



Rutherford  
Laboratory

R(12), NDT(60,3), ISW(3500), ANGLE(60), YINT(60), DUMMY(84),  
(6,3), NACHT(48), XCEN(12), YCENT(12), IPAC(12), TC(12), AR  
MMON/CFID/MFX(20,3), MFY(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(  
DY(100,2), JDX(4), JDY(4), IHS(4), IOV(2), IUN(2), L(100,2), IDE  
CF(16), IFS,NFS,FX,FY,JK,PIC,KPIC,NCOUNT,NBIN,MA,OV,AXUN  
AXN,CTA,CTB,MX,MY,JA,JB,JC,JD,JE,JF,XF(20,3),YF(20,3)  
MMON/CJACK/NSY(20,30), NMS(20), NDR(20), NSR(20), YB(100), YA  
(20), BX(20), NST1(20), NST2(20), INER(20), NSX(20,50), AN(60)

**20-27 March 1972**

**bulletin 12**

#### STAR GAZING AT 550 KILOMETERS

An 'observatory spacecraft' - the first of its kind developed in Europe - is carrying a joint United Kingdom/Belgian ultraviolet telescope in earth orbit after being launched on behalf of the European Space Research Organisation by NASA from its Western Test Range, California, on March 11 (California time).

The telescope, designated S2/68, is a major experiment in ESRO's TD-1A satellite (TD standing for the NASA Thor Delta launching vehicle). This UK contribution to the experiment has been financed by the Science Research Council and represents a significant collaboration between stations of the Council and industry. The experiment was originally proposed by Dr H E Butler of the Royal Observatory Edinburgh.

The satellite system enables the telescope to scan a great circle of the sky during one orbit whose plane is maintained orthogonal to the earth-sun line. As the earth moves in its orbit, the great circle rotates until complete sky coverage is obtained in six months. It is estimated that about 40,000 early type (hot) stars will be detected by the system and these measurements will lead to a greater understanding of the atmosphere of these objects. These observations will also enable the ultraviolet extinction effects of the inter-stellar dust grains to be determined throughout the Milky Way and lead to a better understanding of the nature of these particles which play a role in star formation.

The fact that stars are observed more than once - over a hundred times for objects near the ecliptic poles - means that studies can also be made of stellar variability. The complete coverage of the sky ensures the sampling of all detectable objects within and without the Milky Way and a full coverage of our galactic companion - the Magellanic Clouds. It is expected that some galactic and extragalactic nebulae will also be within the range of the telescope.

The British participation in the project has been under the direction of Dr Robert Wilson, Head of the Council's Astrophysics Research Unit at the Culham Laboratory. Project and scientific management have been carried out from the Rutherford Laboratory by Messrs Peter Barker and Harold Wroe respectively. Calibration measurements on the integrated experiment were undertaken at the Royal Observatory Edinburgh by a group headed by Dr C M Humphries. An important aspect of these measurements was the use of a secondary standard photomultiplier which was calibrated absolutely against a thermopile at the Rutherford Laboratory. Finally, the enormous quantity of data expected will be processed at the Atlas Computer Laboratory in a joint operation between ACL and a Data Analysis Group, headed by Dr Gordon Thompson, at the Royal Observatory Edinburgh.

The UK hardware responsibilities extend over the optics and structure of the telescope, including the thermal as well as the mechanical aspects, together with final alignment and vibration and thermal vacuum tests of the integrated experiment. The Belgian participation in the S2/68 experiment has been through the Institute d'Astrophysique of the University of Liege which has been responsible for the ultraviolet detectors and associated electronics. Photometric calibration of the experiment was carried out in both countries for comparison.

#### BULLETIN NOTICE

The next Bulletin No 13/72 dated 27 March will cover a period of three weeks. This is due to the Easter break followed by the large International Conference at St Catherine's College Oxford on 5 - 7 April at which most of the Scientific Administration Group will be in attendance.

Please note - the Editor will be absent for about three months with effect from Monday 20 March. Items for inclusion in the Bulletin should still be sent to Room 42, Building R20 but telephone calls regarding the Bulletin, and other work normally carried out by the Editor, should be directed to Mr F Harden Room 40 Ext 6114.

#### 'STONY BROOK' CONFERENCE

The 4th International Conference on High Energy Collisions is being organised by the Rutherford Laboratory, and will be held at St Catherine's College Oxford, on 5 - 7 April. The first and third conferences of this type were held at the State University of New York at Stony Brook (Long Island) - hence the unofficial name of the series; the second conference was at CERN.

Continued on Page 4



## INTERNAL EVENTS

### NIMROD LECTURE SERIES

Monday 20 March  
11.30  
Lecture Theatre

Recent Development in the Theory of Weak Interactions

*Professor M Veltman/Utrecht*

### SPECIAL LECTURE

Tuesday 21 March  
10.00  
Conference Room Building RI

Exchange Mechanisms in Resonance Production Reactions

*Professor George Gidal/Berkeley*

### HEP DISCUSSION GROUP

Wednesday 22 March  
11.00  
Conference Room Building RI

Weinberg's Renormalizable Model of Weak Interactions

*Dr J C Taylor/Oxford*

### FILM SHOW

Wednesday 22 March  
13.15  
Thursday 23 March  
12.40  
Lecture Theatre

After the Arrow, a 21 minute colour film from The Post Office

Last year we showed a film called Picture to Post which was very popular. Two other films from the Post Office have been released which completes the trilogy of specialised films on postage stamp design, production and use. The third of these films - The Rainbow Verdict has been booked for showing on 12 and 13 April this year. 'After the Arrow' could rightly be subtitled 'Our National Heritage' as it shows how historical events from the Norman Conquest onwards have been commemorated in special issues of postage stamps. The film should have appeal for three distinct classes of audience, firstly for the philatelist for whom it is primarily intended, secondly for general audiences who will enjoy it for itself, and thirdly for those interested in the techniques of the cinema - for it contains some excellent trick camera work and colour manipulation. Lastly, all three films set a very high standard of quality continuing the tradition set by one of the oldest classical films of all, Night Mail.

### SEMINAR IN COMPUTING

Friday 24 March  
11.00  
Conference Room Building RI2

Computer Control of the HPD Flying Spot Digitizer.

*P Hallowell/RHEL*

The talk will discuss how the IBM 360/195 controls the HPD 2 film measuring machine via the DDP 516 satellite.

## NIMROD SCHEDULE

CYCLE 3 14.3.72 - 4.4.72

MACHINE PHYSICS

HIGH ENERGY PHYSICS

<u>Team</u>	<u>Beam</u>	<u>Experiment</u>	<u>State</u>
Birmingham University RHEL	K12A	$K^{\pm}\eta$ Elastic Scattering and $K^{\pm}\eta$ Charge Exchange from 0.45-0.95 GeV/c	Data
Cambridge University RHEL	K13C	Associated Production Cross Sections	Setting up
Imperial College Southampton University	$\pi^7$	Studies of $\eta$ $\omega$ and $A_2$	Setting up
Surrey University Birmingham University RHEL	$\pi^{10}$	Total Cross-Sections for Pions on Light Nuclei	Setting up
RHEL	K9	HBC-Technical Tests for Future Experiments	Data
Glasgow University RHEL	$\pi^9, N_4$	Polarisation Measurements in $\pi^-p$ Charge Exchange	Setting up
Bristol University Southampton University RHEL	K15	$K^+p$ and $\pi^+p$ Differential Cross-Sections	Setting up
Westfield College RHEL	$\pi^8$	Neutron Counter Tests for $\Omega$ Project	Setting up
Oxford University	P71	Cherenkov Counter Tests for NAL Experiment	Setting up



