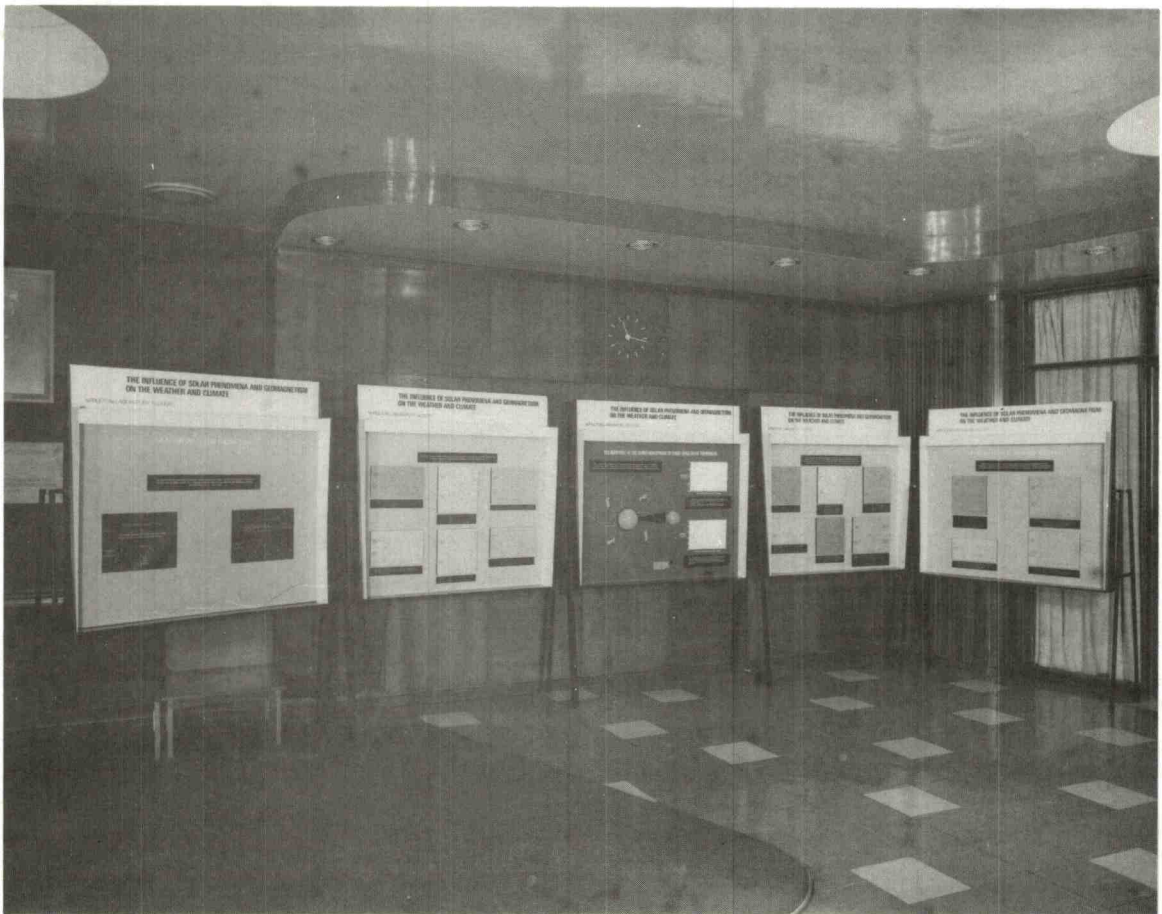




APPLETON LABORATORY NEWSLETTER

No. 168/9

May/June



The Appleton Laboratory Display for the Royal Society Soirée

The Royal Society Conversazione

The Appleton Laboratory was among those invited to contribute to the recent Royal Society Conversazione, at which were shown examples of work from some of the country's leading research establishments.

The display exhibited by the Laboratory gave details of the work of Dr. King and his colleagues, and showed ways in which solar cycles and the Earth's magnetic field influence weather and climate in the manner related as follows.

It has recently been established that the weather in certain parts of the World, including Britain, is apparently influenced by a wide variety of solar phenomena ranging from short-lived events such as solar flares to the 11-year and 22-year sunspot cycles.

Sunspot cycles are accompanied, for instance, by pronounced variations of the annual rainfall (up to 50% in certain parts of the World) and of the winter temperature (up to 6 F). Droughts in some of the World's major food-growing regions appear to be associated with the 22-year sunspot cycle. This cycle is also associated with a 6-week oscillation of the date in each year by which various percentages of the annual rainfall occur in Australia.

The number of days each year on which 'blocking anti-cyclones' occur over Europe (and hence the quality of the British weather) varies during the sunspot cycle, as does the temperature of the sea in the English Channel.

