Bulletin
of the Rutherford Appleton Laboratory 20 Sept 1982 No.14

Opportunity in Space

RAL scientists and engineers, in collaboration with colleagues from Oxford University's Department of Atmospheric Physics and University College London's Mullard Space Science Laboratory, have won an important competition for the chance to build an instrument for space research as the result of an "announcement of opportunity" issued by the European Space Agency (ESA). The opportunity is to provide a scientific payload for ERS-1, Europe's first remote sensing satellite.

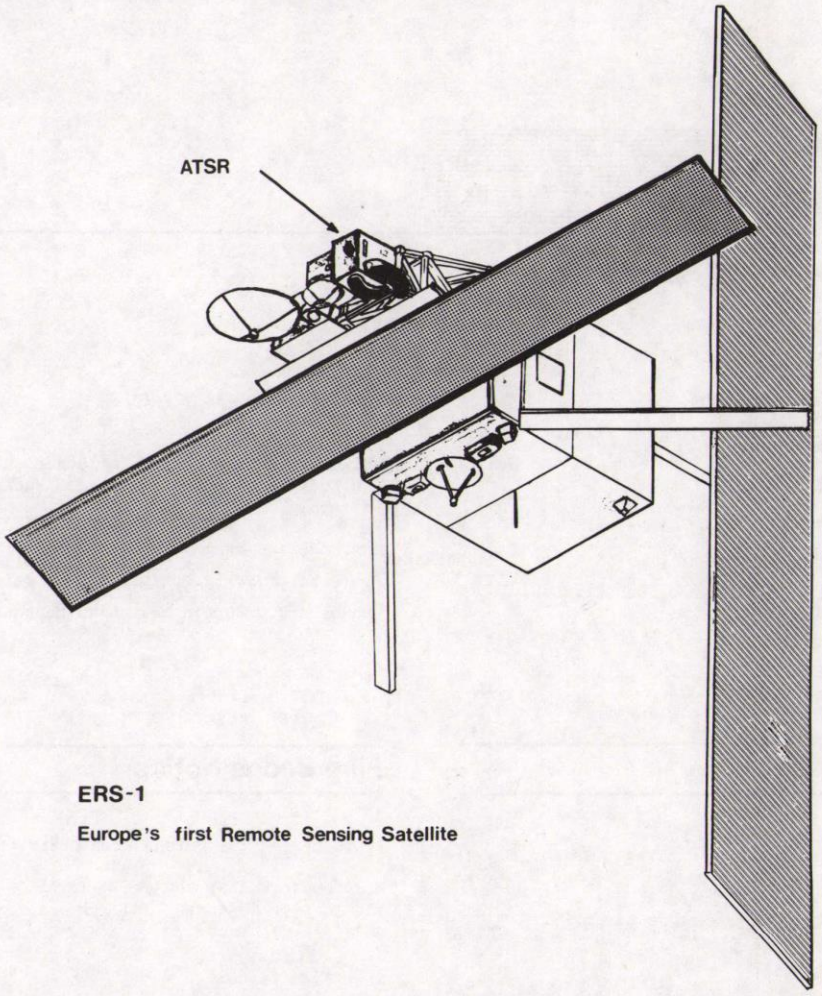
ATSR

The instrument selected by ESA in the face of competition from a number of well established European groups is the Along-Track Scanning Radiometer (ATSR), proposed by RAL and collaborators. This is an infra-red radiometer of new and advanced design whose purpose will be to measure sea surface temperature with great accuracy. In addition it will provide information about the global extent and nature of cloud cover and other parameters. Information of this kind is vital for a proper understanding of the heat balance of the Globe and ultimately our weather, because the oceans cover 4/5 of the Earth's surface and play a dominant role in determining our climate.

