Bulletin
of the Rutherford Appleton Laboratory 21 Feb 1983 No.3

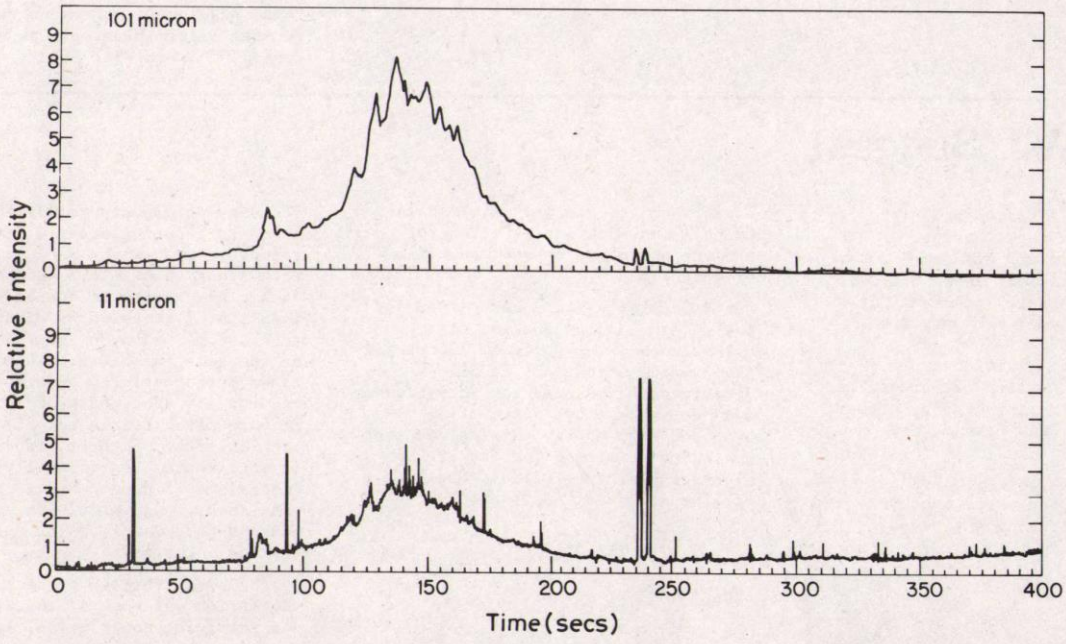
IRAS Looks Good

On Monday 31st January at 19.37 hours GMT the protective cover of the IRAS telescope was ejected into space, on command from the RAL mission control centre, and within the hour data had been received of its first look at the Universe.

The telescope performed a series of full circle scans, which included two passes over our galaxy, the Milky Way, and as expected, showed that the Galaxy is heavily populated by stars and other objects that strongly emit infrared radiation. Even on the first day of scientific observations, the telescope recorded over 4,000 infra-red sources - comparable with the total number previously seen from Earth and the initial scans form only a minute part of the systematic survey that IRAS will conduct of the entire sky.

Since that time, in-orbit check-out has been completed. The instrument is in an excellent state of health, the pointing accuracy even better than expected and the life-time of the satellite is now predicted to be considerably longer than was at first forecast. The scientists in this joint Netherlands-USA-UK project are delighted with the new results and the prospects which now exist for revealing many of the secrets and mysteries of the Universe.

It is with this air of excitement that a Press Briefing to release these new results has been arranged at RAL on Monday 21 February, on which day we shall have the added pleasure of a visit from Mr William Shelton, MP, Parliamentary Under Secretary of State in the Department of Education and Science. Mr Shelton will be present during a pass of the satellite over the Operations Control Centre.



The First results from a scan of the Milky Way taken by the Infrared Astronomical Satellite (IRAS) telescope on its first day of operation, an hour after its protective cover was removed. They were obtained during a 25 degree-long sweep from south to north at an angle of about 45 degrees across the plane of our galaxy in the constellation Crux, the Southern Cross.

The upper tracing is dominated by 100 micron wavelength emission from cold dust associated with the material out of which all stars in the Galaxy are formed. The structure in the tracing is due to individual clouds of dust and molecular gas hundreds of light years across.

