

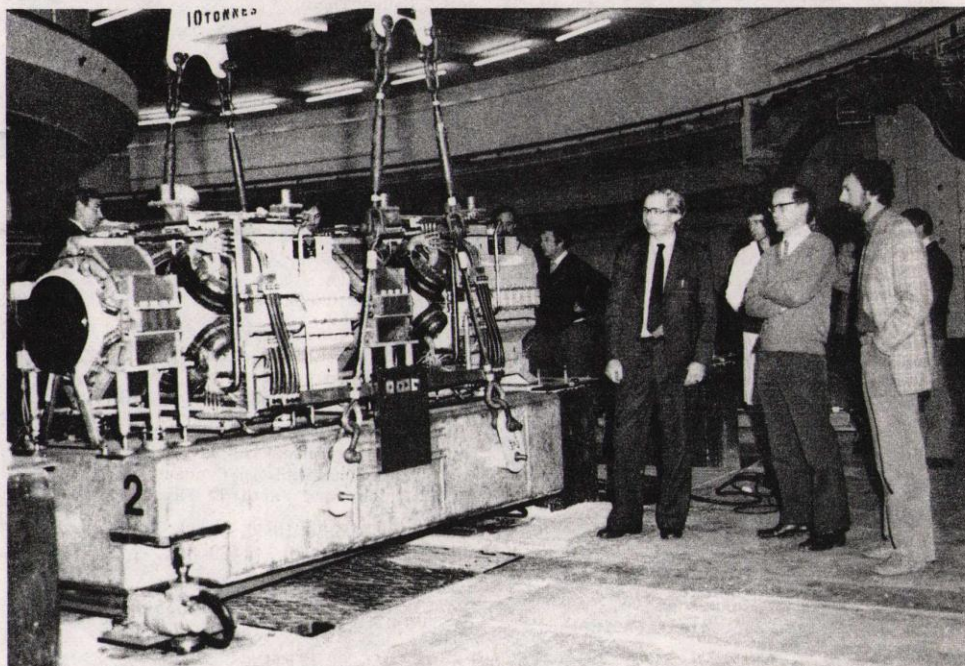
Bulletin

of the Rutherford Appleton Laboratory

16 Nov. 1981 No.20

SNS on Course for Neutrons

At 10.30am on Monday 2 November, right on schedule, the first of the quadrupole modules for the SNS synchrotron ring was ceremoniously swung into position and lowered onto its alignment subframe. A large audience of SNS staff and other interested parties watched the event conducted by SNS Division Head Mr David A Gray.



The first quadrupole module in place in the SNS ring. David Gray (nearest module) Mike Harold and Tony Wardle look satisfied - and perhaps a little relieved.

One of ten such modules, the focus of attention comprises, as can be seen in the photograph, a quadrupole doublet with a pair of smaller trim quadrupoles; all four magnets being mounted on a common re-inforced concrete base. One long ceramic vacuum chamber threads all four magnet apertures. Of the other nine modules, six are assembled and aligned and four of these already being plumbed up ready for installation. Another is being aligned and the last of the four magnets for the eighth module is being magnetically surveyed. The outstanding bases and magnets are in the test and assembly area awaiting their turn.

All the civil engineering modifications and the new water distribution plant for the new Synchrotron are now complete. The sole plates and precision alignment subframes for the main ring magnets are in the magnet room awaiting their respective charges. Ten more quadrupoles, the so-called singlet quads, are to be manufactured as soon as the latest changes to the prototype have been assessed and approved. The manufacturers of the ring bending magnets have met more obstacles than they expected, so they will be later than planned and are on the critical path for the injection

tests of Milestone 2 which requires a complete ring. Early '83 is still the target for these tests, however, and every effort is being made to speed up delivery and measurement of the prototype, so that manufacture of the ten production magnets can begin as soon as possible.

Preparations for Milestone 1 - a 70 MeV H^- beam from the injector linac - are in hand and it is hoped that a 650 keV H^- beam will be achieved at the pre-injector before the end of this year, followed by a 10 MeV beam accelerated in the first linac tank early in '82. Owing to extra difficulties with the new moderators, completion of this milestone is now expected later in '82 rather than earlier.

