 June.
Dancing to 'PORKY', 8.00 - 12.00
Supper choice: Scampi in the basket
Chicken in the basket
2 meat salad.
Tickets, £2 from Val Goodwin, R1, Ext 6256.

TABLE TENNIS NEWS The Table Tennis Ladder Competi-
tion is progressing very well with
some very good matches being played, the competition
attracting about 40 players from the Lab. Any Rec. Soc.
member who is interested in table tennis and would like
to join this competition can do so, by simply putting
their name at the bottom of the ladder board in R15
Rec. Hut.

At present the top five players are:-

1. Peter Kent - Atlas
2. Kenichi Konishi - R1
3. Eric Thomas - Atlas
4. John Varley - R2
5. Gordon Scott - R1

For further information on the Ladder competition, please
contact Gordon Scott, Ext. 293 or John Varley Ext 6363.
Team enquiries to Eric Thomas on Ext 6219.

I.P.C.S.

General Meeting on Wednesday 9 June
1300 hours - Lecture Theatre

AGENDA

1. Report back from IPCS Annual Conference.
2. Manpower : Report on recent discussions
between SRC and Central Staff Side Rep-
resentatives. Speaker - H Aram.

Note: On 24 June another General Meeting will be
held on the possible introduction of
'Flexitime'.