Bulletin
of the Rutherford Appleton Laboratory 26 Nov 1984 No.18

Jean Banford

Indian Collaboration on SNS Takes Shape

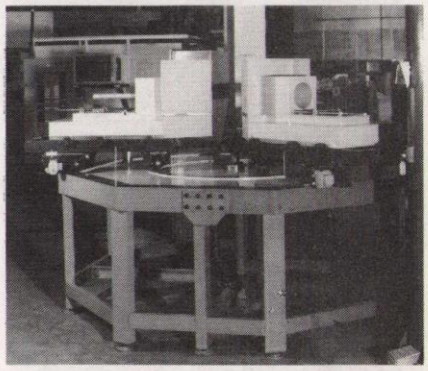
In the midst of the intense activity taking place in R55 in preparation for recording the first neutrons from the SNS in December, is the first fruit of the international agreement between RAL and the Bhabha Atomic Research Centre (BARC) Bombay, for the use of the SNS by Indian scientists. Amongst the neutron beam lines radiating from the target station is the guide tube for the high resolution quasielastic spectrometer IRIS.

IRIS itself is a spectrometer which has been designed for the study of very small energy transfers of only a few microelectron volts - so called quasi-elastic scattering. In this dynamic region atomic motions on time scales of 10^{-9} to 10^{-12} seconds can be observed and in particular the diffusion of individual atoms can be investigated. Problems which can be studied are manifold but include the diffusion of hydrogen in and through metals, the charge conduction process in superionic conductors, the motions of polymer molecules, the dynamics of atoms on the surface of catalysts and the microscopic behaviour of those seemingly paradoxical materials, liquid crystals, so commonly used in digital watch displays.

Over the past two months the first set of neutron energy analysers for IRIS has been installed. These analysers, which were designed and built at BARC, are of the novel window filter type which was pioneered in Bombay and have been adopted to the requirements of a pulsed neutron source. The neutron energy incident upon the sample under study is determined by time of flight and the scattered neutrons are analysed at the energy of the window filter. The window filter defines both an upper bound and a lower bound to the energy range analysed by using a combination of two beryllium filters at different temperatures. When the first filter is at liquid nitrogen temperature and the second is at room temperature the resolution of the spectrometer is about 50 microelectron volts. By varying the temperature difference between the two filters the resolution can be adjusted to suit the measurement. Future developments of IRIS envisage the use of pyrolitic graphite and silicon crystal analysers in the high resolution back scattering geometry. The availability of different resolutions on the same spectrometer will allow the complex behaviour of atomic and molecular diffusional processes to be unravelled.

The IRIS user group assembled in front of the Indian analysers in R55. 84RB4522

The two window filter analysers on their rotary table in a partially assembled state. The guide tube from the target station to the sample position can be seen in the distance.



Mr J N Soni the BARC engineer responsible for the building of the window filter analysers has been resident at RAL installing and commissioning the equipment in readiness for the first neutrons from the SNS.

At a meeting of the IRIS user group on 6 November, the results of the Indian collaboration were inspected in R55, where representatives of 12 university groups from the U.K. and overseas gathered to discuss the measurements they will be making when the SNS commences regular operations in 1985 as the most powerful pulsed neutron source in the world.

Colin Carlile

NASA-IRAS Awards 84FC4607

NASA have awarded Medals and Group Achievement Awards to the UK members of the IRAS project for their contribution to the success of the mission.

The Head of NASA, Mr U Beggs will be presenting the awards at a ceremony in the Lecture Theatre on Thursday 13 December at 1145 am. Mr Beggs will also give a short lecture on NASA's future programme.

All staff are welcome to attend, subject to approval by supervisors.

Wind Energy at RAL

On Thursday 8 November the Department of Energy's "Wind Energy Steering Committee" visited the Windmill Test site at RAL which the Energy Research Group are operating and developing as a central research facility. Currently the RAL group is pursuing wind energy projects with three universities; Reading, Strathclyde, Imperial College and the Cranfield Institute of Technology, and an interesting exhibition was mounted to give our guests an up-to-date review of the work being undertaken in these collaborative projects.

