



Rutherford
Laboratory

R(12), NDT(60,3), ISW(3500), ANGLE(60), YINT(60), DUMMY(84),
(6,3), NACHT(48), CEN(1), ARS(1), TC(1), AR
MMON/CFID/MFX(20,3), MFX(20,3), NFDX(10,3), NFX(3), NFD(3), I
B(2,20,3), NX(100,4), NY(100,4), XN(2), YN(8), IB(100,2), IDX(100,2), JDX(4), JDY(4), IHS(4), IOV(2), IUN(2), L(1), IDE
CF(16), IFS, NFS, FX, FY, JK, PIC, KPIC, NCOUNT, NBIN, M, OV, XUN
AXN, CTA, CTB, MX, MY, JA, JB, JC, JD, JE, JF, XF(20,3), Y(20,3),
MMON/CJACK/NSY(20,30), NMS(20), NDR(20), NR(20), (1), YA
(20), BX(20), NST1(20), NST2(20), INER(20), (20), (20), (60)

26 March - 2 April 1973

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FEASIBILITY STUDY OF A NEW ACCELERATOR COMPLEX FOR BRITAIN

The Rutherford and Daresbury Laboratories are organising a feasibility study of an intersecting electron proton complex of accelerators, which is being considered as a replacement for Nina and Nimrod in the 1980's. The project has been christened EPIC (Electron Proton Intersecting Complex). Working parties have been set up involving accelerator physicists from both laboratories and about 50 High Energy Physicists. The aim is to produce a report by the end of the year.

HIGH ENERGY PHYSICS WITH POLARISED TARGETS

Last Saturday and Sunday 17 and 18 March, a week end meeting on 'High Energy Physics with Polarised Targets' was held at The Coseners House, Abingdon.

Involving physicists from both British and overseas laboratories, the meeting stressed the physics interest in using polarised targets (at present and future particle energies) for both strong-interaction and electromagnetic interaction experiments. Inevitably, the suitability of polarised targets for the determination of R or A scattering parameters was emphasised.

Theoretical introductions describing the importance of amplitude analysis (and therefore the parameters of R or A parameters) were given by R J N Phillips and R P Worden/RHEL; a similarly excellent introduction to polarisation in electromagnetic experiments was given by F Close/DNPL. M Borghini/CERN described recent work on polarised target materials development.

G Court/Liverpool, C Daum/CERN, P J Hayman/Liverpool, G Jones/Imperial College, J Merlo/Saclay, F M Russell/RHEL, P Sadoulet/CERN, G Walker/RHEL and A Yokosawa/ANL, made notable contribution to an extremely informative meeting. Proceedings will be published in due course.

CONSTRUCTION OF NEW LIBRARY-ALTERATION OF BUS ROUTES AND CAR PARKING

Due to the construction of the new Library, some of the bus services now using Road 5 will be re-routed as from Monday 26 March to bring them on-site by Roads 4 and 1 to terminate at Building R8. Likewise the outward journey by these services will be from Building R8 via Roads 4 and 1. The affected services are:-

- (a) Single deck bus
 - (i) 07-30 - from Hostels
 - (ii) 10-30 - from Didcot Railway Station
 - (iii) Lunchtime - to and from AERE Shopping Centre
- (b) Double deck bus
 - (i) Non-industrial morning feeder bus from AERE bus park
 - (ii) Non-industrial evening feeder bus to AERE bus park

Visitors arriving in cars, who do not normally work at the Laboratory should use the vehicle parks at the East end of Building R1 or R20. Anyone not familiar with road numbers should see inside front cover of telephone directory.

THE FUTURE OF THE DARESBUURY LABORATORY

Bulletin readers may have seen an article on the back page of the Times for Wednesday 21 March in which it is stated that the Daresbury Laboratory would close down in five years time. This is untrue and the Public Relations Unit at State House has issued the following statement:-

"The SRC do not intend to close the Daresbury Nuclear Physics Laboratory. Their present plans envisage that the electron accelerator at the Laboratory will have to be closed in about five years time. These plans also include a proposal to build at DNPL a Nuclear Structure Facility at a capital cost of £5 million. It is hoped that this major new facility will come into operation by about 1978"

RESTAURANT LUNCH SERVICE - THURSDAY 29 MARCH

A Conference on Fire Protection of Computer Establishments, organised by the Atlas Laboratory is to be held in the Rutherford Laboratory's Lecture Theatre on Thursday, 29 March 1973. It is expected that some 200 visitors to this Conference will take lunch in the restaurant. In order to avoid congestion in the Servery and Rotunda, lunch service for Rutherford Laboratory personnel will commence at 11.30 and cease at 13.15. This will allow time for the restaurant staff to clear and prepare to serve the visitors at 13.30. These changes in normal service also apply, of course, to the Coffee Lounge Bar.