Keeping on Schedule

In the meantime, preparations of the components needed for beam transport to the Synchrotron continues and the injection equipment has been ordered in time for Milestone 2. Vacuum chambers, power supplies, RF shields,

diagnostics and controls are all on schedule with much of the equipment already in house and the remainder either being manufactured or on order.

Milestones 3 and 4, both in '83, are concerned with RF and proton extraction studies at low intensity and depend upon the availability of some of the machines RF acceleration equipment. Development of both the low power and high power systems is progressing well and this month should see the first attempt to couple together the first power amplifier and the first cavity.

Towards the end of '83, first extraction studies are programmed and good progress has been made on the extraction septum magnet and power supply and the difficulties with the very demanding fast-rise full-aperture kicker magnets now appear to have been overcome. The extracted proton beam design is now virtually complete and some of the shielding is already in place!

We are indebted to Robin Elliott for this latest news from SNS.

INTERNAL Events

RAL LECTURE
LECTURE THEATRE - 1515 hrs.

- 19 Nov. Dr H O Wüster/JET
'The Present State of JET'

CONDENSED MATTER SCIENCE SEMINARS
CONF. RM R3 - 0930 hrs.

- 17 Nov. W S Howells/RAL
'Structure and Dynamics of Aqueous Solutions'
- 24 Nov. J S Higgins/I.C.
'Dynamics of Polymer Chains'
- 1 Dec. M G Brereton/Leeds
'Gauge Theories, Entanglements and Rubber Elasticity'

NIMROD LECTURES
CONF. RM R61 - 1400 hrs.

- 26 Nov. Dr G Myatt/Oxford
'Tests of QCD in Neutrino Interactions'
- 30 Nov. Prof J J Sakurai/UCLA & MPI, Munich
'Non Standard Weak Bosons?'

HEP SEMINARS
CONF. RM R61 - 1100 hrs.

- 18 Nov. Dr I G Halliday/I.C.
'Structure of SU(2) Lattice Gauge Theory'
- 25 Nov. Dr B Franek/RAL
'Photoproduction of Charmed Particles at 19.5 GeV'

ASTROPHYSICS SEMINARS
CONF. RM R61 - 1400 hrs.

- 18 Nov. Ken J H Phillips/RAL
'Soft X-ray Solar Flare Spectroscopy from SMM'
- 25 Nov. Robert D Joseph/I.C.
'Interacting Galaxies'
- 2 Dec. Robert A E Fosbury/RGO
'Gas in Elliptical Galaxies'

REMOTE SOUNDING SEMINARS
CONF. RM R61 - 1530 hrs.

- 1 Dec. Dr D J Drewry/SPRI, Cambridge
'Remote Sounding Needs in Glaciology'

EXTERNAL Events

NPD COLLOQUIUM
CONF. RM. H8 - HARWELL - 1530 hrs.

- 26 Nov. Dr R Derwent/AERE
'Chlorofluorocarbons - Stratospheric Ozone. Will Aerosol Sprays Really Destroy the Ozone Layer?'
- 30 Nov. Dr D K Olsen/Oak Ridge
'The EPD Cross Section Programme and the ORELA ²³²Th Measurements'

THEO.PHYS.SEMINARS
TPD LECT.TH. - HARWELL - 1400 hrs.

- 24 Nov. Dr J P Coleman/Durham
'Practical Approximation in the Complex Plane'
- 1 Dec. Dr C F Clement/AERE
'Condensation and Aerosols'

ELEM.PART.PHYS. SEMINARS
NPD LECT.TH. - OXFORD - 1430 hrs.

- 19 Nov. Dr P Renton/Oxford
'Hadron Final States in Deep-Inelastic Lepton - Nucleon Scattering'
- 26 Nov. Dr W Allison/Oxford
'Charm Lifetime Results from the European Hybrid Spectrometer'
- 1 Dec. Prof J J Sakurai/UCLA
'The Structure of Charged Weak Currents'

SOLID STATE PHYSICS SEMINARS
CLARENDON LAB - OXFORD - 1430 hrs.

- 3 Dec. Prof F Nabarro/Cambridge
'Recent Developments in the Physics of Dislocations'

PHYSICS COLLOQUIA
CLARENDON LAB - OXFORD - 1615 hrs.