The bottom tracing shows the intensity at a wavelength of 11 microns and is mainly due to emission from billions of stars. The bulge at the centre shows the densest concentration of stars; the slow increase to the right of the figure is caused by warm dust in the plane of the solar system. The individual narrow spikes are caused by single bright or nearby stars. (83 FB 1391).

INTERNAL Events

NIMROD LECTURES
LECTURE THEATRE - 1400 hrs

28 Feb — Prof D H Wallace/Edinburgh
'Hadron Masses in Lattice QCD'

HEP SEMINARS
R61 CONF. ROOM - 1100 hrs

23 Feb — Dr J C Thompson/RAL
'Results from EMC on Hadron Production in Deep Inelastic Scattering'

ASTROPHYSICS SEMINARS
R61 CONF. ROOM - 1400 hrs

9 Mar — Dr K E Turver/Durham
'Ground-based Ultra-high Gamma Ray Astronomy'

23 Mar CONF RM 2 — Dr R D Wolstencroft/ROE
'Infra-red Properties of BL LAC Objects and X-ray Selected Quasars'

CONDENSED MATTER SCIENCE SEMINARS
R3 CONF. ROOM - 1330 hrs

22 Feb — J W Steeds/Bristol
'Submicron Analysis of Materials by Electron Microscopy with special reference to Incommensurate Phases and Luminescence in Devices'

1 Mar — R L Mössbauer/Munich
'Search for Neutrino Oscillations'

8 Mar — W M Gelbart/UCLA
'Size and Shape of Micelles in Simple Soap Solutions'

15 Mar — P Schofield/Harwell
'Scattering or Epithermal Neutrons - Twenty Years On'

RAL TECHNOLOGY LECTURES

The next lecture in this series will be held on Thursday 24 February at 3.0 pm in the Lecture Theatre.

'NEW DIRECTION IN COMPUTING RESEARCH'

by

Professor R M Needham
University of Cambridge

There are many views about the future of research in computing and they are being canvassed energetically by their proponents.

The talk will consider some of these and include the speaker's own views and prejudices.

FOR YOUR DIARY: The next lecture will be on Thursday 10 March by Dr M N Wilson, Rutherford Appleton Laboratory and will be entitled "Superconductivity: New Ideas, New Applications".

SIRA Seminar

An international seminar on Film Preparation and Etching using vacuum or plasma technology is being staged at the University of Sussex, Brighton, 22-24 March.

Those wishing to attend or requiring further information, please contact Gordon Grossart, Ext 5583.

May We Suggest

Two substantial awards have recently been presented to Rutherford Appleton Laboratory craftsmen under the SERC Suggestions Award Scheme. Mr D (David) Stanley received his award of £250 on 7 February from Dr T Gordon Walker, head of Instrumentation Division and Mr J E (Jack) Purling was presented with a cheque for £190 on 8 February by Mr David A Gray head of SNS Division.

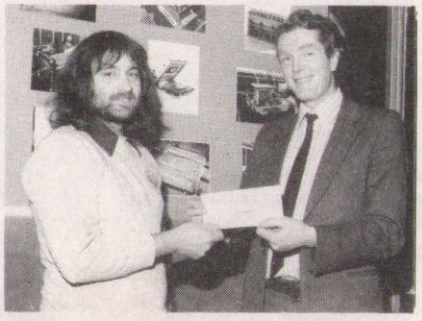
Awards are made on the basis of how much time and money has been saved by introducing the proposed ideas, and are one way in which the Council can show appreciation for effort "above and beyond the call of duty".

David Stanley's award was gained for the design, and production of a silk-screen printing frame incorporating precise adjustment in all directions. The need for this became apparent when a prototype of a proposed high energy physics detector was being developed for the LEP electron-positron colliding beam machine now being built at CERN.

