RUTHERFORD Bulletin 19
17 - 31 October 1977

Spending to Save

RL Secretary, Dr J M Valentine presents the awards to (l to r) Mr J Carr, Mr M J Athawes and Mr J Spencer

Within about thirty minutes on Wednesday 5 October, three cheques to the value of £525 were presented to one past and two present employees of the Laboratory.

The recently announced list of 'Suggestions Awards' printed below itemizes 28 awards to 24 people totalling nearly £1000.

Cheques for the three large awards, £250 (£200 + £50), £175 and £100 were presented to Mr J Carr, Mr M J Athawes and Mr J Spencer by the Laboratory's Secretary, Dr J M Valentine on behalf of the Director, then absent in America.

Dr Valentine said that it was the first occasion he had undertaken the presentation of awards remarking that it was 'a pleasant task giving away money'.

The first presentation, in R18 Electronics Section was to John Carr who recently left the Laboratory to work for a firm of consulting engineers. John's cheque for £250 included two awards; £200 for a suggestion concerning the use of a film overlay bearing component identifications to facilitate the assembly of printed circuit boards and £50 for a suggestion which speeds up the wiring of Amphenal connections. Both these 'suggestions' produce valuable savings as they are associated with production operations.

The next call was to the R12 Mechanical Workshop's mess room where a cheque for £100 was presented to John Spencer who only joined the Lab in 1975. He had suggested an improved method of removing excess resin from gas port cut-outs of W6 and W7 muon drift-chamber fibre glass strips.

The final call in this lightning tour ended in the R2 Electrical Workshop's mess room to meet Mick Athawes who joined the Lab over 15 years ago. Mick's suggestion, which earned him £175, is also concerned with the muon chambers and involves the use of enamelled copper wire (held in place by glass fibre cleats) for the 6 volt rails instead of 50 PREN cable. This saves a considerable amount of work and time in stripping the cable every $4\frac{3}{4}$" to attach connections.

In the complete list of awards below, three more are concerned with the muon chamber work; Mr H G Windless - £45, Mr D J Price - £40 and Mr A P Franks - £20. Further suggestions are being considered which are also concerned with the muon project.

Research into high energy physics and many other scientific fields, is demanding new and sophisticated techniques in the production of electronics and mechanical apparatus. Ideas which reduce time and therefore costs are valuable and this is one important area where the Suggestions Awards Scheme is proving effective.

The Laboratory is fortunate in having skilled craftsmen who can, and do, produce these suggestions to the mutual benefit of themselves and the Council, the estimated savings over the first year being divided equally. Hence the three large awards totalling £525, also saved the Council a similar amount.

The complete list of awards made at the last meeting of the Local Suggestions Awards Committee of the SRC Suggestions Awards Scheme is as follows:

Mr J O Talbot	Administration	R40	£5
Mrs V M Boulton	C & A	R27	£5
Mr G L Jones	Engineering	R18	£20
Mr M Mason	"	R9	£5
Mr R Robinson)	"	R9	£5
)			£5
Mr J Carr)	Instrumentation	R18	£50
)			£200
Mr A P Franks	"	R12	£20
Mr J Spencer	"	R12	£100
Mr M J Athawes	Nimrod	R2	£175
Mr W G Black	"	R2	£75
Mr F Harris)	"	R8	£20
Mr T Burson)			
Mr K B Butler	"	R8	£10
)	"		£5
Mr P J Champ)	"	R55	£5
)			£5
Mr N R Goddard	"	R51	£5
Mr D J Price)	"	R2	£40
)			£5
Mr P J Surtell	"	R6	£5
Mr K Waller	"	R2	£5
Mr H G Windless	"	R2	£45
Mr A D Wood	"	R55	£15
Mr D Wood	"	R55	£20
Mr C Grindrod	Technology	R25	£40
Mr A Holcroft	"	R25	£25
Mr D Morrow	"	R34	£10

INTERNAL EVENTS

JOINT COMPUTER SEMINAR
Thursday 20 October
1400
R27 Colloquium

Probabilistic Modelling and Interactive Computing for the Expression of Expert Knowledge

J M Dickey/University College of Wales, Aberystwyth

ABSTRACT: Statistical and computing methods for data analysis have so far been concerned with uses of objective data in the form of scientific samples and direct measurements on physical systems. With the advent of Bayesian statistics and modern interactive computing, it is feasible to quantify subjective data that may be based in an ill-understood way on otherwise unretrievable observations. Multivariate subjective probability distributions can be used to model expert knowledge. An updating operation, to include the effect of any objective data, permits the extension of subjective probability methods for uses in data analysis, posterior prediction, and sequential design of experiments. A new system of computer programs for this purpose will be described.

