

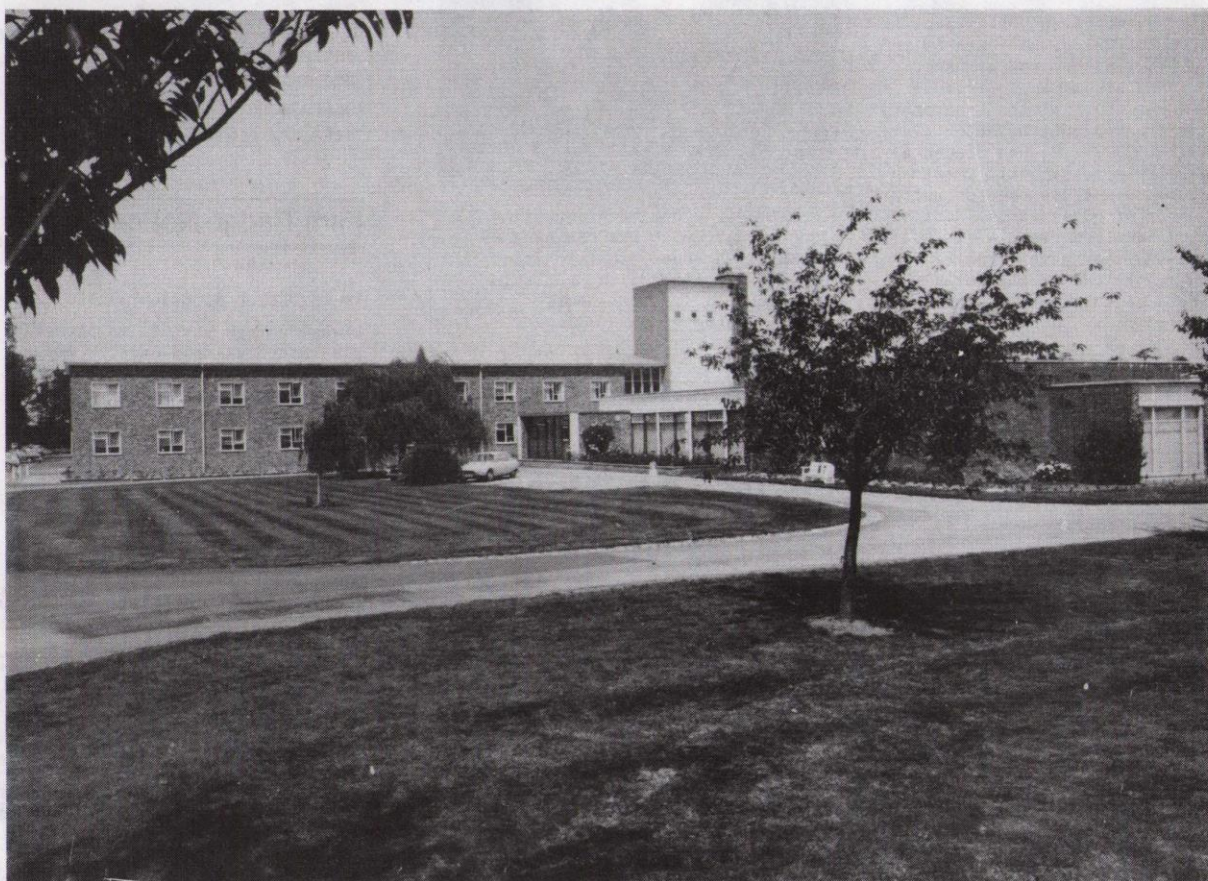
Bulletin

of the Rutherford and Appleton Laboratories

27 July 1981 No.13

Point of Departure

R20



3222/1

A farewell view of the Appleton Laboratory at Ditton Park.

The end of June marks the virtual completion of the merger of the two laboratories. Save for those few who are to remain for a time, everyone at Slough will by then have either left or transferred to Chilton.

It seemed to many that the completion of sixty years' research at Ditton Park should not pass unmarked. Accordingly the evening of Friday 12th June was chosen as an appropriate time to meet. A splendid buffet provided by the catering staff was accompanied by a variety of wines, which enabled friends, recalling old times and comrades, to salute the past and toast the future. At what might have been a sad gathering,

cheerfulness, and optimism, kept breaking through and a spirit of celebration of work well done was the essence of the occasion.

In a brief word to those present the Director, Appleton, emphasised his gratitude for the support received during a period which has been a testing time for all concerned and he referred particularly to those who have left or are about to leave. The history of Ditton Park, he said, would not be forgotten, encompassing as it did the first radar experiments, fundamental work on the ionosphere and the early years of British space science. The

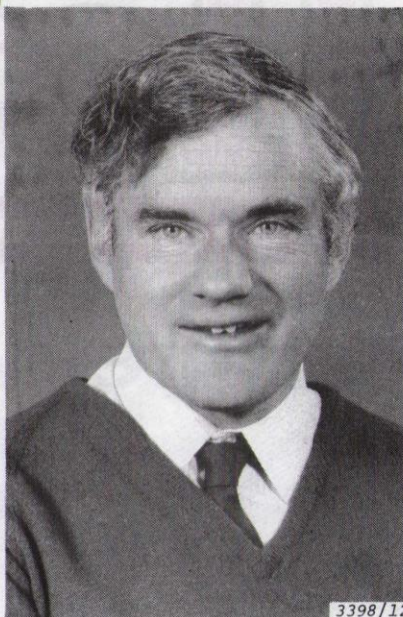
problems, both official and domestic, for those moving to Chilton were, said Professor Houghton, considerable. However, the help and friendship of Rutherford staff has been most heartening. Links are already established which have enabled a start to be made on work using the combined skills of the two former laboratories.

It is part of the nature of scientific enterprise, he continued, that it cannot remain still. Change and progress are its life. All at Ditton Park, whether leaving or staying, have contributed to an enterprise which is moving forward and seizing new opportunities.

Dr H Rishbeth Awarded Appleton Prize

Dr Henry Rishbeth is the latest recipient of the Appleton Prize awarded by the Royal Society to honour the memory of Sir Edward Appleton. The Prize, which was introduced in 1966, is awarded every three years on the occasion of the General Assembly of the International Union of Radio Science, and is for outstanding contributions to studies in ionospheric physics. Past recipients include well-known geophysicists such as Prof. R A Helliwell from Stanford and Prof J V Evans at M.I.T.

Dr Rishbeth, the first U.K. scientist to receive the Prize, was born in 1931 and obtained his PhD at Cambridge in 1960. He became an Individual Merit SPSO at the Appleton Laboratory in 1972 and was Deputy Director there from 1977 - 1979. He has played a leading role in ionospheric research for many years and has been an author or co-author of 60 papers. Most of these have been concerned with the F-region, and they have established Dr. Rishbeth as one of the world authorities on this part of the ionosphere.



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Recently, he has made important contributions to the planning of EISCAT, the European Incoherent Scatter facility being built in Scandinavia for ionospheric investigations.

Thankyou from the Director Appleton

A matter much to be regretted but unavoidable in the circumstances is that, because of the numbers involved, many staff who have given years of loyal service were unable to receive the formal tributes which would have been theirs in earlier times. Their friends have made their good wishes known at informal gatherings. To single out any one would be invidious so to all may I offer thanks on behalf of myself and the staff for past help and wish them the best of good fortune for the future.

Jul Hayler

to you all

Mrs. R.H. Bigland
Mrs. M.E. Glanville
Mrs. I. Jack
Mrs. M.E.M. Staniford
Mrs. J.M. Wiltshire
Mrs. I. Broadhead
Mrs. B. Danbury
Dr. J.A. Lane
Mr. J.C. Samuel
Mrs. E.D. Hurst
Mrs. B. Tamkin
Mr. K Bhattacharyya
Mr G.M. Johnston
Mrs. S. Harries
Mr. P. Neirinck
Mr. P. Brickley
Mr. W.J. Hayes
Mr. A.J. Irvin

Mr. J. King
Mr. F.D. Robbins
Mr. R. Smith
Mr. E.R.J. Tucker
Mr. R. Wakefield
Mr. S.J. Cook
Mr. R. Lewin
Mr. T. Holding
Mrs. B.A. Nutley
Mrs. M.E. Shepherd
Mrs. D.J. Thorpe
Mrs. E.G. Bignell
Mrs. E.A. Banks
Mrs. E.B. Garrett
Mrs. M.F. Green
Mr. G. Liddiard
Mrs. E.P. Mitchell
Mrs. M. Parissien

Mrs. J. Pober
Mrs. E.W.W. Scammell
Mrs. H. Hawkett
Mrs. M. Paterson
Mrs. D.E. Robertson
Miss H.J. Bengel
Miss A.M. Nicole
Mrs. M.W. Thrift
Mrs. I.M. Wells
Mrs. H.K. Wood
Mrs. B. McFadden
Mrs. J. McDermott
Mrs. M.E. Hayward
Mrs. B. Jeremiah
Mrs. G.H. Lawder
Mrs. J.M. Johnson

Missing

Would the person who borrowed a torque wrench, Model EVT 3000R from R55 please return it to Mr Bert Thompson Ext. 6260.

Also missing is Archive Box 341 (S & AD and IRAS files). Would anyone knowing its whereabouts, please contact Mary Snaith Ext.6163

Library Notice

MISSING ITEMS NEEDED URGENTLY!

'Grounding and Shielding Techniques in Instrumentation by R Morrison. 2nd edition 1977.

'Semiconductor Devices and Applications 1961' by R A Greiner.

Film Badge Notice

It is PERIOD 8, Colour strip Yellow.

Please change your films promptly and return all old ones. Anyone needing a new film holder please contact Jenny Coates Ext 430.

NEXT FILM CHANGE
Monday 10 August.

RAL at John Mason



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The role of RAL in scientific research was again a special source of interest at an exhibition mounted at John Mason School Abingdon on 11 July, the school's Twenty First Anniversary.

Early One Morning

During the thunderstorm in the early hours of 2nd June, 10 mm of rain fell in 10 minutes at Ditton Park - not a great deal by historical thunderstorm standards but at its peak the rain was coming down at the rate of 200 mm per hour for just 10 seconds. This was the highest rainfall rate recorded in the 11 years measurements have been made on site.

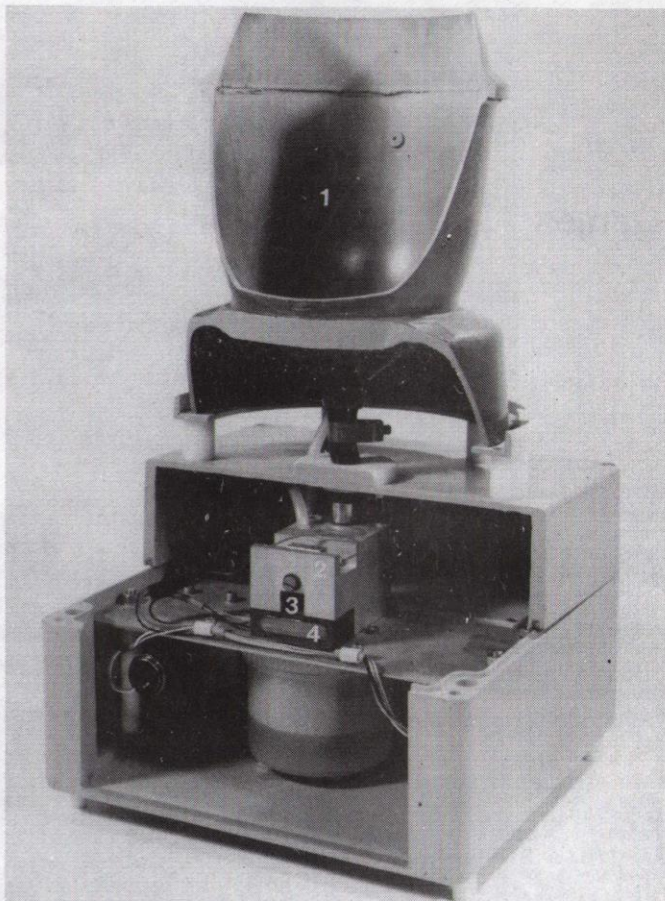
To most of us, this only means it was very wet!

To the Tropospheric Propagation Group it was useful data in their studies into the effects of rainfall on the propagation of millimetric waves, an important investigation to those involved in modern communication systems.

The information explosion of our times has been pushing the frequencies of these systems higher and higher. Scientists are under pressure to understand the propagation characteristics of these waves to provide reliable and economical communication systems. Appleton Laboratory has long been involved in these investigations (see Bulletins 15 & 17 1980) and it was the significant fading of millimetric waves in rain that led them to design, develop and manufacture a Rapid-Response Rain Gauge (RRRG). Rain gauges in use by the Meteorological Office are simply too slow to follow fast fluctuations in rainfall rate which cause variations in signal strength.

The Rapid-Response Rain Gauge indicates rainfall rates every 10 seconds with an error not more than 10%. Rainwater is collected and channelled into a small reservoir in the transducer block. The reservoir is kept full at all times so that as water flows in at the bottom, droplets are formed at the outlet on the top. The drops are of a known standard size and interrupt an infra-red beam as they fall thus producing electrical pulses. The pulses are conveyed to an electronic counter which computes the rainfall rate every 10 seconds. The design has proved so successful that the R.R.R.G. is much in demand, being used in places as far apart as Farnborough, Hants and Papua New Guinea in associated fields of study.

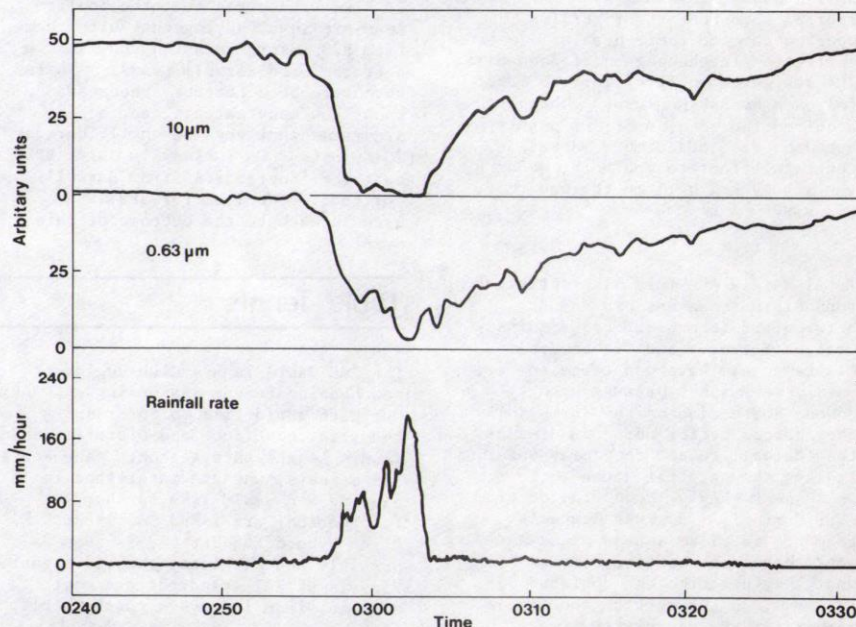
At Ditton Park on 2nd June three such gauges were in use on the 270 m path microwave test range (MTR) (see RAL Annual Report 1980, p.70). The effect of the heavy rainfall on the 10 μ m (infra-red) and 0.63 μ m (visible) transmissions was spectacular; the former link falling below the detection level at 03 hrs 02 minutes. The signals did not recover immediately after the rain had slowed down. This is due, either to water vapour absorption because of increased humidity or a very fine mist suspended near ground level after the deluge. There was a lot more rain that morning between 0500 and 06.30 but the rate did not go above 20mm per hour.



Cut-away model of the RRRG showing the components referred to in the text.

1. Rain Collector. 2. Transducer block. 3. Dropper Tube.
4. Detector assembly.

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Fading on the 10 and 0.63 μ m links and rainfall rates recorded at Ditton Park on 2 June 1981.

Statistics of rainfall rates and their durations are essential when planning millimetre and infra-red systems. The data being gathered now will probably help more science fiction come true - like personal communications via wrist-televisions?

We are indebted to U. Yilmaz for the interesting information contained in this article.

SNS Fun and Games



Gruelling 'press-ups', part of the gym tests.

Down in SNS Division the warm weather seems to have caused a rush of blood to something or other and an attack of the Sporting Spirit is abroad.

On the evening of 5 and 12 June at Steventon Sports and Social Centre the supermen of SNS waged a war of athletic prowess in the battle to find the divisions Super Star. Nine exciting events took place to determine which of the mighty contestants had the skill, speed, strength and grace to win the coveted title.

The concentration needed for Target Golf and Darts, the mental agility of Crib (and you have to have 15 fingers), the stamina for the gruelling Gym Tests and Obstacle Race, the speed and dexterity essential for the Sprint Race and Football Skills event, together with the very special hard won art of Wellie-wanging came to their peak of perfection in the person of John Hirst, who staggered in first more or less followed by Bob McClure. They both acquired the same number of points but John was judged more versatile. Congratulations to you both, we hope you are by now well on the way to recovery!

Total war in the form of a series of rounders matches has broken out between two teams lead by Captains Claire Cheesmore and Graham Toplis. Claire's team have won twice so far, mainly we suspect because with Rowena Rouse also on the strength, they have a better understanding of the 'Harwell rules' they play under. It says they are for Rounders, but we suspect they've been adapted from 'War Gaming'. However Graham's team are in close second place and would have done better, but for what they describe as 'dubious tactics', on the part of the female members of the opposition.



Toplis strikes again!

It also transpires that the Toplis team are involved together with teams from R20, Instrumentation and IRAS in a fracas with Harwell teams. There appear to be 3 Leagues, goodness knows how many matches, and a programme that goes on until Thursday 20 August. On Tuesday 14 July 'SNS' beat the 'Energetics' from Harwell 10½ to 5. We look forward with bated breath to the outcome of this event.

Table Tennis

The RAL Table Tennis Club begins its new Evening League season in September. Our Club would like to enter extra teams in the Didcot and District Table Tennis League this season. Any Rec Soc members, who are interested in playing and would like further information, are asked to contact Brian Wyborn R25 Ext 447 as soon as possible and not later than 19 August. Players of all standards are most welcome, from improvers to the really good.

SERC Golf Tournament

The Rutherford 'B' team have once again brought the "Brian Flowers Trophy" back to the Laboratories. Competing against nine other teams, the Rutherford 'B', captained by Geoff Manning ably supported by Brian Parkinson, Mike Watson, Ron Roberts, Gordon Walker and Bob Witty, returned a score of 612 to win the trophy. Central Office 'A' came second with 621, Rutherford 'A' was third with 625 and Rutherford 'C' fifth with 654. Our Appleton colleagues came fourth with 646. Congratulations to Bob Witty for winning the "R.G.O Trophy" for the best nett score over 36 holes and to John Delury, the Appleton captain, for winning the "Chairman's Trophy" for the best gross score. Eddie Fitzharris, captain of Rutherford 'C' won the prize for the best nett morning round and the prize for the best nett afternoon round was won by Adrian Dent of Central Office.

Each year, golfing enthusiasts from all the branches of the S.E.R.C. meet to hold a keenly fought tournee, generously spiced with humour and shouts of "fore" in accents ranging from Hamish of Edinburgh to Ron of Southall.

This year Central Office, Swindon, were hosts on Friday the 19th June and the venue was the Swindon Golf Club at Ogbourne St. George. In perfect golfing weather, those who stayed on the fairways found the course in first class condition, some of us passed most of the day thrashing about in the foot deep rough.

We were all very pleased to see our chairman, Sir Geoffrey Allen, who joined us for dinner and presented the prizes. Our grateful thanks to the hosts for a well organised match and very pleasant evening.

Golf

Following the sad loss of the section chairman, Ron Wimblett, earlier this year, I am pleased to say that Doug House has agreed to take the chair for the rest of the year.

Roy Bell (Secretary)

Bulletin

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

Deadline for insertions: Mon 3 Aug