APPLETON LABORATORY

NEWSLETTER

No. 200/201 March/April 1978

The World Data Centre

At Ditton Park, nearly half a century ago, was established what must be one of the world's oldest ionospheric observatories. From the beginning, data resulting from the observations and accruing at an ever-increasing rate, has been available to workers throughout the world.

This state of affairs applied, naturally enough, to similar institutions in other countries and by the late 1950's, with the advent of satellite and rocket-borne experiments, the various international scientific organisations made plans for data storage and exchange on a world-wide basis.

In preparation for the International Geophysical Year (IGY, 1957 - 1959) the International Council of Scientific Unions (ICSU) agreed to establish a system of World Data Centres to facilitate the exchange of scientific data. The centres are:

WDC - A Boulder USA)
WDC - B Moscow) covering all IGY disciplines

WDC - C A number of centres in several countries each catering for particular disciplines e.g.

WDC - C1 Slough (Ionosphere, Rockets and Satellites)

WDC - C2 Tokyo

All these data centres are financed by the host country and have operated since 1957. By making data freely available to scientists of many nations the WDC's have played a key role in the scientific achievements of:

International Geophysical Year	(IGY)	1957-59
International Geophysical Co-operation	(IGC)	1959
International Quiet Sun Year	(IQSY)	1964-65
International Active Sun Year	(IASY)	1969-71
International Magnetospheric Survey	(IMS)	1976-79

The duties of a Data Centre are defined thus:

1. Collect data from their catchment area according to instructions given in the WDC guide.

2. Exchange data, in particular with other WDC's.

3. Supply data and information on request to scientists and scientific institutions at a cost not exceeding that of copying and postage.

4. Provide facilities for visitors and guest workers from any nation and to make available to them all data in the centre.

5. Publish catalogues at regular intervals of information held at the centre.

At the Appleton Laboratory, World Data Centre C1 is housed in Building 7 and is responsible for data and information in the disciplines of (1) Ionosphere and (2) Rockets and Satellites.

1. IONOSPHERE:

Vertical incidence soundings, Topside and satellite probe data, Incoherent scatter, Oblique soundings, Total electron content, Absorption A1, A2, A3, Drifts, Whistlers and VLF Emissions, Atmospheric radio noise, N(h) profiles.

Most of these data are either in monthly bulletin form or on 35 mm film and microfiche.

A considerable amount of supporting data - solar and magnetic - is also kept.

Daily telex messages of geophysical data received from Meudon (International Ursigram World Days Service) and Darmstadt (Regional Warning Centre).

2. ROCKETS AND SATELLITES

Sounding Rockets: Launch information including details of rocket, apogee, experiments and names of principal experimenters. Some final reports on results.

Satellites: Pre-launch information via Spacewarn bulletins giving description of experiments, orbits, lifetime, frequencies etc.

Launch announcements via telex.

Two-monthly reports of launches, frequency transmissions and decays.

Reports and Reprints from publications which normally have a limited distribution.

Reports of Optical Sightings which include Hewitt-camera observations from Malvern.

Now, twenty one years since its foundation, the Centre has proved a worthy heir to our old Ionospheric Bureau and to the data storage systems which preceded that. Even in those days our reputation enabled us to build up contacts throughout the world. Those standards remain, a cause for congratulations to past and present staff at the Centre whose efforts have made it an important contributor to a world-wide plan.

G W Gardiner

Measurements Lab. Notes

The Measurements Lab. has recently acquired a Tektronix Logic Analyser. This instrument can be used for:-

1. Checking the operation of logic circuitry.

2. For finding hardware or software faults in microcomputers.

The instrument is in the form of two plug-in modules which fit into any 7000 series Tektronix Oscilloscope. There are three modes of operation. In its most basic mode the analyser enables the oscilloscope to behave as a 16 channel device for examining a 16 bit data bus or for example looking at 16 points in a frequency dividing chain. The other two modes are:-

a) State table displays

State tables are displayed in terms of binary, octal or hexadecimal formats. This data may be displayed in up to two tables of 17 lines of 16 bits each. One of the several facilities available is that the two tables can be read from a ROM, and from a reference, and then compared automatically line by line. Any differences are then indicated by brilliance intensification.

b) Mapping Mode

In this mode a dot matrix display is formed with up to 64000 dots, each dot location representing one possible combination of up to 16 bits of the data input.

Correct program operation can sometimes be recognised by the pattern of dots produced when the output bus lines are examined using a test input.

Staff News

Congratulations to:

John and Helen Goddard on the birth of their sons Ralph and Owen on 10th March.

Ron Halton now Cfn.I

Lydia Brindle now Sen. Data Proc.

Welcome to:

Mrs B M Hall	C.O.
Mrs A Watson	Typist (P/t)
Mrs J D Green	H.S.O. (P/t) (U.S.A.)
Mr J Nardi	H.S.O. (P/t) (U.S.A.)
Dr W Smith	S.O.
Mr H S Jutla	S.C.S.
Mr L T Chew	S.C.S.
Mr R G White	S.C.S.
Mr J Iqbal	S.C.S. (Culham)

Resignations etc.

Mr S Phillips	S.O.

Other Changes

Mr D Long	S.S.O.	now in Div. 2 Gp.3
Mr M Trower	S.O.	now in Div. 4 Gp.3
Mr D John	H.S.O.	now ret. to A.L. from U.C.L.
Mr T F Smith	C.O.	now in Accounts

Former Staff

Dr R H Barfield

We are sorry to learn of the death, last July, of Dr R H Barfield at the age of 82.

Robert Barfield was a member of our staff from 1921 - 1946. During that quarter-century he made many significant contributions to the study of radio-wave propagation.

The field of radio direction finding he made particularly his own and, to summarise the comments of the Radio Research Board, he became universally acknowledged as an expert whose work was largely responsible for the lead achieved by this country at the outbreak of the second world war.

The literature of the time bears witness to his energy and enthusiasm. As the years passed, it was evident to those who met him that, throughout a long life, the enthusiasm never waned.

G.G.

Safety Note

CATALYST DANGER

'At a safety conference held in Vancouver, an eye specialist described a hazard that could affect each of you and your families. That hazard is the catalyst for 'hardener' or 'accelerator', that is added to fibreglass resin before the resin is applied. The eye specialist told us that a drop of this catalyst in the eye will progressively destroy the tissue of the eye and result in blindness. This will occur even though an attempt is made to wash the catalyst from the eye. Furthermore, once the chemical has started to destroy the eye, there is no known way of stopping the destruction or repairing the damage.

The hazard associated with fibreglass resin was unknown to those of us who attended the conference, although many of us had used fibreglass resin at home or at work. The hazard may be unknown to you also, and to your wives and children who may also us a similar kind of resin and catalyst when working with fibreglass (or with some hobby kits now available). We hope you will bring this hazard to the attention of your wives and children. The cost of a pair of safety goggles is a very small price to pay for the protection of their eyesight - and yours.'

Excerpt of National Safety Council article first printed by Aerospace Newsletter 8/75, and in this case taken from Pegasus S.C. Newsletter as supplied by their President, Dr Strang.

The 'hardener' referred to above is coded 16-11030 and described as Beetle Catalyst Paste. Always wear Safety Goggles when using this item.

(From 'Accident Prevention' - Culham Laboratory)

May Day

May Day is celebrated in the UK on May 1st. It is confused in the minds of some people, who see subversives everywhere, with a "Marxist" event called Labour Day. In Europe, except Italy, Socialist and Labour organisations have selected May 1st as Labour Day. However, in the U.S.A. and Canada, hardly Marxist states, Labour Day is a legal holiday but is celebrated on the first Monday in September. In New Zealand it is the third Monday in October.

Many years ago, long before Marx, May Day was celebrated throughout Great Britain, and to some extent in France and Germany, with festivities going back to ancient Roman and Druidic times which survive only in a few rural districts. In Tudor England it was customary for people to go into the woods at night to gather tree branches and flowers to decorate their houses when they returned at sunrise. The May Queen was crowned and ruled for a day over her court of morris dancers, Robin Hood and his band, and villagers who danced round a maypole decorated with flowers and ribbons. The birch maypole was set up on April 30th, but in London maypoles were a permanent feature.

As to be expected, May Day revels were proscribed by the Puritans and maypoles were banned in 1644, but returned at the Restoration. In 1661 a 134ft. high cedar maypole was set up in the Strand. In 1717 it was taken down and used as a support, by Sir Isaac Newton, for a great telescope presented to the Royal Society by a French astronomer.