Applications include: scientific research in complicated settings, (cancer therapies in combined regimens, screening programs for new compounds, geological sampling); product design (asphalt composition, motor oil, physical properties of pharmaceuticals); optimization of industrial processes.

HEP SEMINAR
Wednesday 26 October
1100
R61 Conference Room

Baryoniums in Multiquark Spectroscopy

Dr Chan Hong-Mo/RL

SAFETY FILM SHOWS
Wednesday 26 October
12.30 & 13.15
Lecture Theatre

A new series of safety film shows will be presented during the coming months, continuing the series started last year.

The first film to be shown, "Night Call", is a follow-up on "The Motor-way File" shown last year and covers more specifically, correct motor-way driving techniques in normal conditions, wet conditions and night time, in an interesting and intriguing picture of events leading to a surprise development at the end.

RUTHERFORD LABORATORY LECTURE
Thursday 27 October
15.15
Lecture Theatre

Communicating from the Frontiers of Science

Mr Nigel Calder (see 'News' section for details and abstract)

HEP SEMINAR
Wednesday 2 November
1100
R61 Conference Room

Results from the Fermilab 100 GeV $\bar{p}\,\bar{p}$ Experiment

D R Ward/Cambridge University.

TURKEY TIME A date for your diary - Christmas Lunch will be available in the Restaurant on Tuesday 20 December 1977. Details will follow shortly.

EXTERNAL EVENTS

THEORY GROUP SEMINAR/DARESBURY LAB - 1600 hrs
24 Oct: Dr J Inkson/Cavendish - Local fields in semi-conductors.

THEOR PART PHYSICS SEMINAR/NP DEPT, OXFORD - 1430 hrs
21 Oct: Dr D Robson/Manchester - Narrow resonances not due to new quarks.

MANY BODY SOLID STATE PHYS SEMINAR/CLARENDON, OXF - 1430 hrs
20 Oct: Dr H Barentzen/Max-Planck Inst - Perturbation theory for low lying energy levels of a linear John-Teller System (prov title).

THEORETICAL PHYSICS SEMINARS/CLARENDON, OXF - 1615 hrs
20 Oct: Dr J Pendry/Daresbury - The theory of photo-emission
27 Oct: Dr M B Green - 2-Dim QCD as a model for quark confinement.

NUCLEAR STRUCTURE SEMINARS/NP DEPT, OXF - 1430 hrs
31 Oct: Dr A Jones/BSC - Nuclear power in steel making - fact or fiction?

PART PHYS DISCUSSION GROUP/BIRMINGHAM UNIV - 1615 hrs
28 Oct: Dr F Foster/Lancaster - Resonance region electroproduction and the quark model.

PHYSICS & GEOPHYSICS COLLOQUIUM/BRISTOL UNIV - 1700 hrs
31 Oct: Dr A J Illingworth/UMIST - Electrification of rain-drops.

HEP SEMINARS/ROOM A, DAMPT, CAMBRIDGE - 1500 hrs
20 Oct: T Weiler/Liverpool - Is there another neutral current?
27 Oct: P Goddard/Camb - Backlund transformations and the Atiyah-Ward Ansatze.

HEP SEMINAR/BRAGG L TH, MANCHESTER UNIV - 1615 hrs
26 Oct: Prof M Veltman/Utrecht - Weak Interactions at super high energies: what particles exist in this world?

THEORECTICAL PHYSICS SEMINAR/MANCHESTER UNIV - 1430 hrs
26 Oct: Prof W Greiner/Frankfurt - QED strong fields and its test in heavy ion collisions.

THEORETICAL PHYSICS SEMINARS/QMC - 1615 hrs
24 Oct: Prof Sir Brian Pippard/Camb - The superconductor normal interface
31 Oct: Prof R H Dicke/Princeton & Camb - The enigma of solar oblateness.

