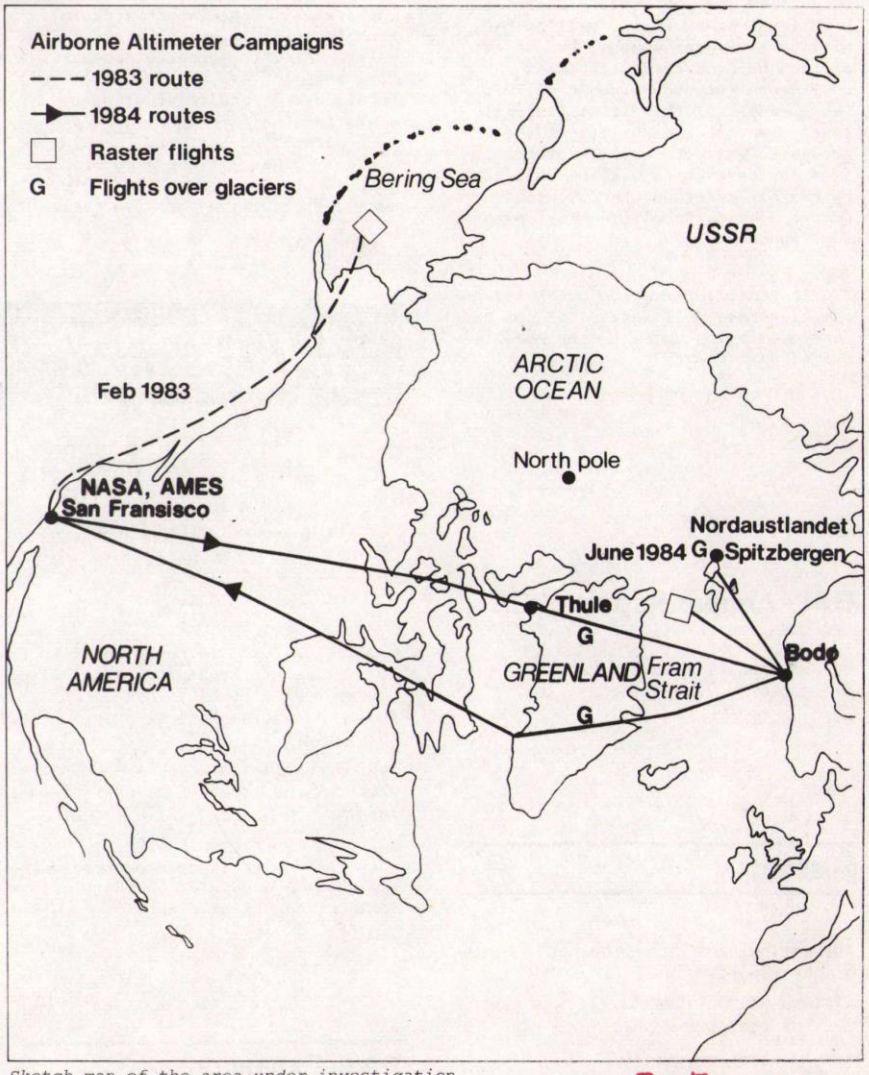
Bulletin
of the Rutherford Appleton Laboratory 22 May 1984 No.8

MIZEX - Experiment in a Cold Climate

For most of the month of June this year, a group of RAL scientists will spend much of their time flying over the arctic wastes of Greenland and Spitzbergen taking part in an internationally coordinated large scale field study of this fascinating and climatically crucial zone of the Earth.

The article below attempts to provide a simplified guide to a very complicated subject - the study and evaluation of polar climate.



Sketch map of the area under investigation.

84 Fb 2741.

Observations from space of radiation reflected, scattered or emitted in various regions of the electromagnetic spectrum can yield information about the structure and behaviour of the Earth's atmosphere, oceans and polar regions which is of value in climate research. This is particularly true of a region about 100 km wide around the polar ice edge where the open sea interacts with the ice. To study this region in the Bering and Greenland Seas, a series of experimental campaigns the Marginal Ice Zone Experiment (MIZEX) has been planned.