Thus on May 1st those with left-wing leanings can celebrate Labour, the other side and Puritans can go about with compressed lips and disapproving looks, the rustically inclined can go maypoling and morris dancing, while those who don't care a damn one way or the other will have a day off and be glad of it.

P Muzlish
(in favour of days off, left right and centre)

Bring and Buy

You will be pleased to hear that after numerous enquiries from staff, the Bring and Buy Sale, which was postponed last year, will be held on Thursday 11th May in the Table Tennis Room from 12 till 2 p.m. and from 4.45 p.m. till stocks run out! Please look out any goods you wish to sell. See posters for details. Don't delay - it's almost May.

SPORTS AND SOCIAL CLUB NEWS

Bridge

The Appleton II bridge team has won the Felixson Cup in the Great West Road Bridge League. In the first two rounds the team consisted of the Gordon-Smiths, Paul Dickinson and Robert Pratt. In the last two rounds Robert Pratt, who was suffering from the accident on his skiing holiday, was replaced by Bill Bain.

W C Bain

Letter to the Outstations

Dear Colleagues

Spring is come and with it the awakening floweret, snow, frost, nor'easters and the Roof-Trampings.

This last is a noise, basically rhythmical in character, swelling as it passes overhead, at which time the subtler sounds of scraping and the patter of tiny stones may be discerned. In time it dies away leaving naught behind save a not unpleasant smell of tar and the promise of a roof new-proofed against the elements by an age-old Works ritual.

We are natural philosophers (well, more or less, give or take a bit) and are paid to follow reason. A hard task, this, and worth every penny. The Trampings are merely a re-sealing operation, we say, but what we sense is that the true purpose is an expulsion of Winter's Demons by unexpected human activity (They don't think we'll walk on the roof) and the smoky incense of the tar-barrel. It's all very reassuring however you view it - unless on hearing them you remember that yours is a sloping roof.

Together with Spring, the ..... floweret and so forth comes the 200th issue of this Newsletter. This does not mean, though it may well seem like it, that this is quite the 200th perpetration of this particular item. There has been the occasional hiccup in production though, as discerning readers are well aware, mere failure of inspiration has never ranked as a major threat to the piece.

Looking back to issue 100, that occasion was marked by, among other things, a welcome to Liz Morgan on her agreeing to be the Deputy Editor. Now a century of captions later, congratulations on staying power and thanks for sticking with it thus far are more than due to her, to Irene Wells, Peter Hicks and their colleagues and to all associated in the effort.

from,

Yours sincerely

The Editor

MARCH/APRIL 1978 REPRINT LIST

A1227 D A Bryant, D S Hall, D R Lepine
'Electron acceleration in an array of auroral arc'
Planet. Space Sci., 1978, Vol. 26, 81-92.

A1237 L Thomas, A J Gibson, S K Bhattacharyya
'Lidar Observations of a horizontal variation in the atmospheric sodium layer'
JATP, 1977, Vol. 39, 1405-1409.

A1276 A J Gibson, L Thomas
'Injection-locking of a flashlamp-pumped dye laser without longitudinal mode matching'
J. Phys. D. Appl. Phys., 1978, Vol. 11, 59-61.

A1258 P F Shutie, E C MacKenzie, J E Allnutt
'Relative phase measurements at 30 GHz between copolar and induced crosspolar signals produced by ice particles on a satellite-to-ground link'
Electronics Letters, 1978, Vol. 14, No. 4, 105-107.

A1232 P M McPherson
'F-region temperatures measured simultaneously by satellite and incoherent scatter radar'
JATP, 1977, Vol. 39, 1459-1464.

A1204 J W King, A J Slater, A D Stevens, P A Smith, D M Willis
'Large-amplitude standing planetary waves induced in the troposphere by the Sun'
JATP, 1977, Vol. 39, 1357-1367.

A1259 B N Harden, J R Norbury, W J K White
'Attenuation/rain-rate relationships on terrestrial microwave links in the frequency range 10-40 GHz'
Electronics Letters, 1978, Vol. 14, 154-155.

A1272 S K Bhattacharyya, A J Gibson, E Hammond, M C W Sandford, L Thomas
'A steerable laser radar system for atmospheric studies'
Optical & Quantum Electronics, 1978, Vol. 10, 243-252.

Internal Memorandum

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