FOR STAFF USE ONLY

APPLETON LABORATORY
NEWSLETTER

No. 177 March, 1976

FUN IN ORBIT

The Satellite Orbits group's small population is watching over (or under?) a huge population of 3850 orbiting objects - one facet of our work is to issue, to COSPAR stations, Satellite Observing Notes from which you may be pleased to read informative abstracts :

S.O.N. 557 (22/1/76) Page 3

Head shed shreds

While the headaches generated by the Pageos break-up on 1976 July 12.77 are still present in all memories (and still giving nightmares to U.S. computer memories), we are sorry to report that the main remain - the head of Pageos - has unexpectedly shed a second caravan of disconcerting shreds.

On January 20 at $18^{H}21$ U.T., from Edinburgh to Bournemouth, a long dotted line was seen trailing Pageos' head, as if all objects were tied on an invisible slowly moving string.

Some couples were quite bright (Mag + 3 to + 5). At as low as 16 degrees of elevation and in worse phase angle, Farnham and Yately binoculars spotted 9 objects. At $18^{H}43$ U.T., relative the main fragment, time intervals in seconds were recorded at Ditton Park as follows :

(-68, Bournemouth), -3.87, -2.6, 0, + 8.92, + 9.23, + 14.45, + 15.4, + 20.41, + 21.6?, + 22.92, + 26.1, + 30.46, then tape drowned by aircraft noise (not Concorde), covering one to three pieces, then + 82.34, + 111.77.

Morning observations (Jan. 21.25), in bad weather conditions, show that 17 objects exist, among them, at least 4 pairs. This enables us to date provisionally the second break-up :

January 20.06 $\pm$ 0.05.

S.O.N. 558 (28/1/76) Page 2

Production capacity

These days, the computer is more cheerful than awkward. Every second week, at the price of some paper-handling inconvenience for observers who receive Look-Angles, we are able, from time to time, to produce a supplement on the complement. This is as well depending on staff level and availability. Our staff level, falling from 12 in 1966, is now at ebb-tide : 1 + 0.15 + 0.1 + 0.05 = 1.3 persons. It will raise to 2.2 by the end of February and probably to 5 at our next syzygy.

S,O.N. 559 (5/2/76) Page 3

Computer Eclipse

As Abu Simbel, our computer will be transplanted to another near site. Unlike Ramses II's sanctuary, our mathematical temple was not in danger of being flooded (except by data); it is again the same case of builders changing the scenery.

The British masterpiece of science, as the Egyptian masterpiece of art was, will be raised to a higher level (higher speed in this instance). Meantime, some other activities, such as satellite predictions, must be kept at a lower level.

The operation due to start on March 08, will be hopefully achieved by the 15th. Our computer cannot resist the move but we expect it will be resistant to the move (on the ground that it is 360 times younger than Abu Simbel). In case of delay or break-up, another computer is willing to serve as godfather and to feed our observers. Before any possible havoc, a slim 3 week-run is "on the cards". On behalf of some sacrificed satellites which will temporarily disappear from the sky, we apologise in anticipation for your frustrations generated by our ever changing world.

S.O.N. 560 (12/2/76) Page 3

Keeping the skeleton alive

Ebb-tide (see SON 558) occurred on 06/2/76. Correction on our prediction was - 0.1. After a two day slack time, the level rose to 1.3, thanks to the helping hand Janet Ryder lent to our skeleton service. We would like to thank as well the very helpful and efficient personnel in Typing, Duplicating, Teleprinter/Telex and particularly the computer operators without whom it would be impossible to keep the skeleton afloat.

S.O.N. 561 (18/2/76) Page 3

Soyuz 20

75 - 106A was recovered on Feb 16 a.m.

Intelsat 4A - F2

Was supposed to be launched on Jan 29 and is probably 76 - 10A.

CORSA *

X-ray satellite lost on Feb 04 due to 2nd stage thrust vector control malfunction.

Fragments

41 new Pageos fragments were catalogued at Ditton Park.
58 more objects, probably related to 75 - 102, are existing but have not yet been officially catalogued.

ISS*

Was delayed (to Feb 19?) due to launch vehicle gyro problems.

Launches

76-14A : Cosmos 802 launched from Plesetsk on 11.4 February
15A : Cosmos 803 launched from Tyuratam on 16.3 February

You will notice that 15A is chasing closely 14A for probably military experimental reasons.

Next Launch

Marisat A Feb 19 $22^{H}32$; 102.5 kg; P = 3140; i = 0; 12762 km.

S.O.N. 563 (3/3/76) Page 2

Moving Moves

- 76 - 18A was perhaps slightly raised on Rev. 174 (March 02).

- UK4 may be operational again, in April, for a short check of battery status, when in shadow.

- Except for the fact that we did not receive any information and data on a non-secret satellite (ISS, working well since February 29), no satellite seems to have been put into orbit since our last S.O.N. but, for a nice change, a girl was put into "Orbits" on 23 February 1976 - Heather J. WELCH, full time Clerical Assistant is now operational in the Satellite Orbits Group - her batteries are not lacking energy.

Moving Stability

- The computer (see S.O.N. 559) will enjoy one more week his childhood residence.

S.O.N. 564 (10/3/76) Page 2

Leave Notes

Before transplant, the computer was on sick leave - Predictions were delayed. Pierre will try to exhaust his annual leave till March 29 - Predictions will be resumed then. Meantime thanks to Heather and Ken, Observers will not leave the track.

P. Neirinck
Satellite Orbits Group

* CORSA and ISS are both Japanese.

LETTERS TO THE EDITOR

Dear Sir,

I cannot resist the temptation to join your anonymous correspondents who have been defending the English language against its abusers.

One of the most regrettable trends is the growing use, especially in technical writing, of nouns as adjectives. Consider the following examples (all of which, incidentally, have a length of seven - equal to the record, claimed by Gowers/Fraser in The Complete Plain Words) :

computer based systems user tree searching techniques
UCSD plasma detector pitch angle scan mechanism
ad hoc computer aided design requirements board
short time averaged mean square values estimate

Rules for this competition have yet to be agreed; but it is thought likely that the inclusion of punctuation, such as commas or hyphens, will be the equivalent of a following wind. On the other hand, it could be argued that the use of foreign words, especially if they are taken from an ancient language, should qualify for a bonus. Mere length, however, is not everything. For example :

rabies drama prologue
IBM user afficionado (sic)

This brings me to another common fault - spelling. Developments in the Orwellian-sounding technique of word-processing suggest that the day may come when this will be checked by computer. Until then the reader (or as he could be called in modern jargon, the prose end user) will have to put up with :

afficionado	miniscule	concensus
analagous	jejeune	anomolous
fulfill	overlayed	innoculate
rarified	supercede	ancilliary
compatability	permissable	forego (instead of forgo)
spacial	ammendment	

Yours sincerely,

D.H. Long

Dear Sir

INFLAMMABLE, OUTFLAMMABLE

In the interests of "correctizement" "Non-Eng-ity" might like to know that the following notices still appear on many bridges in Dorset :

NOTICE

DORSET

Any person wilfully INJURING any part of this COUNTY BRIDGE will be guilty of FELONY and upon conviction liable to be TRANSPORTED FOR LIFE

By the Court

T FOOKS

7 & 8 GE04 C30 S13

I understand that one may still be transported for committing a felony but perhaps these days banishment to the former colonies might well be considered unfair to the lawful! Or is this what is meant by an "assisted" passage?

Yours etc

A. POM

SAFETY NOTICE

Inert Gases

Staff are reminded that whilst inert gases may be non-toxic they can be highly dangerous if used in badly ventilated situations, i.e. very small rooms, tanks, etc. In fact accidents have occurred (outside the SRC) where persons working in such atmospheres have become asphyxiated and have died before help arrived.

Staff using inert gases must ensure adequate ventilation and if in any doubt whatsoever should contact the Safety Officer, Mr C. Clarke, Room H.18.

The late Mr J.E. Airey

We report with regret the death of Mr J.E. Airey at Swanage at the age of 81. His name will not perhaps be known to many present members of staff, but to those with knowledge of the Laboratory's earlier days it will be very familiar.

Joe Airey was in charge of the workshops of the Radio Research Station in pre-war days and indeed his service with our first Superintendent, Sir Robert Watson-Watt, harked back to the end of the first World War.

His experience gained in that conflict has been related in Watson-Watt's autobiography :

> "The charge of our small workshop, and of the construction of antennas, was given to J.E. Airey, recommended to me as a uniquely valuable radio mechanic by the Army member of the Committee who had been responsible, inter alia, for Colour-Sergeant Airey's highest constructional achievement, the installation of a radio antenna on top of the Great Pyramid of Cheops. Joe Airey's special talent, exercised all over the Middle East, for building and erecting timber "box-masts", 150 feet high, at ridiculously low cost, was only one of his special contributions to the progress of radio - and of radar."

His death marks the passing of one of the older members of the small team whose initiation and early development of British radar gave them a place in History.

Professor H. Yagi

The death was announced recently of Professor Yagi. His most famous work in the 1920's, with Uda, on the effect of nearby, parasitically excited resonators on the radiation pattern of simple Hertzian dipoles led to the development of the Yagi array.

This aerial in all its variations of reflector and director components is known by sight to millions who know nothing of physics. Throughout the world rooftops bear witness to his research; 'Si monumentum ....'. The tribute to Wren is not out of place.

Staff News

Congratulations to :

Mike and Rita Courthold on the birth of their son Christopher Richard Stephen on 5th February.

Kim and Sue Ward on the recent birth of their daughter Stephanie.

Stuart and Wendy Beatson on the birth of their son Michael Stephen on 14 February.

Mike and Maureen James on the birth of their daughter Helen Rachel on 29 March.

Roger Evans on his recent engagement to Mary Jones.

Mike Tracy on gaining a B.A. at the Open University.

Ray Turner on gaining a B.A. at the Open University.

Helen Corder, now Deputy Shift Leader.

Welcome to :

F.D. Robbens	Craftsman I
Miss H.J. Welch	C.A.

Resignations :

S.R. Denney	A.S.O.
Mrs P.A. Cross	C.A. (P/T)

Other Changes :

G.M. Courtier	S.S.O. currently working in Div. III, Gp. III not IUE as stated in previous issue.		
L.D.J. Harris	S.O.	transferred to	Div. II, Gp. II.
Miss V. Williams	C.A.	" "	Div. II, Gp. I.
P.A. Eggett	A.S.O.	" "	Div. V, Gp, III.
P. Jordan	A.S.O.	" "	Div. I, IUE.
D.J. Mackinnon	S.S.O.	" "	IUE Proj. Man.
A.C. Roberts	H.S.O.	" "	Div III, Gp. IV.

LETTER TO THE OUTSTATIONS

Dear Colleagues,

Everything sounds - even silence. I recollect hearing long ago of this admonition inscribed on the wall of a broadcasting studio. It's true enough, as anyone spending time in the corridor near D spur can testify, a deafening quietude is evident. What's happened ? The computer's gone, that's what's happened. To visit its former home is to be with one who treads alone some banquet hall deserted - all dust and dried up telephones.

The machine has not exactly gone to that great computer suite in the sky but it has moved up in the world a bit to a better class of residence - wood panels, carpets and such like. As in cities the focus of fashion has moved westward (well - O.K. - it's not truly West but let not brute fact smother simile). Lock stock and peripherals it and its associated orders of priesthood are now installed in air conditioned comfort.

Thus man conquers. This area was once the land beyond the ballroom, that one-time period of cosmography, that Ultima Thule beyond which all was mystery, dragons and the caravan of the occasional wandering physicist. Now discfiles spin where cattle erstwhile grazed.