INTERNAL EVENTS

300 GEV MEETING

10.30 - 17.00 Saturday 24 March
9.15 - 17.00 Sunday 25 March
Lecture Theatre

Meeting on Experimental Proposals for the 300 GeV Machine

NIMROD LECTURE SERIES

Monday 26 March
11.30
Lecture Theatre

Resonances and Symmetries

Professor J Rosner/University of Minnesota

HEP DISCUSSION GROUP

Wednesday 28 March
11.00
Conference Room, Building R1

Current Status of ACE Partial Wave Analysis of K^*p Scattering

Dr N Griss/California Institute of Technology

ATLAS CONFERENCE

Thursday 29 March
10.30 - 18.00 or later
Lecture Theatre

Fire Protection of Computer Establishments

One-day conference, organised by the Atlas Laboratory - attendance is by invitation only and is already over subscribed.

TRADE EXHIBITION

Friday 30 March
10.00 - 16.00
R25 Car Park

The G A Platon Ltd mobile display vehicle will visit the Laboratory to demonstrate their range of flow control equipment, including flow meters for gases and liquids, flow alarms and transmitters and flow control valves and actuators.

NIMROD LECTURE SERIES

Monday 2 April
11.30
Lecture Theatre

Partial Wave Analysis of the 3π and $K\pi\pi$ Systems

Dr J D Hansen/CERN

EXTERNAL EVENTS

DARESBURY LECTURE SERIES

Tuesday 27 March
14.00
Daresbury Lecture Theatre

Higher Symmetries for Resonance Decays - Duality and the Quark Model Meet Again

J L Rosner/Minnesota

APPLIED PHYSICS COLLOQUIUM

Wednesday 28 March
16.30
University of Reading

Single Sideband Broadcasting

Professor P B Fellgett

EVENTS AT AERE

THEORETICAL PHYSICS SEMINAR

Tuesday 27 March
14.00
Conference Room, Building 8.9

Electron Transport in Liquid Metals

Mr R Gilbert/AERE

NUCLEAR PHYSICS COLLOQUIUM

Thursday 29 March
15.30
Conference Room, Hangar 8

Peaceful Uses of Nuclear Explosions

Dr K Parker/AWRE

THE DEMINERALISED WATER PLANT - BUILDING R4

David Evans continues the story of water for cooling in this third article in the 'Scene But Not Heard' series.

Water is used to cool the high current windings on the Nimrod magnets and on many other items of electrical plant. If the water is pure it will not conduct electricity (i.e. it is not water that is conductive but the mineral salts dissolved in it) and so pure water can be used directly in contact with the magnet windings without fear of excessive current losses.

To purify the water, mineral salts dissolved in it have to be removed. (Hence the term - demineralised water). This may be done by distillation but on a large scale the more common method is ion-exchange. It is this latter process which is employed on the plant in building R4. Raw water direct from the mains flows into the top of a large column partly filled with beads of ion-exchange resin. A chemical reaction between the resin and the water removes the dissolved mineral impurities and pure water flows from the bottom of the column. In a second column, dissolved oxygen is removed by a similar chemical reaction.

A convenient method of expressing the purity of water is based on a measure of its electrical resistance. The reciprocal of the resistance of the water (measured in a standard cell) is termed the 'conductivity'. For water direct from the mains the conductivity would be about 400 μ mhos/cm and for water direct from the bottom of the demineralising columns in building R4 the conductivity would be less than 0.1 μ mhos/cm. Distilled water would commonly have a conductivity in the region of 1-2 μ mhos/cm.

In 1894 Kohlrausch prepared distilled water with a conductivity of 0.04 μ mhos/cm. However, he distilled the water under vacuum straight into a small cell for measuring the conductivity. Successive small portions were distilled into the measuring cell; after about 30 days, during which about 30 portions were distilled, the conductivity was almost constant at the above figure. The apparatus which Kohlrausch used for this experiment had been soaked in distilled water for some 10 years previously!

The plant in R4 will produce water, of a comparable quality to that which Kohlrausch so painstakingly produced, but at the rate of 180 gallons per hour for each of the three installed units.

Water of high chemical purity may be even more corrosive than raw water, especially in the presence of dissolved oxygen or as a result of electro-chemical attack. To prevent corrosion from dissolved oxygen, the water is deoxygenated as previously described. Electro-chemical attack may be minimised by excluding from the system metals which are not compatible with each other. For instance, an iron fitting in a water circuit constructed predominantly of copper would form the anode of an electrolytic cell and be rapidly corroded. There are other examples of such undesirable couples and these must be excluded if the objectionable consequences of corrosion are to be minimised.

Reference: 1. Z physikal Chem., 14, 317.

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MODEL RAILWAY CLUB

The club members have been pressing on with the basic work necessary for the new layout. This has meant a lot of hard work with saw, screwdriver and big hammer. The next phase is about to begin, the laying of the actual track. New members will be welcomed and as a reminder meetings during the construction period are at 12.30 on Monday, Tuesday and Friday. Information can be obtained from Ray Roberts on Ext 254.

RECORD SOCIETY

Tuesday 27 March at 12.40 in the Lecture Theatre

Perry Como - In Person at the International Hotel, Las Vegas.

Perry Como's appearance at the International Hotel, Las Vegas was his first performance on any stage other than TV in over twenty-five years. It is also the first time throughout his long singing career that he has been recorded live. Perry Como still has many followers so here is a chance to hear that distinctive style.

CHRISTIAN FELLOWSHIP

Captain Hiscock of the Salvation Army, Abingdon will be speaking at the Fellowship and all are welcome to come along. The meeting commences at 12.30 on Friday 30 March in the Conference Room, Building R12.

RUTHERFORD LABORATORY BULLETIN

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Editor: H F NORRIS

Deadline
for
Insertions

GENERAL & SOCIAL NEWS

INTERNAL & EXTERNAL EVENTS

Tuesday 1600

Wednesday 1200

Room 42 Building R20
Rutherford Laboratory
Chilton Didcot Berks
Abingdon 1900 Ext 484

CASH OFFICE-TEMPORARY CLOSURE

The Cash Office will be closed for business for the morning only on Monday 2 April 1973. Afternoon opening hours will be as normal, i.e. from 14.00 - 16.00 hours.

NATIONAL SAVINGS - WEEKLY CYCLE ENDING 31 3 73

Certificates can be collected from the Cash Office, Building R20, from 3 April onwards. New members wishing to join the Scheme can obtain enrolment forms from the Cash Office. Forms must be returned not later than 5 April.

A I S B SUMMER SCHOOL and ONE-DAY MEETING

An A I S B (Artificial Intelligence Simulation of Behaviour) Summer School is to be held at St Catherine's College, Oxford, from 16 - 20 July 1973. The plan is to bring together a fairly informal mix of four or five leading UK researchers in artificial intelligence and about fifty other participants eager to learn from them. Anyone who may wish to attend (whether or not a member of A I S B) should write for further details to: James Doran, A I S B Summer School, Atlas Laboratory.

A I S B is also sponsoring a one-day meeting on chess-playing by computers to be held at the Atlas Laboratory on Monday, 21 May. A number of researchers active in this branch of A I will speak, and there will be a demonstration. Details from Mr C L Roberts, Computer Chess Meeting, Atlas Laboratory.

UNDELIVERABLE MAIL

Mail, containing a scientific paper, and addressed to Dr Van Berg can be collected from the Editor.

FILM BADGE NOTICE

Period 4 commences Monday 26 March. Colour Strip - ORANGE for 8y films. Six monthly change for people with surnames commencing M, N, O, P.

Please make sure that all old dosimeters are returned as soon as possible.

OVERSEAS VISITS

Mr G T J Arnison, to CERN, 25 March - 3 April, for setting up spark chamber and readout system - S124.

Dr D Mrogan and Dr R L Sekulin, to the USA, 26 March to 11 and 9 April respectively to attend International Conference on $\pi\pi$ Scattering and Associated Topics at Florida State University and to visit NAL, ANL and BNL.

Dr J B Forsyth, to ILL Grenoble, 26 - 30 March for discussions.

Mr M R Harold, to S L A C, California, USA, 26 March - 25 June, to collaborate in the commissioning of SPEAR.

Dr J S Hutton, to CERN, 27 March - 1 June, to work with the ISR group on software problems. The Director, to Geneva, 30 March for one day, to attend Restricted ECFA Meeting.

SOCIAL NEWS

SEVEN-A-SIDE SOCCER

LEAGUE FIXTURES

Week Beginning - 26 March

Monday 26 March - G O v R9
Tuesday 27 March - R25 v Casuals
Wednesday 28 March - App v R55
Thursday 29 March - Trans v 351
Friday 30 March - Atlas v RHG

FOOTBALL LEAGUE TABLE - 21 MARCH

TEAMS	P	W	D	L	F	A	Pts
351	3	3	0	0	11	1	6
G O	3	3	0	0	16	4	6
R25	4	1	3	0	6	4	5
C A Div	4	1	2	1	8	6	4
Casuals	4	2	0	2	7	8	4
Admin	2	1	1	0	6	2	3
R9	4	1	1	2	5	6	3
Apprentices	3	1	0	2	9	10	2
Atlas	3	1	0	2	7	8	2
R H G	3	1	0	2	5	10	2
R55	3	1	0	2	3	19	2
Trans	3	0	1	2	6	8	1

Social News continued on page 3