- 20 Nov. Prof I F Silvera/Amsterdam
'Spin Polarised Atomic Hydrogen: a New 2 and 3 - Dimensional Quantum Gas'
- 27 Nov. Prof D J Wallace/Edinburgh
'Symmetry Breaking and its Ramifications in Condensed Matter and Particle Physics'

ELEM.PART.THEORY.SEMINARS
NPD LECT.TH. - OXFORD - 1430 hrs.

- 20 Nov. P Scharbach/RAL
'Gauge Invariant Decomposition of Gauge Theories'

PART.PHYS.DISC.GP MEETINGS
BIRMINGHAM - 1615 hrs.

- 20 Nov. Dr P Norton/RAL
'Nucleon Structure and Scaling Violation in Muon-Nucleon Scattering'
- 27 Nov. Dr J Ellison/Manchester
'Results from the Omega Tagged Photon Facility'

PHYSICS DEPARTMENTAL COLLOQUIA
BRISTOL - 1700 hrs.

- 23 Nov. Prof I F Silvera/Amsterdam
'Spin Polarised Hydrogen'

HEP SEMINARS
DAMPT - CAMBRIDGE - 1500 hrs.

- 20 Nov. Chan Hong Mo/RAL
'Non-Abelian Monopoles'
- 27 Nov. M Green/Manchester
'Multiloop Calculations of Renormalisation Group Functions'

THEORY GROUP SEMINARS
DARESBURY - 1400 hrs.

- 23 Nov. Dr J Wilson/Bristol
'Discommensuration Arrays Observed in 2H-Ta Se₂'
- 30 Nov. Dr J A Blackman/Reading
'Use of Neutrons to Study the Bandstructure in Semiconductors'

HEP SEMINARS
MANCHESTER - 1430 hrs.

- 19 Nov. Dr R L Sekulin/RAL
'Bubble Chamber Holography - Its Status and Prospects'
- 26 Nov. Dr H McCann/Manchester
'Muons from e⁺e⁻ Interactions'
- 2 Dec. Prof C Michael/Liverpool
'Lattice Gauge Theories'

THEO.PHYS.SEMINARS
QMC - LONDON - 1615 hrs.

- 23 Nov. Dr E Jakeman/RSRE
'Statistics of Optical Scintillation'
- 30 Nov. Dr E Abraham/Heriot-Watt
'Optical Bistability and Related Devices'

SHEP SEMINARS
SOUTHAMPTON - 1430 hrs.

- 18 Nov. H Nicolai/CERN
'Gauged N = 8 Supergravity'
- 25 Nov. S Ferrara/CERN
'Hierarchies of Symmetries in Supersymmetric Unified Theories'
- 2 Dec. R Petronzio/CERN
'Perturbative QCD'

Missing

Wier 761.1 Power supply Serial No: 219405.
Please advise location to J Hardaker
Ext 6530.

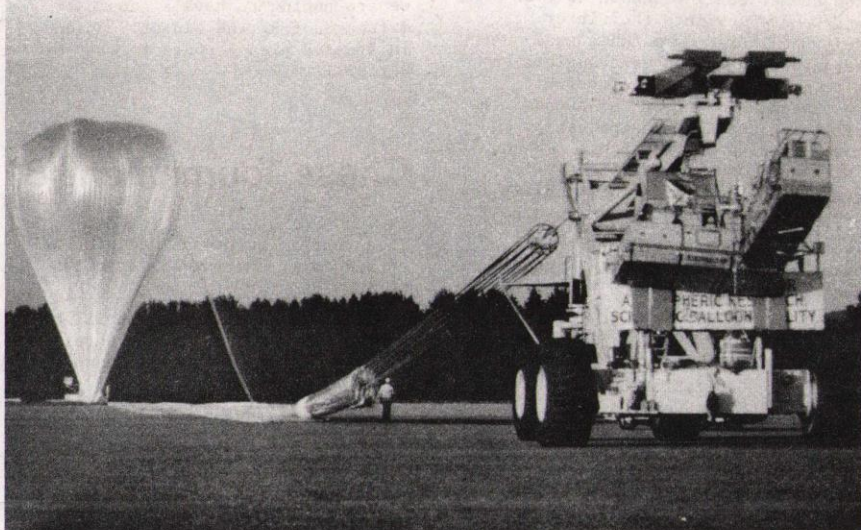
W E Burniston on Ext 200, would like to regain his Texas TI-30 LCD calculator which was removed from his room between 25 September and 12 October.