Such sun-weather relationships described above are obviously of great practical and economic importance and they are being further investigated.

Short-lived solar phenomena such as solar flares, and also magnetic sector boundaries that extend into space from the Sun and sweep across the Earth as the Sun rotates, are accompanied by significant variations of the average wind speed over the northern hemisphere. Detailed analyses of sudden changes in the lower atmosphere are being made in order to identify the short-lived solar phenomena with which meteorological changes are most closely associated.

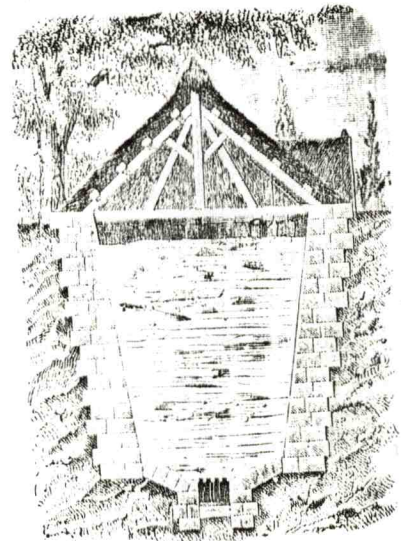
Evidence suggests that certain sun-weather relationships are associated with charged particles from the Sun; the approach of these particles to the Earth is controlled by the Earth's magnetic field and associations between the lower atmosphere and the geomagnetic field are, therefore, being investigated. It appears that variations of the magnetic field may play a major role in determining the Earth's climate.

THE ICE HOUSE

Members of the staff may have heard reference to an ice house on the Admiralty side of the park. This can be found on the motorway side of South Park and appears as a pile of earth with a central depression. Actually the brickwork has been removed and the present site gives little indication of the original construction.

These ice houses were built in the grounds of many large country houses prior to the use of refrigeration. They were brick built domes with well padded entrance doors. These domes were covered with a thick layer of earth upon which trees were planted to ensure little direct sunlight fell on the area during the summer months. During the winter large blocks of ice would be cut from local ponds etc and the food and ice would be packed into the ice house. Efficiency was such that the temperature often remained below freezing throughout the year.

An example of an ice house in somewhat better condition can be seen in the grounds of the Duke of Wellington's house at Stratfield Saye Park near Reading.



STAFF NEWS

Congratulations to :

Mike Roberts and Barbara Ann Long on their marriage, which took place at Southport on May 31st.

D. Sandcraft	now	H.E.O.
Mrs. J. Ryder	now	C.O. P/T
P.H.G. Dickinson	now	P.S.O.
A.J. Rogers	now	P.S.O.
A. Ridgeley	now	S.S.O.
A.D. Stevens	now	S.S.O.
M.A. Tracey	now	S.S.O.
J.D. Ewart	now	H.S.O. (substantive)
A.L. Hardie	now	H.S.O.
Miss M.L. Kendall	now	H.S.O.
C.J. Walters	now	H.S.O. (substantive)
Mrs. C.A. Taylor	now	S.O.

Welcome to :

G.E. Bromage	H.S.O. (Culham)
D.J. Parker	H.S.O.
M.P. Brincat	Ex.O.
R.J. Henson	S.C.S.
P.J. Newton	S.C.S.
A.R. Birks	H.S.O.
Miss E.M. Austin	Ex.O.
R.A. Buckland	S.S.O.
K.S. Griffin	S.C.S.
S. Hale	S.C.S. (Culham)
A.R. Buxton	PTO.III(Chilbolton)
C.W. Nowell	Cfn.I.

Resignations :

H.C. Hoppe	Ex.O. (Transferred to Home Office)
R.J. Watts	Dvr.

Other Changes :

P.P. Reader	SSO	Changed from D.5 G.2 to Div.1 IUE 'A' Project Manager
G. Douglas	HSO	" " " " " " " " " "
P.H. McPherson	HSO	Transferred back to Appleton Laboratory from RRE Malvern
Mrs. Q.M. Sams	CO P/T	Changed from Finance to Accounts

LABORATORY NEWS

The Director is visiting Iran from 21st to 29th June. He is to advise the Department of Science and Higher Education of the Iranian Government on the organisation of science in Iran. The Iranian Government is considering setting up a National Research Council and is interested to know how the S.R.C. and other Research Councils function in the U.K. Amongst other matters under discussion will be the relationship between University research and National research institutes. The visit has been arranged through the British Council.

The Laboratory Committee will be visiting Ditton Park on 24th July.

Mr. Meadows, who has become involved with EISCAT, visited Finland from 14th-16th May, for discussions about VHF antennas. Mr. Meadows also attended a meeting of an EISCAT project group which was held in Tromso, Norway from 3rd-6th June. He was accompanied on this occasion by Dr. Rishbeth.

Mr. M. P. M. Hall visited the Communications Research Centre in Ottawa on 20th May and McGill University in Montreal on 21st May. The visits were to discuss radar studies of rain cells and the application to site diversity working at microwave frequencies.

Dr. Allnutt attended an URSI-APS meeting at Illinois University from 3rd-5th June. This was followed by visits to Virginia Polytechnic on 8th June, the Goddard Space Flight Center on 9th June and Comsat Laboratories on 10th June. The meeting and visits were all in connection with the ATS6 satellite.

Dr. Quigley visited Long Island manufacturers and the National Research Council in Ottawa for discussions on long-baseline interferometry and steerable antennas. He then visited the Jet Propulsion Laboratory in Los Angeles for talks about possible future collaborative work.

A.R.D. News Extracts

Staff will have seen the Director's notice indicating a change in Management Structure for the Division, Barry Shenton is assuming major duties concerned with the development of an SRC millimetre wave astronomy facility, and Alan Gabriel will be acting as Head of the Division. Both changes are on a temporary basis. Although Barry's departure from the Division is of a temporary nature, it is an appropriate time to express our sincere gratitude for all that he has contributed in several capacities to the work and organisation of our astrophysics research activities. This has extended over 14 years and includes our former roles as Spectroscopy Division of Culham Laboratory and as the Astrophysics Research Unit. We would like to offer Barry our best wishes for the success of his new activities.

The echelle spectrograph designed for the SL911 rocket payload has been modified to enable observations to be made in the wavelength region 3000 Å-9000 Å. This modified spectrograph (CRESTA) was recently tested at the Cassegrain focus of the RGO 36" telescope and provided very promising results. It is intended to make further observations next month with the aim of studying the optical spectrum of several stars of potential interest for ultraviolet observations, while evaluating further the performance of the instrumentation for optical ground-based spectroscopy.

The CRESTA spectrograph was used to record stellar spectra with the RGO 36 inch telescope during the period 5-8 June. Observing conditions were excellent and good quality spectra of a wide variety of objects were obtained. The results include spectra of the 9th magnitude optical component of the X-ray source Cygnus X-1 which is thought to have a 'black-hole' in the binary system.

Which? Subscriptions

The Which? Bulk subscription is due for renewal in July. If you are already receiving Which? and wish to continue, or if you would like to start taking the magazine, could you let me have your subscription as soon as possible.

The subscription rates are as follows :-

Which? only - £2.00 per annum.

Motoring, Money, and Handyman Which? are each an extra £1.00, and

Holiday Which? is an extra £2.50 per annum.

Mike James
Spur C

SPORTS AND SOCIAL CLUB NEWS

The S.R.C. Sports Day will be held on July 3rd. Anyone who wants a lunch should contact Alan Buck.

Golf Triumph

The Inter-Laboratory golf tournament for 1975 was played at Wrexham Golf Club on June 13th. The Appleton team - John Delury, Barry Shenton, Doug. Roberts, John Kitt, Jack Moore and Neil Urquhart, with John Smith as reserve, competed against five other teams for the Brian Flowers Trophy. The four best net scores from the team of six counted and Appleton won with a score of 588 - four strokes in front of the next team, Daresbury.

In addition to the team trophy, three individual prizes were awarded for the best gross score for 36 holes, the best net score for 36 holes and the best net score for 18 holes. Appleton swept the board, with John Delury, John Kitt and Jack Moore taking all three prizes.

The performance of the Appleton team was quite outstanding, particularly in view of the small number of golfers from which a team can be chosen.

Appleton Cricket Club

The Club commenced the season with a Saturday afternoon match against the Kiwis followed by a party in the clubhouse. Both the match and the party, which was well supported, were successful and it is hoped both events will be repeated next year.

So far this season the Club have won 6 of the first 10 matches and are looking forward confidently to a good season overall.

The results so far are summarised below:-

26 April v. Kiwis (WON)

Kiwis 79

Appleton 80 - 8

Hassan 27 N.O.

Sandal 19 N.O.

6 May v. Wilkinson Sword (WON)

Wilkinson Sword 74 - 7

Appleton 75 - 3

Kitt 3 - 15

Martin 31

Sandal 19 N.O.

Thomas 19

8 May v. Treasury & CSD (LOST)

Treasury & CSD 170 - 5

Appleton 126

Latham 56

Martin 20

14 May v. British Aluminium (LOST)

British Aluminium 62 - 9

Appleton 54 - 9

Bevan 3 - 8

Paterson 26

21 May v. Royal Holloway (WON)

Royal Holloway 42 - 9

Appleton 43 - 2

Bevan 4 - 5

Martin 18

29 May v. ACO (WON)

Appleton	91 - 6	ACO	55
Hassan	24		
Khan	25 N.O.		