As part of this programme, RAL scientists of the Remote Sounding Group spent many hours during February 1983 over the Bering Sea in a NASA Flying Laboratory (Convair CV990 aircraft) studying sea-ice and ocean waves using a microwave radar altimeter/scatterometer built at the Laboratory (see Bulletin No.3 1983)

This year, June 1984, the scene moves to the Greenland Seas. Here the second phase of MIZEX, involving seven other planes, seven ships, a mountain of remote sensing and ocean instrumentation and teams from the US, Canada, France, Germany, the UK, Norway, Denmark and Iceland, will concentrate on the marginal ice-zones around Greenland, Norway and Spitzbergen. The RAL team's contribution to this programme will include flying rasters (110 x 200 km) over the Fram Strait below Spitzbergen. In addition they will make studies of ice-caps and glaciers with a special flight over the ice-cap on Nordaustlandet.

Using the microwave radar altimeter-scatterometer, the group will make precise measurements of the distance between the aircraft and the Earth's surface. Reflected pulses will be further analysed with respect to their amplitude shape and delay time and it is expected that by comparing radar altimeter, microwave radiometer and ice observer data collected over the ice, it will be possible to relate these measurements to sea-ice type and ice density.

From data collected over the sea it will be possible to determine wave height, wind speed and ocean wave length spectra. Thus a comprehensive description which can be used to

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MIZEX *(cont'd from p1)*

validate and refine a predictive model of the Bering Sea and Greenland Sea marginal ice zones, a model which could ultimately be used to describe such zones in a fully coupled climate model.

The combination of altimeter timing measurements over the ice-caps together with those from an accelerometer on-board the aircraft, will yield information on ice altitude and assist the development of an ice-surface tracking system for use in future satellite systems.

The complete analysis of this information which involves scientists from the University of London's Mullard Space Science Laboratory, the Scott Polar Research Institute of Cambridge University and the Geodesy Department of Oxford University as well as RAL, will take several months, but it can already be predicted with some confidence (on the evidence of last years campaign) that it will significantly improve the ability of the U.K. groups to extract sea-ice information from the data which will be collected by the altimeter on the European Remote Sensing Satellite ERS-1 planned for launch in 1989.

(For further information on the MIZEX campaigns and full details of the RAL instrumentation contact John Powell, Ext.6426).

RAL Annual Report 1983

The RAL Annual Report for 1983 is now available from the Library, R61.

Missing

The following item is the subject of a loss report.

A Fluke 8050 A. DVM Serial No.2733315 missing from Lab 7, R1.

Any information, please, to D J A Cockerill, Ext 6248/5301.

Film Badge Notice

It is period 6. Colour Strip YELLOW. Please be sure you are wearing the correct dosimeter and return all old ones.

RAL Lectures

The next lecture in this series will take place on Thursday 24 May at 3.15pm in the R22 Lecture Theatre.

"Quasars, Radio Jets and Black Holes"
by
Professor Martin Rees, FRS
Institute of Astronomy
Cambridge University

Active galactic nuclei generate relativistic plasma and expel spectacular collimated jets which are sometimes more than 10^5 light years long. A rapidly spinning black hole of about 10^8 solar masses is the best candidate for the primary power source. The plasma in its vicinity could consist mainly of electron-positron; pairs. Electro-magnetic processes and flow patterns around black holes will be discussed, and related to a tentative 'unified model' for the varied forms of activity in galactic nuclei. Other astrophysical consequences of black holes (for 'hidden mass', etc) will be briefly reviewed.

RAL Technology Lectures

The next lecture in this series will be held on Thursday 7 June at 3pm in the R22 Lecture Theatre.

RADIO COMMUNICATION RESEARCH
AT RAL
by
Dr J R Norbury
(RAL)

The lecture will be concerned with the activities of the Radio Communications Research Unit at RAL.
These activities fall broadly into two categories;

Radio Propagation Studies -
which extend from VLF to optical wavelengths.

Radio Communication Research -
which has recently been concerned in the Phase A study for the Communication Engineering Research Satellite (CERS).

Trade Exhibition

There will be an exhibition by Hewlett Packard Ltd on Thursday, 24th May in R12 Conference Room from 1000-1600 hrs. On display will be a selection of electronic test equipment and computational controllers, including logic analysis, scalar and network analysis, modulation and spectrum analysis and several stand-alone demonstrations.