Wind energy is presently considered to be one of the two most promising forms of renewable energy for the UK. However by its turbulent nature it imposes severe conditions on both wind turbines and their associated electrical systems. The test site at RAL provides a facility where some of the problems associated with this fluctuating power source are being examined.

There are now two wind turbines on what was once a car park at the South West corner of the site. The vertical-axis machine, with the rotor in the shape of a capital H, is being used by the Cranfield Institute of Technology to examine the aerodynamic performance of the blades during rotation. As the blades rotate, their incident windspeed constantly changes with stall occurring twice per revolution. Hence, analysis of the blade's aerodynamic behaviour is not straightforward, but it is important to get a better understanding of "dynamic stall" for such machines.

The horizontal-axis machine, with the propeller type rotor, is part of an experiment to examine the behaviour of small combined wind/diesel generation systems. This project, which is a collaboration between RAL, Imperial College and Hawker Siddeley Power Plant is assessing the possibilities of using wind power to reduce the cost of electricity generation on islands and at other remote sites. There are a large number of locations both around the UK and worldwide where diesel generator sets of less than 100kW rating are used to generate electricity at costs of up to 20p/kWh. Work so far has shown that it is possible to run a wind turbine generator and a small diesel generator in parallel. Present work is concerned with improving control techniques and maximising fuel savings. It is likely that a novel storage device will be added to the RAL experiment with a view to greatly enhancing operating logistics and fuel saving.

Another wind energy project which is in progress is a collaborative study by RAL, Strathclyde University and the North of Scotland Hydro Electric Board, of the wind energy potential on Shetland. A detailed wind monitoring exercise is to be carried out at 2 hill top sites in Shetland, to assess the viability of erecting wind turbines of ratings above 500kW and connecting them into an existing 30 MW electrical supply system. A later part of the project will be to examine the integration of electricity generated by wind turbines into the Shetland grid using computer models.

The RAL group has been invited to co-operate in a new European programme, sponsored by EEC, to establish standards of measurement and interpretation for wind turbine studies. A joint initiative is being discussed in this area, with the new DTI test site at National Engineering Laboratory, East Kilbride.

More generally, the RAL group has been in a position to play a significant catalytic role in bringing together UK academics working in wind energy, in a number of successful collaborations with industry - an important factor now that wind energy is entering a more commercial phase. A new proposal recently submitted to SERC will, if funded, develop a high stress flywheel for storage applications in wind energy; the industrial partners being Laing and Brook-Crompton-Parkinson. The Imperial College/RAL/Hawker Siddeley Power Plant teams have recently been requested to provide inputs into two further commercial wind/diesel demonstration projects.

(We are indebted to the Energy Research Group for the information contained in this article).

RAL Lectures

The next lecture in this series will be held in the R22 Lecture Theatre on Thursday 6 December at 3.15 pm.

THE PREDICTABILITY OF WEATHER AND CLIMATE
by
Dr J T Houghton, FRS
Director General Met. Office

Numerical models of the atmosphere employed for weather forecasting are now showing significant skill at forecasting up to 5 or 6 days ahead. A lot of attention is currently being given to the theoretical and practical considerations involved in extending the forecasting period. Turning to longer timescales (seasonal, inter-annual and longer) what is the connection between anomalies which appear at the surface of the ocean and is it going to be possible to predict with any certainty changes in climate due to man's activities?

Missing

The following items are the subjects of loss reports:-

Wolf Industrial Vacuum Cleaner
Label No. VO 11473

Wolf Saphire Electric Drill
Label No. VO 12552

They were lost from the R7 or R25 Labs Area. If found, please phone Ray Kenzell, Ext 6534.

BEWARE!