The detector incorporates stacks of lead and copper plates (1,000 in the prototype) which are pierced with a series of slots and holes. Each plate has to be coated with an insulator 2 thousandths of an inch thick, followed by a coat of epoxy of the same thickness. These have to be screen-printed onto the plates leaving a 4 thousandth of an inch of bare metal evenly spaced around each aperture. Without the device, it would have been virtually impossible to have achieved the consistent, high precision, repetitive process needed for the production of this detector.

The problem overcome by Jack Purling's suggestion was that of installing and servicing power units, each of which weighed 250 lbs and was consequently not easy to handle. It was suggested that the purchase of a fork-lift truck with counterbalance was the answer.
The simpler solution, devised by Jack, was to build a portable stand which would pick up the existing mounting rails enabling a standard stacker truck to be used for loading the power supplies into racks. It also had the advantage of allowing easy withdrawal of the units for repairs.

Both men are to be heartily congratulated on their ingenuity.



David Stanley (left) receives his award and the congratulations of T Gordon Walker. (83RB1423)

Jack Purling (left) and David A Gray enjoying the presentation of Jack's award. (83RB1426)

Horse-Box in the Bering Sea

In 1987 the European Space Agency is launching a remote sensing satellite ERS-1, which will have a radar altimeter as part of the payload. In order to understand the physics of the interaction of radar pulses with various surfaces, RAL's Remote Sensing Group is collaborating with the Scott Polar Research Institute, Mullard Space Science Laboratory, University College London and Heriot-Watt University in a joint NERC-SERC funded programme of theoretical and experimental studies of altimetry and scatterometry.

The first experimental measurements are being undertaken this February in the Bering Sea between Alaska and Siberia as part of the international Marginal Ice Zone Interaction Experiment (MIZEX). A combined altimeter-scatterometer has been built at RAL and will be flown over the ocean-ice boundary in a NASA aircraft. John Powell, John Bradford, Charlie Wrench and Andrew Birks are the RAL people on board the aircraft. On one of the ships at the ice edge is Rodney Knight who will be collecting samples of ice and snow to measure the microwave dielectric constant in a RAL untuned cavity. These measurements have to be carried out at ambient temperature, so the equipment is housed in a converted horse box trailer tied down to the deck of the ship.

Microwave radar altimetry is a technique which enables precise measurements (to within a few centimeters) to be made of the distance between an aircraft or satellite and the surface of the Earth. Variations in the amplitude and shape of the returning echo can be used to monitor ocean topography, and the location and type of sea ice cover, all of which are important variables in global climate studies.

The untuned cavity in its horse-box.

As well as carrying out scientific studies, this programme will encourage the growth of expertise and knowledge, so that maximum benefit is obtained from the ERS-1 mission.

(We thank David Croom and Rodney Knight for this report on an interesting new area of research).

HEP Forum

The next UK HEP Forum will be held at Cosener's House, Abingdon, on 23 and 24 April.

The subject will be:-

'STRINGS, JETS and FRAGMENTATION MODELS'.

Would anyone interested in attending please write to Dr E R Hancock, RAL, (Ext 5647), before 20 March. The number of participants at this meeting is limited - so, first come .....!

R9 - On the Move

The R9 Workshop is moving home to R12.

During the period of the move we regret any inconvenience caused to our customers. We aim to be fully operational with the minimum of delay.

Library Notice

With reference to the Library Notice in the last RAL Bulletin concerning the Library Database, please note that the details given were misleading. It is still an incomplete database we have available, and the 'beginners guide' is still with Repro. The full database is unlikely to be available before March. WE WILL KEEP USERS INFORMED OF PROGRESS.

The following new book has disappeared from the Computing Library.

Metcalf, M - 'FORTRAN Optimisation'

Would the person who has this book please return it to the R27 Library. (We have nine other people wishing to see it!).

Missing

D J Parker of R25, Ext 6530, would be pleased to have news of the whereabouts of the following three items:-

AVO Model 9, Inv. No 4885

Marconi Oscillator, Type TF 2103, Inv. No 5512

Farnell Power Supply, L30B, Inv. No 5719

During the first two weeks of November 1982 an Avometer 8 disappeared from the bench in G-100 R25. The carrying case (new) in leather also went from the cupboard under the bench. The Avo carried the inventory label 12726 in Appleton form.