Four More Farewells

Geoff Gardiner

"Every establishment should have at least one Geoff Gardiner", we were told by David Ramsden at Geoff's farewell presentation ceremony on Wednesday 18 April. Ditton Park was, of course, lucky enough to have one for many years, and RAL just long enough to recognise that we are going to miss him very much.

It was sad, David said, to be losing another of the old brigade, someone rich in memories of the boom time of radio at Slough; a cultivated gentleman with an interest in a diverse range of topics. Qualities such as good humour, literacy, knowledgeability on historical matters were also mentioned, (but we musn't embarrass you too much Geoff).

Geoff joined the Kew Met Office after a spell in the Royal Corps of Signals, and was eventually prized from their grip to join the Radio Space Research Station, afterwards Appleton Laboratory. In 1955 he was shipped off to Port Stanley, by what was then deemed the fast route via Las Palmas, and Montivedeo, to join the Ionosonde Observatory, and like all who have experienced the friendship of the Falklanders, retains an abiding affection for the land and its people.

Returning to Ditton Park he was involved in radio meteorology, devising special apparatus, and helping to make it work. He also worked on solar observations and plasmas, but perhaps his greatest contribution to the Labs has been in Public Relations. Many of us will have had our first introduction to SERC through his delighful Induction Course lectures. His famous and much loved "Letter to the Outstations", which he wrote regularly for the RSRS Newsletter, will long be remembered. Coping with visitors, with exhibitions, displays and the Appleton Annual Report were further aspects of his service to the Lab community which won our respect and were greatly valued.

"We wish you all the best for the future and hope that your interest in history will be satisfied with this gift", said David in conclusion.

Geoff, thanked everyone for the small library of books, multimeter and cheque. "I have been involved", he said "in space science much longer than most. During the war a V2 blew the back off the house I was living in - I have never been sold on space-science since then. My bit of military life was fairly pleasant, I am proud of being an old Kew Man, I enjoyed my Falklands, Antarctic base days and am glad I became involved with visitors. For the future I intend to concentrate on the history of things and records. Thank you for this grand collection, I am much touched by it. As an encore, thank you very much".

Geoff with just a few of his friends and his Ray Roberts card. 84RB 2369

Les, in typical "what shall we do about this" pose. 84RB 2415

Harry, with his bus. 84RB 2422

Joe, with card and friends. 84RB 2406.

Harry Paterson

Harry, as a long standing member of Transport section, is of course, well known at RAL and so it was quite a crowd that turned up on Monday 30 April to wish him well in his retirement.

As a driver for NIRNS/RAL since 1961 there has grown up around him a fund of stories, all of which were touched upon in the Ray Roberts cartoon card with which he was presented by David Rawlinson, who was doing the honours on behalf of all Harry's friends and colleagues. Most of these are apochryphal, as Harry's ROSPA 20 year medal for accident free driving illustrates. The card also depicted Harry wearing a kilt, with a glass of tomato juice in one hand and the financial pages of a Sunday newspaper in the other. It also shows him into ballroom dancing. If you'll believe that ....

David thanked Harry for his many years of cheerful service, wished him all the best for the future, and presented him with farewell gifts of a beautiful glass-domed clock and a photograph of his bus.

Mrs Paterson received a bouquet of flowers.

"On behalf of my wife and I", said Harry I thank you all. I am sorry to leave you and hope to see you all in times to come. I have always wanted my own bus!"

Les Coulter

Someone once wrote of Les Coulter "He is a man who is devoted to his work and has consideration for his fellow man - an ideal personality for the important task for which he is responsible". His many friends, gathered together in Conference Room 7 from all over the site to wish him well in his retirement, would heartily agree with that statement.

Les came to us in 1965 to join the PLA after a career which included a period as aircraft fitter at Abingdon, a brilliant career with the RAF (or so he says), a stint with an independant African Airline, ten years at MG , and few more years at the 32 base workshops at Didcot.

From the PLA he transferred to Nimrod, but it is for his involvement with the Physics Apparatus Group's work of transporting and installing, at CERN and DESY, large quantities of massive, complex and sensitive physics experiments, that he won respect and renown. This was something more than putting scintillators in a box and sending them off. When the JADE Experiment was despatched to DESY, over 5000 items weighing 1300 tonnes were transported over a seven months period and always on schedule. The giant chambers sent to CERN posed similar logistical headaches. But, Les coped magnificently and managed at the same time to become one of the RAL experts on the night-life and café society of CERN.