A worrying amount of losses due to theft are reported to the General Administration Group each year. Items lost or stolen include calculators, money, desk fans, telephones, small hand tools, and personal items from desks and office areas. Almost all of these items were not safely secured.

Most thefts could be prevented with the conscientious help of all employees and visiting scientists. Listed below are a few suggestions that may prevent future losses:

Secure desireable portable equipment in a locked cabinet or room.

Control the issue of keys for areas which store equipment.

Keep purses and wallets on your person.

Do not carry excessive amounts of money.

Always lock your car.

Mark all equipment with identifying information.

Store tools in a safe place when not in use.

Do not leave keys and valuables in open areas.

Do not leave coffee club funds, retirement collections, Christmas collections etc. unsecured.

Records show that thefts occur at all times of the day and night. Petty criminals are, in general, opportunist so do not put temptation in their way. Keep it out of sight and secure - whenever you leave, lock up!

Carol Service

The RAL Annual Carol Service will be held on Thursday 20 December at 12.30pm in the Lecture Theatre, R22. This year it will be led by Jeff Taylor, Minister of Didcot Baptist Church.
Everyone welcome.

Christian Fellowship

Meetings of the Fellowship are held in the R2 Conference Room at 12.30pm on Thursdays.
All are very welcome.

DECEMBER PROGRAMME

6 Bible Study - Lester Gale
13 Prayer Meeting - Ladies of the Fellowship
20 Carol Service - Lecture Theatre

Film Badge Notice

It is period 12 Colour Strip RED

Please be sure you are wearing the current dosimeter and return old ones.

NEXT FILM ISSUE

Monday 3 December.

Hawaiian Magic

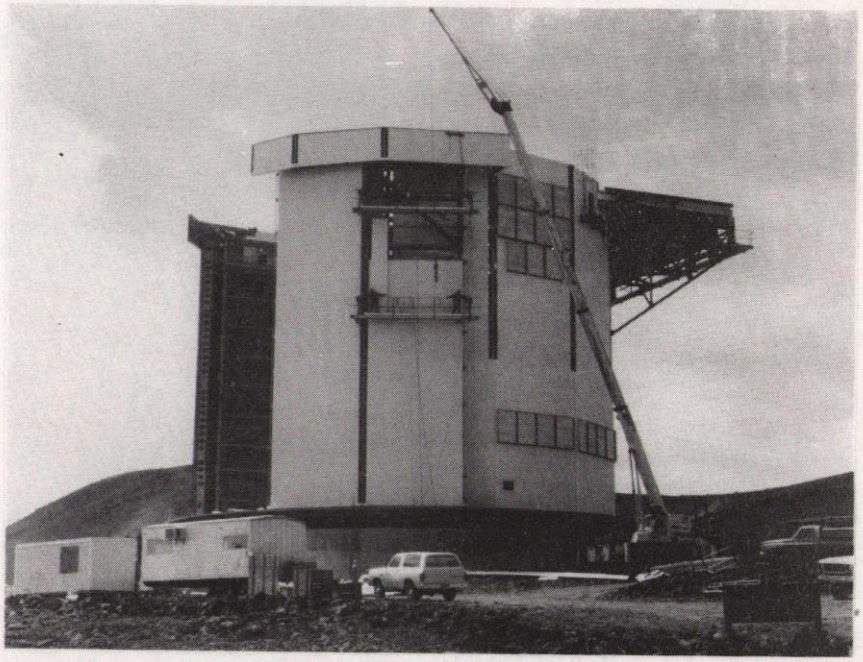
After a long and eventful journey from England to Hawaii, the Millimetre Wave Telescope carousel was finally off-loaded and transported up the mountain of Mauna Kea in May, approximately six weeks late.

Since then a tremendous effort by the main contractor Messrs. Robert Watson & Co Ltd, and their local Hawaiian sub-contractors, has resulted in the commissioning being completed on programme before bad weather closes the site down during the winter.