Anyone with information on these items, please ring Ext 6500.

John Hunt, R18, Ext 6115, would be glad to regain Stop-watch, Serial No WDS3, Label No R006081.

Leaving a Vacuum

Nobby

Friends and colleagues of Mr HE "Nobby" Clark gathered together on 14 January to wish him well on his retirement and to present him with a momento of his many years at RAL.

'Nobby' joined us in 1964 starting in the Vacuum section. He completed his Radiation Monitor Training whilst receiving on-the-job vacuum training and in 1966 passed the Harwell Physics Monitors Course with flying colours. He worked on Nimrod during all its operational life until the close-down in June 1978, gaining high regard from his colleagues for dependability and diligence, especially in his Health Physics duties.

His farewell to Nimrod lasted longer than did many of his colleagues, as he monitored the pieces before they journeyed to other institutions, laboratories or schools for reuse, or to the scrap merchants.

David Gray, making the presentation to Nobby on behalf of all his friends, thanked him for all his work, and wished him good luck for the future.

Nobby is apparently developing an interest in birds - the feathered kind - and is going to use the cheque, presented by his colleages, to equip an aviary.

In a letter received subsequently, Nobby writes that he wishes to be remembered to all his friends and colleages. He thanks them all for his retirement present and says "cheerio" to all those he was unable to see personally.

Ken

Ken Cox started a new phase in his life on 21 January.

His family have lived in Hanney since at least 1700, few of them seeming to have much trouble in reaching their 90s. So - Ken, a mere youth by these standards, has had a new career mapped out for him; assisting with 'meals on wheels', helping the elderly in his village, and farming at harvest times.

David Gray, making the farewell presentation to Ken on behalf of his many friends and colleagues, outlined his career at the Lab which he joined in 1962 as an electrician's mate. However, such were his driving abilities and general knowledge of both the RAL site and Harwell that he soon also became Nimrod Division's driver.

'He has always had a highly enviable system for being able to remember to do a particular job at a specified time regardless of how far in advance the instruction was given. Coupled with his remarkable knowledge of practically everyone on site, this has given him a reputation for reliability which will make it extremely difficult to find a replacement for him', said David. 'We have appreciated your help over the years and we wish you all the best of luck and good health in your retirement'.

Ken Cox (left) says goodbye to David Gray. (83 RB 1304).

Ken then received a hedge trimmer, a watch and a huge iced cake from all his friends, and in reply thanked everyone for coming; for the kind words David had spoken of him; for the 20 happy years his colleagues had given him, for the gifts, and the cake the Restaurant staff had made for him. He would miss the company of his friends very much, he said, and wished all in SNS every success in the future.

Thanks

Mr Ken Cox wishes to thank all his friends and colleagues at RAL, who he did not manage to see personally before he left, for their gifts and kind wishes, for which he is very grateful.

Ray Smith of Repro. R3 would like to thank all colleagues who so generously sponsored him in the December Rifle Shoot.

Coffee at Cosener's

The dates for the coffee mornings for the first half of 1983 have now been arranged and are set out below. They will all be held at Cosener's House (10.30 to 12 noon) except for the June meeting which will be held at Suzanne Clark's house on Boar's hill. Their garden adjoins a wild flower garden which is delightful to explore.

Tuesday 15 March
Thursday 7 April
Wednesday 4 May
Tuesday 7 June at
Mrs Clark's house, Tall Trees, Jarn Way (off Berkley Road) Boar's Hill.

We are hoping to arrange a summer evening party at Cosener's House about the end of June for husbands and wives, and also a walk with picnic or pub lunch early in July. Details of both these events will be announced later.

All RAL wives are very welcome to all events. For more information, please telephone or write to

Rosie Fisher	Joy McWhirter
3 Mandeville Close	13 Park Crescent
Abingdon	Abingdon
Tel. Abingdon 23844	Abingdon 20232

Fitzharry's Astronomical Soc

Dr Mike Hopgood, of RAL. will be speaking to this Society of Tuesday, 8 March, at 7.30pm on the subject to 'Aurorae and Airglow'.