"It was quite a challenge" said Peter Clee who was presenting the retirement gifts of a clock and cheque on behalf of all Les' friends. And now we hope you have a long and enjoyable retirement.

Les replied that he appreciated "you leaving your coffee break to see me off". He would, he indicated, use the cheque towards new speakers - he is fond of music. He sincerely thanked everyone for their presence and the gift. He had had "a hell of a time" at RAL and in Geneva. It had been great, everyone had played hard, but they'd done the work. "It has been fun and you are a great bunch", he ended.

Joe Roberts

In the 25 years Joe Roberts and Computers have been together, things have turned full circle, for Joe began with single user systems on Mercury, has only just got back to interactive computing with VAX, but didn't last quite to single user systems again.

Making Joe's farewell presentation Bob Hopgood spoke of his first meetings with Joe in the days when unless you ingratiated yourself with the operator a job took 3 days. Bob ingratiated himself. It also seems that if Joe went on holiday, Bob was his replacement. Joe has always been known for his absolute reliability and in early days was the resource management section - on his own.

"We have enjoyed working with you" said Bob as he made the presentation of a belt sander, an enormous card (more like a telephone directory of the Lab) and a rose-bush named "Silver Jubilee". It is a pity you couldn't make another 25 years".

"I will remember the days when I first met Bob", said Joe in reply. "The system was so different and slow. Things have come a long way in 25 years. Looking 25 years forward the differences are difficult to imagine. I wish you all the best in the future - whatever happens to you. For this farewell, thank you very much".

Missing

Although the R.1 Xerox Room
Is off the Beaten Track
Someone took the guillotine
And didn't bring it back!

It seems they didn't realise
It was used by everyone,
So its absence from the table
Has caused us lots of fun.

We've hunted high and low for it,
We haven't got a clue!
So will you kindly put it back -
YOU LITTLE RASCAL, YOU!

Royal Greenwich Observatory
Open Season 1984

The grounds of Herstmonceux Castle are open to the public each year from Easter to the end of September. Last year over 51,000 visitors were admitted.

School parties and other organised groups are admitted throughout the year for Guided Tours of the Observatory. By the end of March this year over 1000 children and adults had either been on such a tour or booked and paid for a visit in the coming month.

Attractions include:

THE EXHIBITION - showing not only the work of astronomers but also the history of the Castle and the local flora and fauna.

THE GROUNDS - some 200 acres including formal gardens and a 2 km Nature Trail.

THE CASTLE - originally built in 1441. Apart from the rooms containing the Exhibition, the interior of the Castle is not normally open to the public.

THE 26-inch TELESCOPE - in 1984 for the first time this telescope will be open daily with a recorded commentary and astronomical displays.

In addition there will be special events during the year as follows:

Castle "Open Days" when the public may enter via the South Bridge to view special displays of material from the archives in the Staircase Hall. These dates in 1984 will be May 5-7, May 26-28, June 23-26, July 28-29, August 25-27, September 29-30.

Meridian Celebration Week 25 June - 29 June

The RTC meridian telescope will be open with special displays and a recorded commentary on meridian astronomy and the history of the adoption of Longitude Zero.

Reflections Exhibition 7 July - 5 August

This is an exhibition supplied by the Pilkington Glass Museum. It has been produced to commemorate the 150th anniversary of the birth in 1832 of Lewis Carroll, author of *Through the Looking Glass and What Alice Found There*. The exhibition tells the story of the development of the mirror: what types of glass frames have been used for mirrors, mirrors for scientific applications etc. The exhibition will be located in the Equatorial Group.

At this time the 36-inch telescope which is celebrating its 50th anniversary this year, will also be open.

HOURS of OPENING

Monday to Friday - Grounds & Teashop
12 noon-5.30 p.m.
Telescope & Exhibition 2 p.m.
Saturday/Sunday & Public Holidays
10.30 a.m.-5.30 p.m.
Last Admission 5 p.m.

To Peter, With Thanks

Twenty years of dedicated service to the RecSoc was celebrated on Monday 30 April at the RecSoc AGM when Peter Craske the retiring Chairman was presented with the gift of a fishing rod on behalf of all RecSoc Members, past and present, for whom he has worked so hard and accomplished so much.