Fred Gilbert of the Council Works Unit has spent several weeks on the mountain commissioning the equipment and sorting out the many problems that have become apparent. Local 'Pidgin English' will no doubt become common in R18 after his return!

Next Spring, fitting out work will commence and contracts have already been placed in Hawaii for this work. Completion is planned for August/September.- always assuming that the present wave of strikes by construction workers are settled in the not too distant future.

Roy Tolcher/Rick Mason



Trophy Presentation

84RB 4574

This year's presentation of the RecSoc Trophies to RAL winners of both Indoor and Outdoor Sports events took place on 1 November. Tudor Morgan, RecSoc Chairman welcomed everyone to the ceremony and thanked all who had put so much effort into the arrangements for Sports Days, the competitors for taking part and Dr Geoff Manning for agreeing to make the presentations.

Dr Manning expressed his pleasure at being asked to do so and added his congratulations. Sporting activities were an important part of Laboratory life, he said. They were first and foremost enjoyable, but they also fostered contact throughout the SERC and, he was convinced, improved general morale. He personally supported these events, he assured his audience, and would provide RAL support where-ever possible. He congratulated, all who had participated; a most important point, for not all can win, all those who had won and all who had provided support and done the work. "Never-the-less", he continued "I hope for continuing and improved success in the future".

TROPHY WINNERS

Badminton (Mens)	Richard Lawrence and Alan Stevens
(Mixed)	Pam Richens and Gary Allen
Darts	Fred Roberts (Capt), Stan Buckel, Russ Jones, Tudor Morgan and Trevor Fisher.
Bridge	Tony Gibson and Cliff Pavelin
Crib	Steve Hancock and Steve Stoneham
Rounders	Helen Dorsett (Capt), Zoe Binnie, Penny Whitehead, Janice Brown, Margaret Haddock, Sue Merrifield, Steve Johnston, Bob Young and Colin Uden.
Tennis	Lorna Claringbold and Tim Pett
Bowls	Mary Shepherd, Bob Maybury and Del Forsyth
3000 metres	Richard Hill
100 metres	Alan Saxby

Indoor Sports - Early Warning

Indoor Sportsday 1985 will take place at the Oasis, Swindon on Friday, 1 March. The day will end with a Disco at Central Office for which tickets will cost £3 per head and will cover refreshments.

Details of the events will appear in the Bulletin nearer the date.

Thanks

Ken Kendall wishes to thank all his friends and colleagues for the very generous gift and warm send-off they gave him on the occasion of his retirement.

He wishes to take this opportunity to express his appreciation to all those who helped to make his time at the Laboratory interesting and rewarding.

The recent Lab-wide collection for the Ethiopia Famine Relief Fund realised the sum of £302 which was forwarded to the disaster's Emergency Committee (receipts available).

Grateful thanks to all who gave so generously.

Keith Bellinger.

Goodbye - It's Been Fun

Sylvia Preston

HEP Division lost another of its stalwarts on 7 November when Sylvia Preston ended her working career at RAL.

Sylvia came to Chilton from Malvern where she earned the nickname "Efficiency Preston", and "Effie" she has been to her colleagues ever since. She joined the PLA, first at Harwell and then in the brand new, shiny building, R12! Here she met Phillip Preston and left to marry and produce a son.

Sadly, widowed, she returned to the Lab in 1964 as a scanner in the Emulsions Group, transferring shortly after to Bubble Chamber Group. In 1967 she took over the film library and reckons that, to date, she has processed over 10,000 rolls of film.

Making the presentation of a carving set and a selection of silver-ware, Dr George Kalmus thanked Sylvia for all her hard work. "Everyone knows Sylvia, by sight or sound", he joked, "and she will be very much missed. Our loss is Abingdon Operatic Society's gain".

"I have enjoyed my scientific life", replied Sylvia. "With the interest of new experiments and new particles, it is hard to believe 20 years have passed. Thanks to everyone for making it so rewarding".

of him. "Thank you all for many years of pleasure. It has been an interesting life" was his reply.