The Society holds its meetings at Fitzharry School (Science Block), Northcourt Road, Abingdon, and all are welcome.

'100' Club

The January draw took place in R58 on 2 February. Mrs J E Harries, R25, holding Ticket No 52 won the £25 prize.

IRAS 'Covers'

IRAS launch philatellic covers dated 26 January 1983 are available at the Cash Office R20, price 90p each.

Bulletin

Editor: Jean Banford
Building R20
Rutherford Appleton Laboratory
Chilton, Didcot, Oxon OX11 0QX
Abingdon (0235) 21900 ext 5484

Deadline for insertions:

J. Banford

EXTERNAL Events

THEO PHYS SEMINARS
TPD - HARWELL - 1400 hrs

22 Feb — Dr D B Ingham/Leeds
'Mathematical Theory of Deposition and Diffusion of Particles'

1 Mar — Dr A G Cullis/RSRE Malvern
'Phase Transitions in Silicon Induced Laser Annealing'

8 Mar — Prof T A Kletz/Loughborough
'Why do Chemical Plants Leak'

15 Mar — Dr W Jones/Sheffield
'Thomson's Hypothesis and Minimum Entropy Production'

ELEM PART PHYSICS SEMINARS
NPD - OXFORD - 1430 hrs

24 Feb — Discussion Meeting on Proton Decay.

Dr Wade Allison
'The Irvine-Michigan-Brookhaven Experiment and its Results'

Dr B Saitta
'Background in Proton Decay Experiments'

Dr C H Llewellyn Smith
'The Implications of the Irvine-Michigan-Brookhaven result for $\Gamma(p \to e^+ \pi^0)$'

THEO PHYSICS SEMINARS
QMC - LONDON - 1330 hrs

24 Feb — Prof C Isham/Imperial
'Quantum Geometry'

3 Mar — Dr D A Ross/Southampton
'Does the Drell-Yan Cross-Section in QCD Factorise?'

10 Mar — Dr M Pepper/GEC
'Localised and Interaction Effects in the 2-D Electron Gas'

17 Mar — Prof J C Taylor/Cambridge
'Soft Gluons and Fast Quarks'

THEORY GROUP MEETINGS
DARESBURY - 1400 hrs

28 Feb — Dr B G Giraud/Saclay
'Theory of Exclusive Reactions'

14 Mar — Dr R C Barrett/Surrey
'Coupled Channel Analysis of Deutron Nucleus Scattering using the Adiabatic Approximation'

HEP SEMINARS
MANCHESTER - 1430 hrs

22 Feb — Dr Michael Worsell/Manchester
'$K\bar{p}$ Interactions at 18.5 GeV/c Using the Omega Prime Spectrometer at the CERN SPS'

1 Mar — Dr John Stroghair/Manchester
'Testing the Weinberg-Salam Model in $p\bar{p}$ Colliders'

8 Mar — Dr Richard Moore/Manchester
'Intrinsic Charm in Deep Inelastic Scattering'

THEO PHYS SEMINARS
MANCHESTER - 1430 hrs

23 Feb — Dr J Green/Manchester
'Direct Lattice Animals and their Applications'

2 Mar
1600 hrs — Prof K Pound/Leicester
'X-ray Astronomy'

9 Mar — Dr S Perez/Cape Town
'One Nucleon Transfer Sum Rules and Single Particle Aspects of Nuclei'

PHYSICS COLLOQUIA
CLARENDON LAB - OXFORD - 1615 hrs

25 Feb — Prof K Dransfeld/Konstanz
'Dynamics of Amorphous Metals at Low Temperatures'

4 Mar — Prof B Buras/Risø National Lab
'Solid State Studies Using Synchrotron Radiation'

PART PHYS DISC GP MEETING
BIRMINGHAM - 1415 hrs

25 Feb — Prof V P Kenny/Notre Dame
'Search for Charm in 200GeV Hadron-hadron Collisions at Fermilab'

4 Mar — Dr A Hey/Southampton
'Quantum Mechanics Path Integrals and Fractals'