Accepting the rod from Tudor Morgan, this year's Chairman, Peter thanked everyone for the gift and expressed his satisfaction that the RecSoc "was now something worthwhile to build on".

RecSoc in Fine Fettle

The main business of the Meeting showed the RecSoc to be in a very healthy situation. The facilities are now good with Phase II of the R58 conversion, showers and changing rooms, well used. Phase III, bar and lounge, are nearing completion, and when finished will turn R58 into a first class social centre.

Officers

Chairman	T Morgan	Ext 5563
Vice-Chairman	A Forster	" 6363
Hon. Gen. Sec.	N Whitehead	" 5257
Hon. Treas.	B Wyborn	" 5589

Committee

Mrs M Shepherd	Ext 5635
C J Morgan	" 6317
M J D Courthold	" 6462
K Lewis	" 6488
B Maddison	" 5427
T Pett	" 5332
K Pavitt	" 6317
M Butler	" 5238

Lunchtime Crib League

The Knock-out Competition was won by the JOKERS, Dave Kent, Maureen Smith and Cyril Watkins. Runners-up (and league champions) were the ACE HOLES, Peter Craske, John Moir and Steve Stoneham.

Our apologies to LIVE WIRES, Geoff Brown, Janice Brown and Chris Bruce, who were runners-up in the league, (not the JOKERS as earlier reported).

Christian Fellowship

The list of meetings for June appears below. All are very warmly invited to attend on Thursdays at 12.30pm in the R2 Conference Room.

7 June - Prayer Meeting-Meyrick Ward
14 June - Bible Study-David Ramsden
21 June - Huntercombe Youth Custody Centre-Robert Wellstood
28 June - South African Holiday-Margaret Summers Report

'100' Club

The club draw took place at the AGM, the prize of £25 going to share No 67 owned by Ken Louch. David Rawlinson made the draw.

Bulletin

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

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Bulletin Supplement

22 May 1984

INTERNAL Events

COMPUTING SEMINARS
ATLAS COLLOQUIUM - 1515hrs

5 June — Dave Toll/RAL
"The IBM Personal Computer"

12 June — Nigel Bevan/NPL
"Man-machine Interfaces"

HEP SEMINARS
R61 CONF RM - 1100hrs

23 May — R Middleton/RAL
"Fragmentation Results from the Wide Band Neutrino-Neon Experiment (WA59)"

JOINT THEORY SEMINARS
R3 CONF ROOM - 1330hrs

31 May — F E Close/RAL
"Electron Scattering from Atoms, Nuclei and Nucleons"

14 June — N Rowley/Daresbury
"Nuclear Physics with Heavy Ion Beams"

CONDENSED MATTER SEMINARS
R3 CONF ROOM - 1330hrs

30 May — S Clough/Nottingham
"Neutron Scattering and Magnetic Resonance Studies of Quantum Molecular Motion"

5 June — S F A Kettle/E Anglia
"Inter-molecular Vibrational Coupling in Molecular Crystals-Simplifications and Complications"

12 June — C Norris/Leicester
"Photoemission from Ultra-thin Metallic Structures"

19 June — J B Goodenough/Oxford
"Surprises in NiO Chemistry"

EXTERNAL Events

THEO. PHYS SEMINARS
TPD - HARWELL - 1400hrs

5 June — Dr W Reynolds/Harwell
"Pulse Video Thermography"

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

22 May — W T Toner/RAL
"Plasma Physics Experiments with High Power Lasers"

31 May — Dr R J Bickerton/JET
"Parametric Dependence of Energy Confinement in Toroidal Systems"

7 June — Dr J C R Hunt/Cambridge
"Some MHD Problems of Metal Melting in Induction and Channel Furnaces"

14 June — Prof B Coppi/MIT
"Successes of Academic Experiments and Thinking in Fusion Research"

PHYSICS COLLOQUIA
CLARENDON LAB - OXFORD - 1615hrs

1 June — Dr J C H Spence/Oxford
"Coherent Bremsstrahlung and Other Electron Channelling Effects on X-ray Production in Crystals"

8 June — Prof A G J MacFarlane,FRS/Cambridge
"Evolution of Computer Systems"