A pair of Aluminium steps were lost during building modifications to the Electron Beam Lithography Facility area of R1. Would anyone knowing of their whereabouts please contact J F Ayres. Ext. 270/439.

Proving Flight of SBP Mark II

The Rutherford Appleton Mark II Stabilised Balloon Platform photographed just prior to its proving flight which took place in September from the National Balloon Facility at Palestine, Texas. The payload is suspended on the 'Tiny Tim' launch vehicle in the foreground with the Balloon in the background.

The Balloon expands to its full 30 million cubic feet at a float height of 130,000 feet. The experimental payload was a pair of ultra-violet spectrometers from Queen's University, Belfast.



The first lecture in this year's series will take place in the Lecture Theatre on Thursday 19 November at 3.15pm.

THE PRESENT STATE OF JET
by
Dr H O Wüster

Director, JET Joint Undertaking,
Culham

The JET project is now entering the assembly phase. The plans for the experimental programme will be described in this talk together with the predictions for its performance.

Rutherglen Memorial Prize

The fund which was set up in memory of the late Professor J G Rutherglen is used to finance an annual award to a postgraduate student in experimental particle physics from one of the universities associated with the electron synchrotron NINA. The award for 1981 has been divided between Mr Richard H McClatchey of Sheffield and Mr Douglas McFadzean of Glasgow.

Acknowledgement

Mrs Doris Ashburn and family would like to thank all friends and colleagues of her late husband, 'Bert' Ashburn, for their expressions of sympathy in their sad loss, and for their donations to the 'Oxford Scanner Appeal'.

Mr Ashburn of MRC, lately of RAL and previously of AERE, died at his home in Appleford on 24 October.

Trade Exhibition

There will be a one-day exhibition by Hakuto International (UK) Ltd of their range of photomultiplier tubes of general interest to scintillator work and also designed specifically for high energy physics on Thursday 26 November in Conference Room No 5 in Building R20 from 10.00 to 16.00hrs.

Hartley Measurement Ltd will be holding a mini exhibition of high voltage equipment in Conference Room 5 in Building R20 on Tuesday 17 November from 1000-1600hrs.

Film Badge Notice

It is Period 12 Colour Strip BLUE.

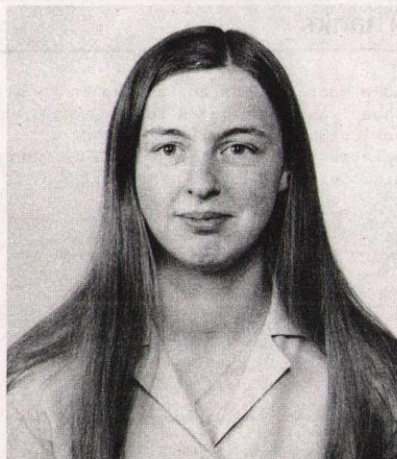
Please check that you are wearing the correct film and all old ones are returned. Anyone requiring a new holder please phone Jenny Coates Ext.430.

Obituary

Karen Thornton

With the deepest regret we record the death of Karen June Thornton, who died on October 17 in Radcliffe Infirmary, Oxford, as the result of an accident on October 8 from which she did not recover consciousness.

Karen was 22 and joined the Computing Applications Group in Technology Division just a year ago after obtaining her degree in mathematics while at St. Hilda's College, Oxford. Previously she had been an outstanding student at the Oxford High School for Girls, and her many achievements were recalled by her former headmistress who gave the address at her funeral on October 22 in the Oxford University Church.



Karen was recruited to work in engineering software and joined the team doing research and development on computer aided design for integrated circuits. Her own work was on the proximity correction problem for the Electron Beam Micro-fabrication Facilities, and with topological problems in specifying circuit components.

She brought to her work a remarkable combination of enthusiasm, serenity and determination, the memory of which can at the moment only heighten our shock at her loss - later we may be comforted that she was happy to work with us.

We offer our deepest sympathy to her parents, her three sisters and her fiancé for their ordeal and for their most tragic loss.

Angling News

The summer angling season is over and we are now into the winter session. Not many matches have been arranged as yet but most anglers on site are still risking frost-bite most weekends. After our success in retaining the SERC Championship, we have aimed even higher this season, entering teams in both the Civil Service Southern Area Championship and the Upper Thames Championship.

Two teams fished the "Southern Area" event at Reading. The 'A' team finished in second place beaten by 2 ounces! The 'B' team managed fifth place.

'A' team - Peter Craske, Stan Buckel, Geoff Kidd and Eamon Capocci

'B' team - Dennis Day, Darryl Taylor, Neil Johnson and Charlie Halliday

The "Upper Thames" was a bit different. Forty two teams took part including most of this area's top match teams fishing. The event was fished by 8-man teams and the match length stretched from Oxford down to Clifton Hampden. The fish decided not to co-operate and most teams struggled for fish. Our final placing was 19th, which was a good result for us.

Next year we will do better!

Rutherford Championship

This year's event was fished at Benson on the Thames. Usually it is fished at Clifton but rumour had it that one angler not only knew all the swims at Clifton but also every fish. As it turned out, it was the best championship we have had, for the amount of fish caught.

RESULTS

1. Dennis Day	41b 12oz
2. Geoff Kidd	41b 8oz
3. Eamon Copocci	41b 1oz
4. Stan Buckel	31b 15oz
5. Peter Craske	31b 12oz
6. Darryl Taylor	21b 12oz
7. Dennis Jacobs	21b 8oz
8. Alan Hodges	21b 4oz
9. Frank Smith	21b 4oz
10. Charlie Halliday	21b 4oz

These were the top weights.

Many thanks to Benson Angling Club for allowing us to use their water.

Civil Service National (Individual)

Eight anglers from RAL took part this year; the highest number ever. Only one of us managed to pick up a prize.

Stan Buckel finished 3rd in his section. Still - a good day was had by all.

We are hoping to have a couple of matches during the winter - anyone interested please contact Peter Craske Ext 232.

Chess Tournament '81

This year's Tournament has been held up due to it overrunning into the holiday season.

The three leading players still have to play one another. This should take place within the next couple of weeks.

Leading Positions

Peter Craske - 8½ points - to play Nandi

Asoke Nandi - 8 points - to play Craske, Hemmings

Peter Hemmings - 8 points - to play Nandi

As you can see, an interesting position, the result of which we hope will be resolved in time for the next 'Bulletin' issue.

Collections

In response to recent appeals the following amounts were collected in the Laboratory.

Civil Service Benevolent Fund	£56.63
Civil Service & Post Office Lifeboat Fund	£78.33

Many thanks for your generous donations and a special thank you to the Messengers for undertaking the task of collecting.

Sylvia Fones.

Thanks

Rose Moore wishes to say thanks to all those who contributed to her retirement collection. She writes "Rather a belated thank you for which I am sorry. Kind regards to all."

Dr WC Bain Retires

Dr W C Bain (G & R Division) retired recently after completing more than thirty years' service which began in 1951 when he joined the old Radio Research Station at Slough.

Following four years as a radar officer in REME, where he saw service in India in the final years of the British Raj, he decided to read physics at Aberdeen.

After graduating, he remained at the University to carry out research into the ionospheric D-region and was awarded a Ph.D. in 1951.

His subsequent career produced many original contributions in the field of radio-wave propagation and ionospheric physics including the application of laser techniques to upper atmospheric sounding. This wealth of experience made him a fitting head of the Solar-Terrestrial Physics group at RAL.

At a farewell ceremony his colleagues marked the occasion by several gifts including a fine marine clock.

In presenting these items Prof. Houghton referred to Dr Bain's many skills, accurately - if tersely - assessed by Prof. R V Jones whose report on his student was simply 'Bain is good'

This verdict may well be applied to his performance at the Bridge table where he has long enjoyed meeting and overcoming a different intellectual challenge and one which will, no doubt, continue to play a prominent part in the long and active retirement which we all of us wish him.

'Fellowship' Tape

The talk given to the RAL Christian Fellowship by Professor J T Houghton on 29 October entitled "Scientific Thinking and the Christian Faith" is now available in transcript or on cassette tape from Mrs V Jackman, Ext 533.

Blood Donors

The next sessions will be held on 23 and 24 November in the Atlas Colloquium, R27 from 1000-1200 hrs and 1330-1500 hrs. Would donors please make sure that their building numbers are correct on their cards.

Bulletin

Editor: Jean Banford
Building R20
Rutherford Appleton Laboratory
Chilton, Didcot, Oxon OX11 0QX
Abingdon (0235) 21900 ext 484

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