ELEMT PART PHYSICS SEMINAR/WESTFIELD COLLEGE - 1400 hrs
26 Oct: Dr W S C Williams/Oxf - Title to be announced.

NUCL PHYS DIV COLLOQUIUM/CONF RM, H8, AERE - 1530 hrs
20 Oct: A Aspinall/Bradford - Geophysical prospecting for archaeology.

THEOR PHYS SEMINAR/CONF RM, BLDG 8.9, AERE - 1400 hrs
25 Oct: Dr D H Worledge/SRD, Culcheth - Regeneration diagrams and component reliability.

OPENING TIMES! The Restaurant Shop R22, opening times will be revised from 17 October 1977. The new times will be: 8.00-9.15, 11.30-13.45.

FR80 Makes 'Film of the Book'

Printing in England began in the 15th century when William Caxton set up his press at the sign of the Red Pale in the City of Westminster; his first-known piece of printing, an *Indulgence*, was issued on 13 December 1476.

Almost exactly 500 years later the first book to be produced (probably in the world), using the FR80 was published.

The FR80 is a microfilm recorder containing a small computer which processes digital data fed into it on magnetic tape.

Kate Crennell has kindly supplied the following article on the book project together with samples of the print quality which will appear in the cumulative volume, due for publication very shortly.

Members of the Atlas Computing Division have been carrying out a feasibility study to determine whether the FR80 can be used for high quality printing of scientific data. We have used bibliographic entries (including chemical formulae) from the data base of molecular structures maintained by the Cambridge Crystallographic Data Centre. They accumulate references to crystal structures published mainly in periodicals and each year they publish a book containing the entries for that year. It must be printed quickly if it is to be useful to the research community, which means that conventional printing cannot be used because of the difficulty of proof reading thousands of very similar complex chemical names and formulae. Computers are used to produce 5 different types of index (main bibliography, author, formula, permuted formula and, compound name) from the one set of data, and do the typesetting.

The magnetic tapes carrying the information for 1976 arrived in Chilton in the first week of January 1977. There were 2762 references and 1313 cross-references listed in 5 different formats. We just managed to run the necessary jobs before the IBM 360/195 was shut down prior to its move to R27. The film was processed and sent off to the printers, who added 20 introductory pages to the 817 we had produced and the book was published in the Spring.

Encouraged by the success of this experiment, we started work on an A4 page layout, with several columns, ready for the production of a cumulative volume in the summer. In August we sent 700 pages of this volume to the printer. It contains all the references published in the previous 7 volumes plus the references in volume 8 referred to above, ie data from 1935 to 1976, and the printers hope it will reach the publishers in October.

The 1977 volume is not due until December, so that we have a short respite and plenty of time to show any interested persons our copy of the first book made with the FR80. (Contact K M Crennell, Data Bases and Text Processing, Ext 6397)

Further reading: "FR80 User Note One" issued by Atlas Computing Division, RL, 1974.
"Using a microfilm recorder to improve laboratory documents" - Report No RL-77-046/B.

Excerpts from Author Index

Armstrong, R.A. 2 81.27, 81.45, 81.48, 81.66, 81.81
Armstrong, V.S. 2 75.22
Armstrong, V.W. 8 64.68, 64.78
Arnott, S. 1 56.2
Arora, S.K. 1 13.8 3 47.12, 50.16 4 11.3, 41.14, 50.1 6 13.8, 13.9 7 36.26, 41.18, 58.18, 59.16 8 12.3, 19.7, 44.24, 44.25, 51.29, 54.7, 58.17, 59.28, 59.29

Excerpts from Permuted Formula Index

8 66.2	Bi	$CH_4Cl_5N_2S^{2-}$. $C_6H_{24}BiN_{12}S_6^{3+}$. $C_2H_8BiCl_4N_4S_2^-$
7 66.4	Bi	$CH_4Cl_5N_2S^{2-}$. $C_6H_{24}Bi_2Cl_4N_{12}S_6^{2+}$
3 66.1	Bi	$C_3H_3O_6$
8 66.2	Bi	$C_6H_{24}N_{12}S_6^{3+}$. $CH_4BiCl_5N_2S^{2-}$. $C_2H_8BiCl_4N_4S_2^-$
7 66.6	Bi	$C_{15}H_{30}N_3S_6$
8 66.5	Bi	$C_{15}H_{30}N_3S_6$
4 66.7	Bi	$C_{16}H_{13}N_2O_2S_2$

RUTHERFORD LABORATORY LECTURE

"The final cause of speech is to get an idea as exactly as possible out of one mind into another .....", part of a quotation attributed to G A Young. A simple enough statement; exceedingly difficult to put into practice.