## EXTERNAL EVENTS

### THEORETICAL PHYSICS SEMINAR

Monday 20 March  
16.15  
Queen Mary College

Theory of Localisability: a New Theory of Many - Body Theory

*Professor P W Anderson/Cambridge*

### PHYSICS & GEOPHYSICS COLLOQUIUM

Monday 20 March  
17.00  
University of Bristol

Physics of Insect Migration

*Dr G Schaeffer/Loughborough*

### INSTITUTE OF MATHEMATICS - SOUTH WALES BRANCH MEETING

Wednesday 22 March  
18.45  
University College Swansea

Discoveries in Number Theory Aided by the Use of Computers

*Professor R F Churchhouse/University College Cardiff*

### EVENT AT AERE

### THEORETICAL PHYSICS SEMINAR

Tuesday 21 March  
14.00  
Conference Room Building 8.9

Throwing Out  $k$  - Space, or, the Electronic Structure of Solids on the Point of View of the Local Electronic Environment.

*Dr V Heine/Cambridge*

## STOP PRESS

### T D 1 SATELLITE - SITUATION REPORT

Latest information from Darmstadt at time of going to press is that the T D 1 satellite (see page 1 for story) is in excellent shape.

The first SE/68 shutter operation was carried out in orbit 55 and the shutter was unlatched successfully at first attempt.

Orbit altitude of satellite 532 to 547 kilometers, inclination superb at 97.55 degrees compared to requirement of 97.57 degrees. Attitude control near perfect.

Congratulations to Harold Wroe (who is at the control centre at Darmstadt), Peter Barker, Ted Higgins and all the rest of the team on this great success.

RUTHERFORD LABORATORY BULLETIN

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*Editor:* H F NORRIS

Deadline  
for  
Insertions

GENERAL & SOCIAL NEWS

Tuesday 1600

INTERNAL & EXTERNAL EVENTS

Wednesday 1200

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

pmr



There will be about 230 participants from 30 countries, attendance being by personal invitation only. The conference will be concerned with both the theoretical and the experimental aspects of lepton-hadron, photo-hadron and hadron-hadron interactions. In simpler terms the central feature is high energy scattering (except for instance, electron-electron); other HEP topics, such as particle decay, are excluded.

Preparations for the conference will make heavy demands on some parts of the Laboratory's resources, notably Scientific Administration, Finance, Electrical Services and Office Services. It would be helpful, therefore, if other demands could be held down to the absolute minimum until the conference is over.

#### FILM BADGE NOTICE

Period 4 commences Monday 20 March. Colour Strip - RED for 8y films and fast neutron packs. Please change your dosimeters promptly and return all old ones. Also make sure your 8y (blue) holder has all filters intact - if a new one is needed please contact Mrs J A Coates Ext 430.

#### FOUND

A printed copy of thesis, author Dr D R Dance of Clare College, title - Scattering of Pions by Protons No HEP/T/15 - left in Cash Office Building R20. Owner please apply to Mrs B Powell Cash Office.

## SOCIAL NEWS

#### SEVEN-A-SIDE SOCCER

The new season opened with a friendly match between the Admin team from AERE and R25. Admin were two up before the R25 team realised the game was on but then they tightened up in defence and stemmed the Admin advance. Then a fine goal as one could ever hope to see, scored by Dave Ferrier for R25, seemed to be a cue for Arthur and John to abandon the organisation they had mustered in the R25 defence which allowed Admin to add two more goals. Final result - Admin - 4, R25 - 1.

#### RECORD SOCIETY

The record society concert for the current week has been postponed.

#### CHRISTIAN FELLOWSHIP

Dr P Duke will lead a Bible Class on the 2nd Book of Corinthians, Chapter 5. The meeting commences at 12.30 p m in the R12 Conference Room and everyone is welcome to come along.

#### FOLK CLUB

There is no club on Friday 24 March. Next date 31 March.