Naturally, winning this opportunity adds considerable prestige to the Lab's new Remote Sounding programme, started in 1980, and those of the participating university departments. Oxford University have a long and successful history of collaboration with RAL in the production of satellite instrumentation, developed in the course of building four important instruments for NASA's Nimbus series of research weather satellites. MSSL also has a similar history, but mainly in the field of astronomical and magnetospheric satellite instrumentation and this venture is their first in remote sensing of the Earth.

Objectives

The satellite, one of ESA's largest to date, is due for launch in 1987, as the flagship of the Agency's new Applications Programme. It carries a main payload of three microwave radars and is directed towards global monitoring of the oceans. It will, by monitoring such quantities as wave height, wave direction, and (with the ATSR) sea surface temperature, produce data which will not only be of great importance to shipping, offshore operations, fisheries and other directly commercial activities, but will collect basic data that directly affects our ability to predict the weather on both medium and long time-scales. Our understanding of the role of the oceans in affecting our climate will also be greatly increased.



ERS-1

Europe's first Remote Sensing Satellite

The ATSR, with two curved apertures for viewing the Earth at two angles, is about 0.6m wide and can be seen at the top of the illustration.

There is no doubt that the future of climate research lies in the development of effective and accurate measurement techniques that can continuously accumulate data on a global scale. The flight of the ATSR will be an important step towards this goal which will engage much of the attention of RAL over the next six years or so in designing, building and exploiting a new satellite instrument.

(We thank David Llewellyn-Jones for this news).

INTERNAL Events

COMPUTING DIVISION SEMINARS
COLLOQUIUM - R27 - 1515hrs

5 Oct Dr Jack Bresenham
"Incremental Line Run Length and Compaction Algorithms"

HEP SEMINARS
R61, CONF.ROOM - 1100hrs

29 Sept Dr C M Fisher/RAL
"Latest Results from LEBC - NA16"

RAL LECTURES
LECTURE THEATRE - 1515hrs

7 Oct Dr J M Irvine/Manchester
"Prehistoric Reactors and the Constants of Physics"

NIMROD LECTURES
R61, CONF.ROOM - 1400hrs

27 Sept Prof J Prentice/Toronto
"Neutrino Production and Weak Decay Lifetimes of Charmed Hadrons"

RAL Colours

1982-83 Series

DATES FOR YOUR DIARY

Thursday 7 October 1982

Dr J M Irvine, University of Manchester

"Prehistoric Reactors and the Constants of Physics"

Thursday 4 November 1982

Dr W J Wadsworth, University of Manchester

"The Evolution of Basaltic Shield Volcanoes"

Thursday 2 December 1982

Sir Bernard Lovell

"Military and Financial Influence on the Emergence of the Science of Radio Astronomy"

Thursday 13 January 1983

Professor M Berry, University of Bristol

"Chaos and Order in Newtonian Mechanics"

Thursday 10 February 1983

Professor D Michie, University of Edinburgh

"The Knowledge Acquisition Problem in Expert Systems Work"

Further lectures will take place on Thursdays 24 March (Sir Hermann Bondi, Chairman NERC), 21 April amd 19 May, but the details of these have not yet been finalised.

Missing

Would anyone finding a Parker stainless steel fountain pen engraved D Evans on the barrel, please contact its sorrowing owner on Ext 5297.

Film Badge Notice

It is Period 10. Colour srip GREEN

Please check that you are wearing the correct dosimeter and all old ones are returned.

Next Film Issue
Monday, 11 October.

Library Notice

Would anyone finding the following books please return them to the Library R61 or the Computing Library R27.

J M Jacob - Applications and design with analog integrated circuits.

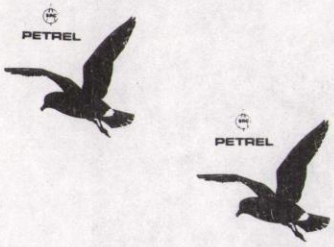
A S Sedra - Microelectronic circuits.

G H MacEwen - Introduction to computer systems using the PDP-11 and Pascal.