We are fortunate in having for our next speaker, Mr Nigel Clader, who for over 20 years has earned his living in probably the most difficult of fields, the communication of science to the public.

The eldest son of Baron Ritchie-Calder (author, scientific, social and political journalist and broadcaster) he has, in many ways, followed in his father's footsteps.

Nigel Calder was educated at the Merchant Taylor's School and Sidney Sussex College Cambridge where he obtained his MA. After working as a physicist at the Mullard Research Laboratories, he joined the editorial staff of the New Scientist in 1956, becoming Science Editor in 1960 and Editor from 1962-66.

Following the publication of a number of books and several TV science programmes he was awarded the UNESCO Kalinga Prize for popularization of science. His involvement with TV has continued and as he remarks in the abstract below, has scripted seven Science Specials for the BBC.

His last programme, 'The Key to the Universe', shown in January this year, aroused considerable comment and criticism amongst members of the Lab staff; question time should be rather lively!

The talk which is entitled "Communicating from the Frontiers of Science", will be given at 1515 hours on Thursday 27 October, in the Lecture Theatre.

Mr Calder has kindly supplied the following abstract:

How does one set about informing the Public (the Tax Payer!) of the current successes in fundamental Research? What sort of collaboration does it involve between the Scientist and the Professional Populariser? The Speaker has scripted 7 "Science Specials" for BBC-TV spanning a wide range of fields from astronomy to human behaviour. He will discuss in particular the methods and problems of devising "The Key to the Universe" (BBC 2 January 1977) - probably the most ambitious attempt yet made to communicate High Energy Physics to a wide audience.

OVERSEAS VISITS

Mr G M McPherson and Mr S Jaroslawski, to CERN, 16-21 Oct, for discussions and maintenance on special purpose processors for WA3 and WA7.
Dr G C Stirling, Dr C J Carlile and Dr W G Williams, to Vienna, 16-22 Oct, to attend IAEA Symposium on Neutron Inelastic Scattering.
Mr A E Smith, to CERN, 17-20 Oct, delivery of equipment.
Dr M Edwards, to CERN, 17-21 Oct, to run tests on muon chambers and attend European Muon Collaboration meeting.
Dr A R Gillman, to CERN, 17 Oct-2 Nov, to work on WA3 experiment.
Mr W J Tallis and Mr A E Thorp, to CERN, 19-21 Oct, to discuss handling installation, refrigeration and optical systems for RCBC.
Dr J Carr, to CERN, 19-22 Oct, to attend collaboration meeting.
Mr E G Sandels, to CERN, 19-21 Oct, for technical discussions on Fast Kicker Magnet Design.
Dr P R Norton, to CERN, 19 Oct-1 Nov, to attend European Muon Collaboration meeting and run tests on muon chambers.
Dr M A R Kemp, to CERN, 17-28 Oct, 31 Oct-4 Nov and 7-11 Nov to work on e 1γ experiment.
Mr R J Gray, to CERN, 24 Oct-2 Nov, to work on Hyperon experiment.
Dr C M Fisher and Dr R Sekulin, to Vezelay France, 25-29 Oct, to attend CERN workshops on the utilization of the EHS.
Dr J J Thresher, to CERN, 25 Oct-2 Nov, to work on PRO 140.
Dr G E Kalmus, to CERN, 26 Oct-3 Nov, to work on WA30 and attend BEBC Users Group meeting.
Dr R P Hand, to CERN, 26 Oct-9Nov, to work on on-line software for WA2 experiment.
Dr L C W Hobbis, to Grenoble, 27-29 Oct, to attend ILL Scientific Council Sub Committee meetings.

Half Century Reached

It is always a pleasure to report on an unusual event; even more so when it is linked to a good cause.