84RB4495

Ken Kendall

Ken Kendall's retirement presentation took place on Friday 26 October. Friends from long ago and here and now gathered to say goodbye, to wish him well and to present him with the gift of a camera. Not one, but two division heads were in attendance to speak of Ken's contribution to 28 years of RAL scientific achievement.

As a Nimrod duty officer, he had been a tower of strength, always to be relied upon, said David Gray (SNS). John Thresher's (HEP) description, made from the point of view of a Nimrod user, was that Ken had always been one of their favourites. "If the intensity was up, Ken must be on duty" was how it was expressed. He had, they both agreed, contributed greatly to the physics that came out of Nimrod.

Ken spent the end of the Nimrod period devising computer programs for SNS, and it was a result of his expertise in on-line computing that was whisked away to join HEP Division to work in CERN for 3 years to help with various test systems.

"We can assure you", said John, "HEP physics in the Lab and in the UK as a whole appreciates what you did. Thanks for your help with our research".

Ken said he had listened with interest and surprise to all that had been said

Ken gets the feel of his camera, David is, of course, dying to push the button!

84RB4471

Don Liska

RAL has recently said a reluctant 'Farewell' to Don Liska, who has just finished a year's sabatical - working on the development of remote handling techniques, the design of target storage wells and the mechanics of the radiation test facility for the SNS. Back home at Los Alamos National Laboratory, Don is an Associate Group Leader with Accelerator Technology Division.

When his year was being arranged, the Lab didn't know what it was taking on! We should have guessed when he and his wife Alice arrived three weeks late using the Korean Airline 747 disaster as an excuse for spending extra time in Kathmandu indulging in their passion for mountaineering. (We never did work out how he got to Nepal on the Trans-Siberian Railway by which he travelled to the UK!)

Although we were not able to give him all of the funds, he (or we) would have liked, he managed to use his ingenuity to produce the "Liska arm" for remotely controlled radiation monitoring of the SNS (The first extracted beam was viewed with this device). We also have other viewing equipment using a stem unit - which Don "scrounged" from CERN and other ideas for the future. He also did invaluable work for the SNS Target and Utilisation Group.

It was very obvious from the large number of people of differing interests (climbing, walking, folk dancing, weight lifting, keeping fit, punt racing, beer drinking and even cricket!), who turned up for the presentation of a "Ray Roberts card" - itself an honour, that Don was very active out of hours and well liked. (Our worthy editor was even moved to relax her 25 year rule and include something in the Bulletin). We hope he got as much out of being here as we got out of his stay.

Trevor Hyman

Don, with card and friends.

84RB4525

Bulletin

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INTERNAL Events

RAL LECTURES
LECTURE THEATRE - 1515 hrs

6 Dec Dr J T Houghton, CBE FRS, Director-General, Met. Office
"The Predictability of Weather and Climate"

JOINT THEORY SEMINARS
R3 CONF ROOM - 1330 hrs

29 Nov M S Longuet-Higgins/Cambridge
"Some Coastal Processes - Fast and Slow"

13 Dec D Rand/Warwick
"Universal Structures in Chaotic Dynamics"

SPACE PLASMA PHYSICS SEMINARS
R68 CONF ROOM - 1400 hrs

11 Dec D A Cairns
"Collisionless Shocks in Plasmas"

CONDENSED MATTER SEMINARS
R3 CONF ROOM - 1330 hrs

27 Nov R Ottewill/Bristol
"Small Angle Neutron Scattering on Colloidal Suspensions"

4 Dec E Marseglia/Cambridge
"Magnetic Intercalcates of Transition Metal Dichalcogenides"

11 Dec A H Gabriel/RAL
"Solar Physics Work from Space"

COMPUTING SEMINARS
COLLOQUIUM - ATLAS CENTRE - 1515 hrs

28 Nov Thomas W Sederberg/Brigham Young
"Parametric and Implicit Curves and Surfaces for Computer Aided Geometric Design"