31 May v. Wargrave II (LOST)

Wargrave	153 - 7	Appleton	138
Buck	3 - 37	Kitt	51
		Sandal	20

11 June v. ICI (WON)

Appleton	103 - 4	ICI	102 - 6
Martin	46	Sandal	4 - 20
Kitt	32 N.O.		

12 June v. Prudential (LOST)

Prudential	109 - 9	Appleton	70
Hayes	3 - 19	Paterson	15
		Johnson	14

18 June v. Burtons Biscuits (WON)

Burtons Biscuits	77 - 5	Appleton	78 - 2
		Porter	30 N.O.
		Hayes	20 N.O.

Appleton Bridge Club

This is now the close season for bridge, though our interest is kept going with some friendly matches within the Club.

Both the teams entered in the Great West Road Bridge League finished 3rd in

their respective leagues last winter, following poor starts to the season. It is hoped that these positions can be improved upon this coming season. The Club has a playing strength of only some 15 persons of whom a nucleus of 8 play regularly. Any one interested in increasing this playing strength in league or club bridge should contact T. Paterson during the next 6 weeks.

LETTER TO THE OUTSTATIONS

Dear Colleagues

At the time of my previous offering, summer might be said to have been on the verge of acumen in. By date and by deed it has now acum. Long weeks ago the cricket roller burst from the tarpaulin shroud wherein it did but sleep. Now, it trundles about its business, a giant refreshed, sputtering, stuttering its call to the summer air.

Now, too, upon the summer air, of late, a new song is remarked. (The reader may continue thus if so desired - I do not.) Anyway it's a curious sort of double or triple piping, puzzling to many. It is in fact the cry of both the greater and lesser Staff Wanderer.

In recent weeks, a useful tag has been fitted to those of us who possess to a high degree the gift of never being there when we're wanted. There is no problem now. We are electronically ringed and bear with us a beneficent chain which may be tugged, up to a distance of a mile, by the telephonist merely pressing a button.

Occasionally, maybe, the bleeper provides an unwelcome note. Generally it more than compensates by minimising those useless 'phone calls to similar peripatetics who seem to inhabit their offices even less often than does

Yours sincerely

THE EDITOR

REPRINTS FOR MAY/JUNE 1975

A.1079

Rees, D. Sandford, M.C.W.	Thermospheric winds from laser tracking of sodium clouds.	Nature	1974	Vol.252 No.5481 291-292
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A.1068

Bradley, P.A.	A slider for determining HM F2 directly from ionograms	JATP	1975	Vol.37 687-690
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A.1064

Emery, R.J. Moffat, P. Bohlander, R.A. Gebbie, H.A.	Measurements of anomalous atmospheric absorption in the wavenumber range 4 cm^{-1} to 15 cm^{-1}	JATP	1975	Vol.37 587-594
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A.1058

Thomas, L.	The summer to winter changes in the D-region and stratosphere	JATP	1975	Vol.37 595-600
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A.1123

Smith, P.A.	Cerenkov relations between RF noise and energetic particles on Ariel 4	Proc. Royal Society, London, 1975	343	241-255
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A.1122

R. Dalziel	The Ariel 4 Satellite	Proc. Royal Society	1975 343 161-165	
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A.1078

Fawcett, B.C. Hayes, R.W.	Classification of spectra of K, Ca, Sc, Ti, V and Cr and extrapolation to Fe solar flare line	Mon. Nat. R. Astro Soc.	1975 170 185-197	
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A.1071

Burton, W.M. Evans, R.G. Griffin, W.G.	The interstellar medium in the direction of the Gum nebula	Mon. Nat. R. Astro Soc.	1974 169 307-321	
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A.1115

Evans, R.G. Jordan, C.	Ultra violet emission lines in the spectrum of Procyon	Nature	1975	Vol.253 No.5493 612-613
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A.983

W.C. Bain	Use of LF & VLF propagation data in the studies of electron density profiles at mid-latitudes	Indian Journal of Radio & Space Physics	1974	Vol.3 113-118
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A.1094

W.C. Bain	Long term periodicities in the sunspot cycle	Nature	1975	Vol.254 No.5498 p.362
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A.1091

B.N. Harden	Investigations of attenuations by	Proc. IEE	1975	Vol.122
D.T. Llewellyn-Jones	rainfall at 110 GHz in South-East			No.6
A.M. Zavody	England			600-604

INTERNAL MEMORANDA

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