On Tuesday, 4 October, the second day of the half-yearly visit of an Oxford Region Blood Transfusion Service Unit, Dr Barbara Johnson, Senior Medical Officer at the Oxford Region representing Dr Gonson, Director of Transfusions, presented Mr G W Lack with a silver-gilt medal on the occasion of his 50th donation of blood.

George who has been at the Lab for 20 years, all in the Engineering Services Division, started donating blood in 1943 while serving in the Royal Navy. We offer our congratulations to him on receiving the award.

Also worthy of a note, Jim Lidbury who gave his 40th pint on Tuesday; his donation (Rh negative) being urgently required for an operation on the following day.

Rutherford Restaurant

Customers will have noticed that there has been a change in the menu recently with a reduction in the choice of dishes available each day.

The Restaurant is expected to be a self supporting unit, in as much as the income from sales of food is expected to cover the cost of raw materials used and the labour directly employed. There is no charge to the Restaurant Account for the use of the building, the equipment or the fuel used. A small subsidy is in fact allowed to cover the obviously uneconomic service of meals at weekends, evenings and breakfast.

In the last couple of years the prices of foodstuffs and wages have risen appreciably and despite an overall price increase in December 1976 and minor adjustments since then the Restaurant has continued to run at a loss.

The Management is anxious to avoid further marked increases in prices and as an experiment has taken the alternative step of reducing the range of dishes. The most marked effect of this is to save waste by cutting down over production of food which cannot economically be re-used later.

Nevertheless the restaurant will continue to provide a prime cut, a made up dish and a snack on the main counter. The cold counter will have ten meats or fish dishes each day and a selection of salads and the grill will continue with its usual range of choice. In addition fish will be available every day to order at the grill counter. The results of these changes in the service will be closely scrutinized for the next few weeks to see if this is the best method of bringing the account into balance. The results after the first week were encouraging and it is hoped that regular users will carry on supporting the Restaurant. It is the aim to continue to maintain the usual quality and the same portions and the generally high standard of service.

LIQUID NITROGEN DEWARS Stores are carrying out periodic maintenance servicing of 75 litre LN2 dewars, identifying them with 'Inspection Date' labelling.

A substantial number of dewars are being retained by users and not being returned to Stores for re-use during recent months.

Will all users please ensure that ALL empty dewars are made available for collection by Stores so that servicing and LN2 supplies can be maintained. Special collection can be arranged by notifying Stores, Ext 6166/6136.

MISSING EQUIPMENT The following items of equipment has been reported missing:

Tektronix Differential Amplifier Plug-in Unit, Type D - Ser No 007583.
Information please to D Jones, R36 Ext 466/6185.

Missing from Lab 15A;
Electric hand drill, ¼" chuck, Ser No 741460
Please return to R J Griffiths, R12 Ext 486.

CLEARANCE Anyone having a claim to apparatus or effects in Room 16, R34 (Machine Spares Stores) should contact A G D Payne Ext 460/6625 or D Jones Ext 466/6185 by the end of October regarding its removal. After that date it may be summarily disposed of - so beware.

ALAN SAYS CHEERIO Alan Watson (who left the Lab recently after 10 years) wishes to convey his thanks to all who contributed to his leaving present and the 'special' presentation card. His apologies to those he was unable to see before leaving.

He says that he will be using the cheque to help to buy a special aquarium pump.

LIBRARY NOTICE The Library has received a collection of xeroxed copies of the transparencies for papers given at the 1977 International Symposium on Lepton and Photon Interactions at High Energy, held at Hamburg, 25-31 August. They will be available for Reference only for a period, on request at the desk.

FILM BADGE NOTICE It is Period 11. Colour Strip - ORANGE for $\beta\gamma$ films and neutron packs.

Please check that you are wearing the correct dosimeter and that all old ones are returned.

Anyone needing a new blue holder, please contact Mrs Coates, Ext 430.

SALES TO EMPLOYEES Sales of scrap metal/plastics as set out in RLN 12/73 will be made on 21 October.

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Deadline for insertions

Editor: H F NORRIS
Room 42 Building R20
Rutherford Laboratory
Chilton Didcot Oxon OX11 0QX
Abingdon (0235) 21900 Ext 484