ASTROPHYSICS EVENTS
R68 - WATSON-WATT CONF RM - 1400 hrs

5 Dec Dr D Stickland/RAL
"The La Palma Observatory"

12 Dec Dr R Walker/Bristol
"Ultraviolet Cosmic Rays - the View from Ariel 6"

GEOPHYSICS SEMINARS
R68 - WATSON-WATT CONF RM - 1400 hrs

27 Nov Dr D Bryant/RAL
"Preliminary Results from AMPTE"

HEP SEMINARS
R61 CONF RM - 1100 hrs

28 Nov Theory Group/RAL
"Theorist Stories"

EXTERNAL Events

THEO PHYSICS SEMINARS
TPD - HARWELL - 1400 hrs

4 Dec Prof J D Pye/QMC
"Bats and Bat Radar"

11 Dec Dr R H Flowers/AFPD
"The Packaging of Intermediate and Low Level Radioactive Wastes"

PHYSICS COLLOQUIA
CLARENDON LAB - OXFORD - 1615 hrs

30 Nov Prof A Faessler/Tübingen
"Quarks and Nuclear Physics"

7 Dec Dr F N H Robinson/Oxford
"Non-linear Dynamical Systems"

ELEM PART PHYS SEMINAR
NPD - OXFORD - 1430 hrs

28 Nov Dr N Booth
"The Indium Solar Neutrino Project"

SEMINARS IN PLASMA SCIENCE
DEPT ENG SCIENCE - OXFORD - 1615 hrs

27 Nov Mr N Malik/Oxford
"Experiments in Low-current Vacuum Arcs"

4 Dec Mr G Matthews/Oxford/Culham
"Particle Distribution Measurements in DITE Tokamak"

SHEP SEMINARS
SOUTHAMPTON - 1430 hrs

30 Nov N MacDougal/Oxford
"Chiral Symmetry Breaking in the U(1) Problem"

7 Dec D Nicole/Southampton
"Classic Paths in Quantum Tunneling"

14 Dec D Olive/I.C.
"Kae Moody Algebras and Soluble Theories"

THEO PHYS SEMINARS
Q. MC - LONDON - 1430 hrs

29 Nov Dr E G Wilson/QMC
"Polarons in Polymers"

6 Dec Dr Chan Hong Mo/RAL
"On Loop Space Formulation of Gauge Theories"

13 Dec Dr C Gibbons/Cambridge
"Black-Holes in Quantum Mechanics"

THEO PHYSICS SEMINARS
SCHUSTER LAB - MANCHESTER - 1430 hrs

28 Nov Dr J S Bell/CERN
"Action at a Distance in Quantum Mechanics"

5 Dec Dr H Osborn/Cambridge
"Quantisation of Skyrmions"

12 Dec Dr M Gunn/RAL
"Localisation and Bose Condensation"

Coffee at Cosener's

CHRISTMAS COFFEE MORNING

Come and have a mince pie and glass of sherry with us at the Christmas Coffee Morning at The Cosener's House, Abingdon

on Tuesday 18 December
from 1030 am until noon.

Here you will have the opportunity to meet other wives who live in the area, and, if you are new to the district, the possibility of learning something about the facilities around Abingdon, Didcot or Wantage. All pre-school age children are very welcome.

Information about these monthly get-togethers can be obtained from

Suzanne Litchfield Tel:Abingdon 21310
Zoe Patrick Tel:Wantage 68809

A Buffet Supper Party for members of the group and their husbands is being arranged for

Friday 15 February 1985.

Tickets will be £8 per head, inclusive of wine and a sherry reception. Numbers are limited, so please telephone Zoe Patrick for details, before 31 December 1984.

Missing

The following item cannot be found and any information as to its whereabouts would be welcome:

Newbury VDU Type 7000, serial No. Z61062, Inventory number V012793 (ex-Appleton Laboratory).

Please ring Inventory Section, ext 5570