Rutherford Appleton Laboratory

Bulletin

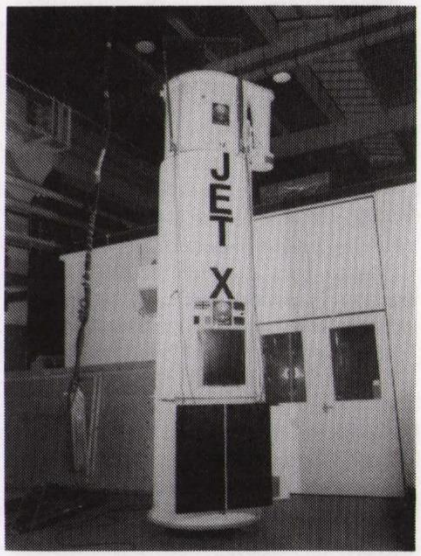
Editor Esther Peacock 2 April 1990

Mass Model for Moscow....

Jet-X (the Joint European Telescope for X-ray astronomy) has reached a significant milestone in its tight schedule with the delivery of a Mass Model to Moscow on 19 February.

The instrument is a very sensitive 4.4m long X-ray telescope to be flown on the Soviet Spectrum-X mission in 1993. Jet-X is being built by a consortium comprising groups from Italy and the USSR, and led by the UK. RAL is overseeing project direction, interfaces with the USSR, provision of the ground segment, thermal analysis and insulation, overall assembly and test of the complete instrument, and provision of the altitude monitor (to determine the pointing direction of the telescope).

The Mass Model is a dummy used to represent the flight instrument in shape, size, and mass. It was delivered to RAL at the end of January to fit the dummy super-insulation and to check how well it could be handled in the new clean room assembly facility in R25. It was then transported by road through East Germany and Poland to the Space Research Institute in Moscow, where it will be integrated with a mass model of the complete spacecraft to check the overall design.



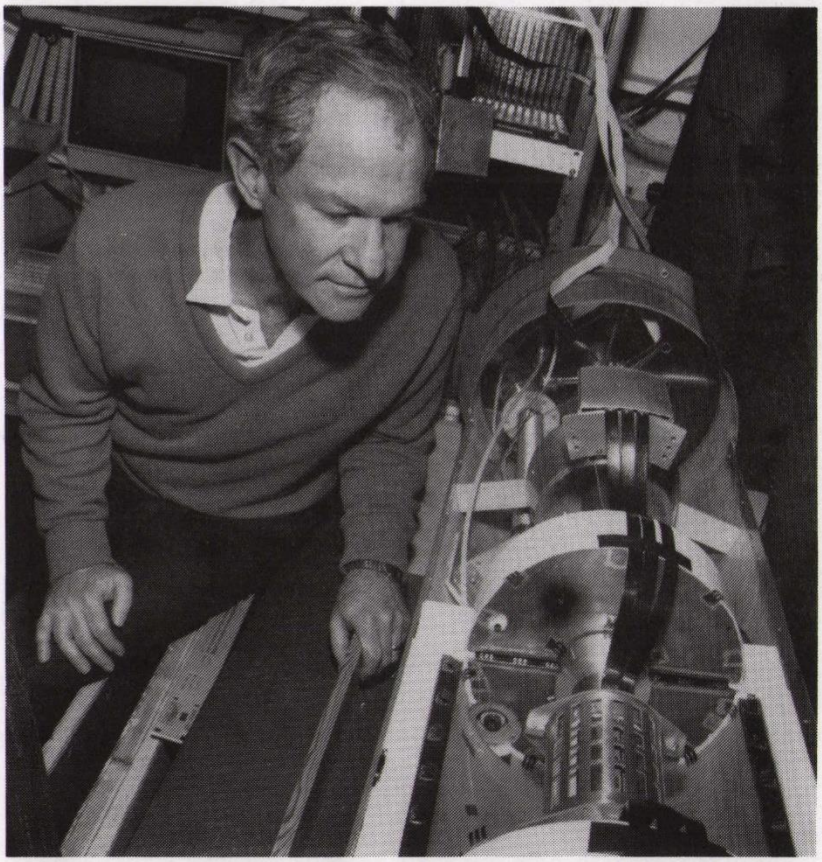
The Jet -X model hoisted upright outside the new R25 clean room facility

....and CCDs for California

A prototype of a Vertex Microscope, a new advanced particle detector, has recently been shipped from RAL to the Stanford Linear Accelerator Centre (SLAC) in California.

The new design incorporates Charge Coupled Devices (CCDs) to great advantage. The CCD records the position of tracks in two dimensions, rather than just one as with other types of detector. This is possible because the CCD consists of a matrix of charge storage elements - the finished detector will have 120 million of them. The prototype is made up of just six million of these storage elements, contained within 24 CCDs. The area covered is therefore limited at present, but the detector is still capable of tracking precision to within five thousandths of a millimetre.

The Vertex Microscope is the fruit of a collaboration between RAL, Brunel University, and the University of Santa Barbara, California. It was fully tested at RAL before being shipped to Stanford, where it will be used to detect particles from high energy reactions at the SLAC Linear Collider.



Chris Damerell of Particle Physics Department with the prototype detector

Visiting Professors

We are pleased to report four further appointments to posts of Visiting Professors amongst RAL's senior staff.

John Harries, Head of Space Science Department, has been appointed Visiting Professor in the Department of Physics and Astronomy at University College, London. He is particularly associated with the work of Professor Culhane and colleagues at UCL's Mullard Space Science Laboratory.

Mike Key, Head of Central Laser Facility, has been appointed Visiting Professor of Experimental Physics at the University of Oxford. He will pursue his research interests in X-ray lasers and high power KrF lasers in association with the University's Atomic and Laser Physics section headed by Professor P G H Sandars.

Ron Lawes, Head of Lithography Division, becomes Visiting Professor of Electrical Engineering in the Optical Semiconductor Devices section at Imperial College, London.

And Peter Smith, Head of the Dark Matter Group, receives the honorary title of Visiting Professor in Physics and Astronomy in the School of Mathematical and Physical Sciences at the University of Sussex.

A Legacy of Health

Sister Kirby of the Harwell Medical section, who had a special responsibility for the medical care of RAL staff, retired last month. She has left us with the following message as a reminder of the rhyme and reason of good health:

I have enjoyed being here with you,
But now my time's complete.
Please remember, have your greens
And watch the FAT you eat!
Position well your VDU's
Support your back and neck.
Remember how to breathe in life
If someone hits the deck.
Protect your eyes from swarf and dust,
And laser beams as well.
And if you're feeling under stress
Just go outside and YELL!

Thank you, Sister Kirby, from all of us at RAL - enjoy your retirement!

Recycling

Why not help the environment and send all those wasted sheets of A4 produced by photocopying and laser printing to be recycled?

There is a special collection on Saturdays for bulk quantities of A4 and continuous computer stationery. It must be free of binders, folders, tags and paper clips, and must not be crumpled or shredded. This should be left outside office doors on Friday afternoons, clearly marked FOR DISPOSAL. In some buildings there is a designated central collection point.

For further information contact Lesley Ford, ext 6378.

• If you have any other suggestions for recycling, please contact RAL Bulletin and we may run a special feature on the subject.

RAL Open Days 1990

D esign
& D iscovery

The first RAL Open Days to be held for ten years are drawing nearer. The Laboratory will be open to visitors over six days in July, with the aim of demonstrating the range and scope of our research to government, the industrial and academic communities, and for the first time this year to the general public.

OPEN DAYS 1990

Tuesday 10 July	Schools and Colleges
Wednesday 11 July	VIPs and Press
Thursday 12 July	Invited guests
Friday 13 July	Invited guests
Saturday 14 July	**RAL families and Public Open Day**
Monday 16 July	RAL Staff

Other than Saturday, attendance is by invitation only. If you would like to nominate someone to receive an invitation, or if you are an external reader who would like to receive one, please contact Marjorie Sherwen of RAL Press and PR section, ext 5553.

Juggling for Joy

Juggling may not be the sort of activity you'd expect to find in a research laboratory (except perhaps when experimental results do not quite agree with theoretical predictions).

Nevertheless, a Juggling Club was formed at RAL in January this year by a group from Informatics Department, and already it boasts 21 members, including Juan Bicarregui pictured above.

The basic rhythm of jugg;ling, it seems, can be learned in just 20 minutes, and as well as amusing the onlookers it can have real benefits for the performer - reducing stress, increasing self-confidence, and improving hand-eye coordination.

From three ball juggling, it is but a small step to doing amazing things with bean bags, rings, and even clubs. The RAL club is well equipped with such items (though they've yet to invest in fire clubs) along with a small library of books and a video.

Juggling sessions are held Friday lunchtimes. Contact the secretary Anne Shrimpton on ext 5160 for more details.

Ten years in space (well, nearly)

The highly successful Solar Maximum Mission, the NASA spacecraft dedicated to studying solar flares and other activity, was launched on 17 February 1980.

It re-entered the Earth's atmosphere on 2 December 1989, after returning almost ten years of data which has made vast additions to our knowledge of solar activity.

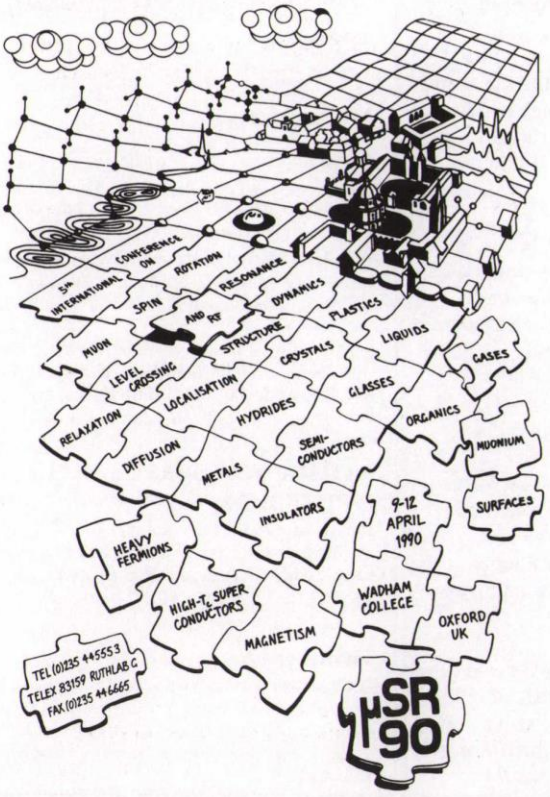
Ten years after the launch, to commemorate the British effort in this achievement, a one-day 'SMM Symposium' was held at Cosener's House on 14 February 1990. This brought together those who worked on the spacecraft, especially the X-ray Polychrometer (XRP) instrument.

Presentations were given by Birmingham University who were involved with the Hard X-ray Imaging Spectrometer, and from Glasgow University who were guest investigators on SMM.

The remarkable longevity of the XRP instrument - it was recording flares right up to a few days before SMM re-entry - owed a great deal to the successful mechanical design of the Flat Crystal Spectrometer part of the instrument, and to the preparation of the Bragg-diffracting crystals, both tasks largely done by RAL staff of RAL's Astrophysics Research Division.

Attendees at the SMM symposium. An active participant was Brian Barker (front row, left) who to our great sadness died sudddenly shortly after the event.

All in a Spin



This eye-catching poster is advertising a conference to be held in Oxford University's Wadham College next month, involving RAL scientists from the ISIS Muon Facility.

For a particle with such a short life - typically about a couple of microseconds - the muon does a lot of work in a wide range of fields, and helps to fit many pieces into the jigsaw which explains why different materials behave as they do.

A muon is a heavy electron. Muons are produced using ISIS and then used in a wide variety of ways. This conference focuses on muon spin and rotation, characteristics which can be used to measure microscopic properties within the materials being studied. Clues to these measurements are contained in the poster itself:

- Muons can provide a way of measuring tiny magnetic fields - even the field between atoms can be measured by looking at the way the axis of the spinning muon rotates under the influence of the magnetic field.

- They can also imitate a proton, and so simulate the behaviour of hydrogen atoms, showing for example the way that hydrogen diffuses through metals - useful in studying the seepage that takes place when hydrogen is stored in metal containers.

- Even chemical reactions can be investigated with the muon - its very short lifetime allows the study of reactions too rapid to be examined in other ways.

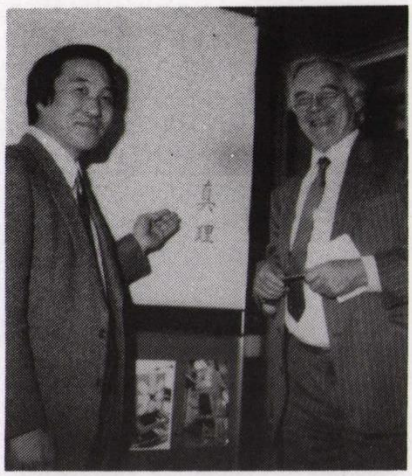
Poster drawn by Steve Cox, (whose initials form the College gateway)

What's in a name?

Professor Bill Mitchell learned many interesting facts about MARI, the Multi-Angle Rotor Instrument at ISIS, during what was probably his last visit to RAL as Chairman of SERC in February, and not the least of these was the origin of its name.

The neutron spectrometer is an example of UK-Japanese collaboration being funded by Japan's Ministry of Science, Education and Culture.

The acronym MARI was chosen in honour of the daughter of the late Professor Ishikawa, initiator of the collaboration.



Dr Masa Arai explains to Professor Mitchell that the Japanese characters that symbolise the name Mari also mean 'truth".

Obituaries

Brian Barker

We regret to report the death on 22 February of Brian Antony Barker of Space Science Division.

After his youth at Retford, an apprenticeship with British Ropes, and National Service in the RAF, Brian joined the Ministry of Aviation in Bromley, Kent.

Widowed from his first marriage, he married Margaret and together they brought up Diana and then their three other children, David, Fiona, and Michael.

Meanwhile he had come to Rutherford Laboratory to work on Nimrod. Since then he was involved in many projects at RAL, Culham, and Slough, such as XRP, Giotto, and Chase, and was an active member of IPMS and the Safety Committee, and contributed greatly to the Amateur Radio Club, Scouting, and Sailing groups - a giver in everything he did.

Brian to some, Tony to others, he will be greatly missed not only by his immediate workmates but also by his friends in many other activities of the site.

Joe Marsh

Sadly we learned of the death on 29 January of Joe Marsh, Chief Engineer at RAL until his retirement in 1976.

Joe joined the government service in the early part of the last war, and became a member of the team developing radar equipment at Swanage, then moving with them to Malvern to the Telecommunication Research Establishment. At the end of the war he played a major part in the design and construction of the first Van de Graaff machine to be built in this country, and in 1946 joined the Atomic Energy Authority, leading a small design group in the 'Lees' where the first Travelling Wave Electron and Betatron accelerators were built.

In 1948 this small team came to AERE Harwell and became part of the Electronic and Automatics Division which produced many of the radiation measuring and recording devices which are still in use today.

A new group was formed in 1952 to build the Proton Linear Accelerator, and Joe took a leading role in the design and construction of this machine in R12, then helped in the initial design and construction of Nimrod before taking charge of the operation and use of the PLA until it was closed in 1969.

His whole engineering team then formed Nuclear Physics Apparatus group and were responsible for the design and construction of the first High Energy Physics experiments at CERN, and many at Nimrod.

In his long career he always expected of his staff his own high standards of professional engineering. He will always be remembered for a mind which was ever ready with innovations and ideas.

Notices

Film Badges

Period 4 colour code RED begins on 26 March. Please check you are wearing the right badge and return old ones to AERE in the pre-addressed envelopes provided.

Sale of Scrap

The next of the regularFriday sales will take place between 12 noon and 12.30pm in the R24 Scrap Compound on 6 and 20 April.

RAL Lecture:
A Chemist Looks at Pollution

Professor Sir Jack Lewis of Cambridge University will be giving this lecture on Thursday 19 April, 3.15pm R22 Lecture Theatre.

Welfare Fund

The Welfare Fund is available to all employees who are in need of immediate financial help and support to meet unexpected problems. To obtain a confidential personal or financial counselling service or to make a contribution phone Denise Lewis on Harwell ext 3061 during office hours.

The Samaritans

The Oxford group of the Samaritans are looking for volunteers to help with their work of providing a listening ear and human contact for those in need. For more information contact Sylvia Fones on ext 6677.

Tenors Wanted

The City of Oxford Choir is appealing for more voices, especially tenors. Contact Carolyn Brock, the conductor, on Wheatley 2977 for more details.

Missing items

• Standard Fortin barometer, missing from R1. Please contact Tony Payne, ext 5460 if you have any information.

• Thurlby digital multimeter type 1905A, serial no. 48814R missing from R25. Any information on its whereabouts to Peter Smith, ext 5463.

• Fluke digital multimeter, serial no.39115840 missing from R6. Contact Hari Shah ext 5409/ 6443 if you think you could help.

NOTICE TO USERS OF BUS ROUTE NO 5

Please note that casual tickets will NOT be available for the newly amalgamated bus route no. 5 (North Oxford, Summertown, etc.) for a short period from Monday 2 April.

Thank you

Tony Lowe thanks friends and colleagues for their generous contributions towards a floral tribute, and also their donations for the Thames Valley Hospice, Windsor, in memory of his late wife Avis.

Published & printed by Scientific Administration Group, Rutherford Appleton Laboratory, Chilton, DIDCOT, Oxon OX11 0QX Tel 0235 821900