All very pampered and decadent no doubt. Nevertheless it must be owned that it was not until this comfortable building came about that the ground in those parts felt the tread of,

Yours sincerely,

The Editor

STOP PRESS

STAFF SUGGESTIONS SCHEME

Since the introduction in the Science Research Council of the Suggestions Scheme in December 1971, Local Committees at Establishments have received over 1000 suggestions from staff, and over 200 awards have been made of amounts varying between £5 and £200.

At Appleton 64 suggestions have been considered over the period, and awards made in 13 cases.

The most recent awards were for the following suggestions :

Vertical Edging on Messengers trolley to prevent items falling off.	(Mrs. E. Wright)	£5
Fluorescent tubes - removal of starter switches during power restrictions.	(Mr. A. J. Hall)	£5
Three monthly distribution of aims of projects.	(Mr. D. H. Long)	£5
Revised form for tenders and orders.	(Mr. M. P. M. Hall)	£5
Overlining of collecting base directly into grit entry mouth of Guynon Blast Cleaning Cabinet.	(Mr. R. Halton)	£5
Checking of gas cylinders.	(Mr. R. J. Knight)	£5
Colour coding strip on fire doors to indicate push or pull.	(Mr. J. F. Smith)	£5
Printing of notices with even numbered pages printed upside down to facilitate reading when on notice boards.	(Mr. A. F. Smith)	£10

Most suggestions which receive an award are put into practice but occasionally an encouragement award is made for an idea which, though not adopted, is nevertheless considered to be meritorious and worthy of a small award.

The present Appleton Laboratory Local Awards Committee is :

Dr. J. A. Lane	Chairman
Mr. G. L. Addison	Management Representative
Mr. D. G. Back	Trade Unions Representative
Dr. D. L. Croom	Staff Side Representative
Mr. T. Paterson	Secretary

Forms for suggestions may be obtained from the Library and from the Secretary of the Committee. Completed forms should be sent to Mr. Paterson.

Reprints March 1976

A1131 'NO^+ and water cluster ions in the D-region', L. Thomas, J.A.T.P., 1976, 38, pp. 61-67.

A1125 'Rocket measurements of electron concentrations in the lower ionosphere at two European locations', P.H.G. Dickinson, J.E. Hall, F.D.G. Bennett, J.A.T.P., 1976, 38, pp. 163-173.

A1140 'An explanation of the longitudinal variation of the O^1D (630 nm) tropical nightglow intensity', G. Thuillier, J.W. King, A.J. Slater, J.A.T.P., 1976, 38, pp. 155-158.

A1133 'Rocket measurements of mid-latitude ionospheric currents during a magnetic storm', K. Burrows, J.A.T.P., 1976, 38, pp. 159-162.

A1162 'Prediction of HF circuit availability', P.A. Bradley, C. Bedford, Electronics Letters, 1976, Vol. 12, No. 1, p. 2.

A1126 'Rocket measurements of current distribution in a normal and an intense equatorial electrojet', K. Burrows, T.S.G. Sastry, J.A.T.P., 1976, 38, pp. 307-311.

A1077 'Some observations of electrons with energies $\geq$ 30 keV made during magnetospheric substorms', P.A. Smith, G.R. Thomas, J.A.T.P., 1976, 38, pp. 251-260.

A1154 'Local acceleration of auroral electrons', D.A. Bryant, Scientific Satellite Programme etc., 1976, pp. 413-423.

A1196 'Solar phenomena, weather and climate', J.W. King, Scientific Satellite Programme etc., 1976, pp. 209-222.

A1139 'Accuracy of the CCIR F2 layer model at low and middle latitudes', J.W. King, Electronics Letters, 1975.

A1155 'Solar flare observations at millimetre and sub-millimetre wavelengths', D.L. Croom, Far infra-red astronomy, 1976, pp. 93-101.

A1134 'A new computer-based method of HF Sky-wave signal prediction using vertical-incidence ionosonde measurements', P.A. Bradley, Agard Conference Paper, 1976, p. 6.

P-854 'Solar phenomena, weather and climate', J. W. King, ESA Bulletin, 1975, No. 3, pp. 24 & 49-51.

Internal Memorandum

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