A S Philippakis - Structured Cobol, 2nd edition.

D Cooper - Oh! Pascal!

Hey Då Petrel



August 1982 saw the last campaign involving the SERC rocket programme in the form of two Petrel rockets. They were part of the CAMP series of launchings involving the firing of two salvos of five and three rockets from ESRANGE in Sweden. One Petrel was allocated to each salvo. The first to go, carrying an experiment from RAL was successful apart from a minor fault. The second (last in the programme) carried a West German engineered payload and although successful suffered from a poor telemetry link. It was probably good continuity for the last Petrel payload to be German as they currently appear to be expanding in the field of sounding rockets.

The first Petrel in the programme was launched from South Uist on the 1st June 1967. Since that date 232 have been launched from ranges in India, Pakistan, Norway, Sweden, Greenland, Spain, as well as Scotland. Developed as a small budget vehicle to augment the Skylark it enjoyed a reasonable success rate. With the demise of Skylark and Fulmar the Petrel continued as the main vehicle for the last five years of the programme.

One of the smaller range of sounding rockets the Petrel could place an 18Kgm payload to a height of 170Km. The assembly consisted of a Lapwing end burning main motor and a carriage containing up to four Chick boost motors. Launch was effected from a tube and offered the advantage of being easily transportable. In fact early launches were made from a mobile launcher with the tube mounted upon a Bedford lorry. The method of launch and the characteristic small but intense blue flame of the Lapwing contrasted well with other sounding rockets used around the ranges.

The Petrel, although it has left our roost, is not yet extinct but will carry on in other guises. I believe all those who have worked with the Petrel over the years, have enjoyed the experience as well as profiting from the flow of data. Perhaps one has been as much benefit as the other for the work has required adaptability over many aspects both social and professional.

It is hoped that a more enduring reminder of the Petrel may appear on site even if the door has closed (successfully) on this phase of its history for the last time.

VB.

Radar Symposium

Seventy nine participants from 15 countries made full use of the last few days of August at Bournemouth for the Symposium on "Multiple Parameter Radar Measurement of Precipitation" organised by RAL and co-sponsored by the International Union of Radio Science (URSI) and the Institutition of Electrical Engineers (IEE). Much favourable comment was received both on the smooth organisation of the meeting and on the standard of the research being carried out at RAL.

Multiple Parameter Radars measure more than target reflectivity alone, and have enabled various hydrometeor types to be distinguished(eg regions containing ice needles or plates, snow flakes or rain, etc) and the distribution of rain drop sizes to be measured. The latter is necessary when using the radar data to derive rainfall rates or radio wave attenuation.

It was clear that the main applications of multiple parameter radar data so far has been by three groups using the Chilbolton radar data to model radio communication problems, but many other applications lie ahead. In particular, there was great emphasis that the techniques should be used in studies of cloud physics.

As part of the programme there was a visit to Chilbolton to see work being carried out there on influences of the weather on radio-wave propagation. To make the demonstrations authentic, we even provided rain right on cue!

RecSoc Access

Building R58 (RecSoc) will continue to be locked in the evening and at weekends, and keys for access will be available to RecSoc members from the Security Lodge at the Main Gate only on production of a valid membership card.

All persons using the RecSoc building should carry their membership cards with them at all times, for scrutiny by Security Wardens or club officials. All visitors must be accompanied, and members will be responsible for the conduct of their guests.

Keys for purposes other than access to the building will be available only to authorised persons, identified on lists supplied by individual clubs. All such persons must also be RecSoc members.

M J D Courthold
Hon Sec
RAL RecSoc

Computing Seminars

INCREMENTAL LINE RUN LENGTH AND COMPACTION ALGORITHMS
by
Dr Jack Bresenham
Senior Planner in the Graphics Advanced Development Department
IBM UK Laboratories Ltd, Winchester

The lecture will take place in the Colloquium, Atlas Centre, at 3.15pm on Tuesday 5 October.

Raster devices, such as digital plotters, CRT or plasma display panels and matrix or jet ink printers, represent "straight" lines in quantised fashion as a sequence of unit axial and unit diagonal steps. Dichotomous run lengths and period repetitive patterns in these incremental or digital lines provide a basis by which the step sequences for quantised lines can be treated in compressed form for storage or transmission. This talk describes a simple algorthm to incorporate both run length and repeated pattern encoding for step sequence compaction. Also illustrated is the similarity in form of the repetitive loop used to generate either runs or single steps and either full lines or periodic patterns; initial parameter values differ, but the subsequent iterative process is identical.

Trade Exhibition

There will be a mini exhibition by Vacuum Generators of ultra high vacuum components on Tuesday 5 October in R20 Conference Room from 10am to 4pm.

Death Benefit Scheme

The object of this scheme is to provide a cash sum (to the nominee of a member) in the event of the member's death and the cash sum would be paid as soon as possible after report of notification of death.

It only costs 60p to join and the benefit currently paid is £100. As the finances are in a healthy state, subscriptions have been suspended since 1974, but could be re-introduced at the discretion of the Management Committee, and would be 10p per month.

Wny not support the Scheme? An application form can be obtained from:-

Mrs S A Fones	-	Room 64, R20
Mr A Forster	-	G02, R6
Mr J Rodbourne	-	R40
Mr D Taylor	-	R56

Parting of the Ways

82 RC 4392

82 RC 4389

Frank Lloyd (left) and Charlie Greenhalg (right) being presented with their retirement gifts by David Gray.

Frank Lloyd and Charlie Greenhalg both joined Nimrod in 1965 and on Friday 27 August both retired under the Government job release scheme, enabling SNS to employ two indentured apprentices.

The joint presentation ceremony, held by their colleagues to mark their going, seemed appropriate for two men whose careers had run along parallel lines for many years. Both are ex-Naval men who saw action during the war, with Atlantic and Malta convoys, took part in the invasions of Sicily and Normandy and visited all five continents in the course of their service. Both have played a part in the success of Nimrod, have mourned its passing and helped SNS towards a bright future.

David Gray thanked them both for all the work they had done for RAL and wished them good health, happiness and prosperity in their retirement, from all the friends they had made at the Lab. He presented Frank with a hedge cutter, saw and sharpener, to facilitate in all the gardening Frank would now be able to do. Charlie's farewell gift was a set of waterproofs and the where-with-all to buy "whatever you want".

Frank thanked everyone for the gifts and good wishes. "I have enjoyed my time here amongst some very nice people, and although I had my ups and downs, let me say that if you ever think this is a rotten place to work, try working for some of the others!".

Charlie also expressed his gratitude for the gifts he had received and the help of friends and colleagues. He had travelled the World and intended to take a few more trips overseas in the future, but his priority now was to discover the United Kingdom. "There's a wealth of antiquities, magnificent architecture and beautiful scenery, I've missed so far," he said, "with my waterproofs and a rucksack I'm going to see it all."

Appleton Apprentices Indentured

On 20 August 1982, a small ceremony took place to mark the completion of apprenticeship of Beresford Hodge and John Kewkovicz whose four years of training had commenced at the Appleton Laboratory, Slough.

David Gray presented them with their deeds of apprenticeship and said that this was a unique occasion in the history of the Laboratory. RAL apprentices were normally trained at Harwell and so the "end of time" ceremonies took place there. He congratulated them on their achievements and said how pleased he was that the Laboratory had been able to offer them employment as craftsmen.

Both Beresford and John thanked the many people at Ditton Park, Chilton, and the Admiralty Compass Observatory, for all the help and encouragement they had received.

Acknowledgement

Mrs Eileen Oxley wishes to express her gratitude to all her friends and colleagues at RAL for their help, messages of sympathy and flowers which have comforted her in her sad loss.

Bulletin

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

Deadline for insertions: