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NEWSLETTER

No. 97

May, 1969

THE DECAY DAY OF COSMOS 253 ROCKET

(Part II)

For my part, the story of this event has not yet decayed and it will be computed and written about much more. Between its birth at Plesetsk on the 13th November 1968 and its death in a terrible crash against the British atmosphere, Cosmos 253 rocket made 117 happy revolutions around the earth. During all that time no observation was made in Britain because this part of its orbit was in complete earth shadow, but it was possible from space tracking elements to compute closer and closer the decay day, then the decay hour, and from that, what is more interesting, the local crossing time of the last pass, in order that the one and only minute of burning out coincided with the minute of my looking out - just in case (the chance was better than usual, 1 in 100). Up to now, predicted objects looked for have decayed before or after Slough. In the latter case they are generally in the shadow which gives no chance to observe anything.

20th November, 15.50 U.T. Between two jobs I recalculate once more with updated elements the crossing time for Slough. The chance is increasing - I try to telephone to three more observers, none is available - the first attends a meeting, the second is not in his office, the third is on leave. The sky is clear - I look at my watch again - if I try one more observer who could be sick or getting married or something, I won't have time to get my camera, tripod and film from my flat, the predicted rendezvous with the rocket being 17.57.4 mins. I drive in a hurry towards Datchet - a terrifying village with a level crossing and several waiting cross-roads.

On my way back, just before the bridge, I glanced at my watch: 17 hrs. 56 mins. 10 secs. And if the rocket was half a minute early? Should I stop near the top of the bridge? I prefer my Ditton Park East Station (a matter of coordinates) and prefer to be an R.S.R.S. observer and anyway I was so confident in my crossing time my car was already passed the bridge, no more cars being in my way I reach the chosen field. I jump out Fantastic sighting!

Already high in the northern sky a 30° long and 2° wide cluster of flaming slipstreams is flying majestically eastward. A dozen silver glows acting as grinding wheels are throwing off backwards a lot of multi-coloured sparks, each glow has a very long reddish trail - it reminds me of planes in formation, evenly spaced, flying in perfectly straight parallel lines. In complete contrast and in succession to the roaring of my motor car this wonderful spectacle is displayed in an impressive silence. Four seconds have already elapsed - I touch my wrist - yes, my stopwatch is there but three other ones are in my vehicle. I look desperately for the Pole star; the sky is slightly misty and I have driven with headlamps on and I cannot find it. The best solution available is to time, at first any rate, any rough positions with a knowledge of some azimuth of my site. I do it, then I plunge into the car, I grab the camera (I don't think there is time to get another stopwatch from my suitcase), I can't find my torch and I cannot check if I am on f.1.9 or f.22. Ten seconds before the rocket goes down, leaning on the car without tripod I take colour photograph. The exposure was 2 seconds, just enough to record the angular speed of each piece, and not too much so that the trails do not mix with one another.

At the penultimate second I find the torch and read the precise time of disappearance of the front glow just at the top of a tree. I write it on my hand. Meantime I had counted twice that there are seven main pieces left - I notice as well they were fading slowly. Now I can see which stop I used and it appears clearly that it was f.22 - catastrophe! Even if I pray on my knees to the earth, the rocket will not decay a second time (the title "You only live twice" does not apply to rockets).

I have not previously spoken about this picture to anybody and hope to be forgiven. Later on I noticed the magnitudes reported by numerous observers were brighter than I made them and this led me back to hope. Perhaps it would be possible to find some little bright marks above the line of the trees. There were two long waits, firstly to finish the film in bad weather conditions, secondly to await its return from the processing plant at Hemel Hempstead and came that day I got the picture of the blackboard whereon I drew in

colour what I saw; a good picture of Proton 4 rocket, a failure on Proton 4 itself but, between them, there is a gap I cannot fill - the picture of the decay was possibly too dark, considered as rubbish and thrown into a bin! To be 15 seconds late cost me a terrible loss of picture and measurements, but, after all, I was there at the predicted time; the rocket it was that was faulty.

(to be continued)

Pierre Neirinck

Letters to the Editor

Dear Mr. Editor,

I go a long way with Mr. Peter Simple, but he seems to me to have the habit of writing in "Learned Society English," and to feel that he must not use words of one or two syllables if there are others with three or four. In my view English should be clear, easily understood, and say what it has to say as simply as possible. One does not write scientific papers for literary critics, who do not read them, and who for the most part would not understand them if they did.

I would add that neither the Oxford dictionary nor Fowler's 'English Usage' make any distinction between "while" and "whilst", and that "program" is spelt thus to avoid ambiguity. And perhaps we need a new verb to describe the production of a paper if the work is done by a group of people, one of whom then writes a report which is rewritten by somebody else?

Yours sincerely,

F. V. Bale

Dear Mr. Editor,

Since writing to you I have discovered, on page 54 of the Pelican Edition of "Plain Words" (Gowers):- " the verbs "loan", "gift" and "author" these were verbs centuries ago and are only trying to come back again after a long holiday."

F. V. Bale

R.S.R.S.

9th May 1969

Dear Mr. Editor,

I read with interest and amusement Mr. Peter Simple's letter concerning the declining standards of written composition. Although I share his concern, I fear he is unwisely treading on dangerous ground.

It is interesting to note that Chambers' dictionary gives the word forms programme, program and for that matter gram and gramme as perfectly acceptable alternative spellings in Modern English.

I can offer no defence of propagation with three O's, although until recently I used this form, or the "while/whilst" problem except to suggest we drop "whilst" from the language as it is superfluous. The use of data in the singular is common practice and so must be considered as Modern English usage - indeed sentences formed in the plural look incorrect in this case.

The use of "author" as a verb can be justified on two grounds:-

1. It can be considered as foregrounding - the deliberate use of a word in an unusual context for emphasis - a technique used by many poets and authors.
2. It is a legitimate method of word formation in any language which depends on word order rather than inflectional word endings to convey meaning and is known as "zero-morpheme conversion*". There are many examples of this in Modern English which we happily accept but must have seemed awful when first used. For example

(a) Noun - Verb "z-m c"

a coat	to coat
the sugar	to sugar

(b) Verb - Noun z-m c

to lift	a lift
to concern	a concern

(c) Noun - Adjective z-m c

a road	a road sign
the petrol	a petrol engine

(d) Noun - Adjective - Verb z-m c

a father	a father figure	to father
a murder	the murder weapon	to murder

This kind of conversion is found as far back as the 9th century in Beowulf and exists through Anglo Saxon, Old English, Middle English as well as Modern English.

I am afraid that Mr. Simple will have to accept these changes if he continues to use a flexible language like English - of course he could always learn German.

If we do produce reports in the first person let us not have sentences beginning "I, myself, for my own part,", which translated as "I, I, I, ..." merely indicates that the author stutters badly.

Why should we not use Americana such as labor, honor or naybor? These are the true language of the people, our spellings are merely prostitutions of the language introduced during the years when the academic language changed from latin to English and the Court language from French to English by the scholars of Oxford.

Let us not forget that there is a state-of-the-art in English as well as the technical fields to be followed.

Yours sincerely,
Michael Cleverley

*Zero-morpheme conversion is the process by which a word changes its grammatical function without changing its form.

(Our last month's correspondent, Mr. Simple, has been so successful in drawing forth replies that some have had to be held over until the next issue: Ed.)

Station News

The Director and Mr. Lane are to attend a 10 day symposium run by the URSI/IUGG committee on the Spectra of Meteorological Variables, taking place in Stockholm on 9th June.

There has been a Whitsun meeting of chairmen of the 11 sub-groups of the URSI working group preparing a large report on techniques for probing the atmosphere by electromagnetic means. Dr. Horner is Chairman of sub-group 5 and Dr. King is Chairman of sub-group 1.

After cancellation of the ESRO solar eclipse rocket programme, Dr. Hall's group have been invited by the Canadians to participate in the Canadian rocket launching programme in Nova Scotia to examine the 7th March, 1970 eclipse. Lyman α and X-ray experiments will be contained in four Canadian rockets.

Dr. King, Dr. Yonezawa and Dr. Graham Thomas attended the 12th COSPAR meeting and the 10th international Space Science Symposium from 11th to 12th May in Prague.

Dr. Croom and Mr. P. Smith are taking part in the NATO advance Studies Institute on Solar Eclipses and the Ionosphere from 26th May to 4th June in Greece.

In Lindau on 24th to 26th June, an URSI sponsored European Regional meeting on ionospheric research is to be held, and will be attended by Dr. King. Its aims are to foster co-operation, collaboration and joint planning between European ionospheric physicists.

Mr. Harden, together with some Post Office colleagues will be in the United States on 2nd June for two days, visiting the Bell Laboratories to discuss work on microwave radio attenuation.

Staff News

Congratulations to:

Alan and Linda Smith on the birth of their son, Stephen Alan on 24th May.
Mr. B. R. Martin, now P.S.O.
Dr. G. R. Thomas, now S.S.O.
Mr. P. A. Smith, now S.E.O.
Mr. G. E. A. G. Barnett, now E.O.
Mr. M. F. Reid, now A.E.O.
Mr. G. M. Johnston, now Substantive S.E.O.
Mr. G. Douglas, now Acting E.O.
Miss A. Bailey, now C.O.

Welcome to:

K. Frazer	S.A. (Perm)
Mrs. J. White	Typist I
D. V. Dyal	S.C. Student
J. D. Burge	A.E.O. (Non-perm)

Resignations:

Mrs. M. B. Colbourne	A.E.O. (Perm)
R. J. D. Hewitt	Handyman (Falklands)
J. C. Hancock	A.E.O. (Non-perm)

Other Changes:

B. J. Murphy	S.A. Transferred to Div. I, Mr. Luscombe's group.
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Former Staff

Congratulations to Tony and Sylvia Legg on the birth of their daughter, Susan Catherine on 1st May. Tony is with W.R.E., Salisbury, and their present address is:

24, Primmer Avenue, Modbury North, South Australia 5092, Australia.

SPORTS AND SOCIAL CLUB NEWS

The Bar

Now that a new year has just started for the Sports and Social Club, it seems an appropriate time to inform the Station of the facilities that now exist in the bar.

Many people already know that the Bar has been divided into a lounge and games-room. In this way, table-tennis and darts are kept away from the lounge, which was only recently redecorated. Because of this, the lounge is a much better place in which to enjoy a quiet drink. In fact several people have started to bring in sandwiches, and have a drink with their lunch during the mid-day break.

Looking into the not too distant future, it is hoped that before the summer ends some form of Beer Garden will have been located, (just outside) the Bar lounge. Negotiations are going ahead with Courage Breweries to see if and when they will supply the necessary tables, chairs (and umbrellas?). Did you know that off-sales can be obtained through the Bar at any time as well as at Christmas? The same rates are charged for the off-sale drinks as for the Christmas drinks, i.e. trade price plus 7 $\frac{1}{2}$ %. Wines, spirits, beer and soft drinks of your choice will be delivered to the bar ready for you to pick them up. Price lists can be obtained from me in room 127.

Another service being offered to the staff is the hiring out of glasses for parties and socials etc. The Bar is fairly well stocked with a wide range of glasses all of which can be hired for the princely sum of 1/- per dozen glasses

(of any kind) plus the cost of replacing any breakages. There is only one condition of hire and this is to return the borrowed glasses to the Bar in time for the next lunch-hour break.

An attempt is to be made this year to keep a permanent supply of draught beer on sale. This will most probably be Tavern Keg, but bitter may also be available from time to time. If you do not fancy a draught beer then what about a glass of NEWCASTLE BROWN. Yes, to please the Northerners and converted Southerners, Newcastle Brown is being sold in the bar at the lowest price in S.E. England - 1/7 for a $\frac{1}{2}$ pt. bottle.

In ending this short note I should like to apologise for giving you the impression that this has been an advertisement to attract people into the bar. If I have succeeded in doing this, then all well and good, but my aim has been to show people the present facilities existing through the bar.

A. Dagnall

Bridge Club

The two return matches of this season were played last month, with results similar to those of the earlier matches against the respective opponents. The result against NPL was in doubt until the last board had been completed, but RSRS were beaten: the score being 65-58 IMP's. The match against RRL was won by 14 IMP's.

These are the last matches until next season, when a team may be entered in the Thames Valley League, if there is sufficient interest.

Robert Pratt

Proposed Visit to the A.C.O. Museum

It is hoped to arrange a visit to the A.C.O. compass museum, during lunch hour, in the near future. This interesting collection may shortly be moved from Ditton Park to a place more readily accessible to the public, so this may be the only opportunity to view it at the Observatory. Will all interested please give their names to Pat Dadds, room 7.

Cricket Club

At the A.G.M. the following officers were elected, or re-elected:-

Captain	:	E. Dunford
Secretary	:	G. R. Thomas
Treasurer	:	B. Y. Moosajee
Equipment Officer	:	M. Hussain
Groundsman	:	C. R. Boulton

Rather less inclement weather heralded the start of this season, a welcome change from last year. Activity started in April, and we set to work on the pitch. Whatever people may say about sheep improving the grass, their effect on the surface leaves much to be desired. However, with the help of a roller discovered by Jack Savage, we removed some of the worst of the bumps. Weedkiller has been applied, and a 'new' mechanized roller should help to tame the surface even further. There is much more to do in this direction, and any help would be much appreciated.

Our playing season got off to a good start. We warmed up with a practice match on May 8th, which gave everyone a chance to show their skills. Then, on May 13th, we played our first match against I.C.I. Their ground must be one of the best most of us have played on. We batted first, and, possibly somewhat overawed by the excellence of the surroundings, found runs a little hard to get. Most of them had to be run in singles due to a long boundary and good field placing. However, Moosajee (15), Bramley (21) and Thomas (19) batted well, and we finished our 20 overs with 73 for 5. I.C.I. found the length of the boundary little problem, and rushed to their first 30 runs in a few overs. Then RSRS broke through. Three wickets fell in the first three balls of Moosajee's first over, and I.C.I. collapsed. Moosajee finished with 3 wickets for 2 runs, and some keen fielding helped us to a very welcome win.

We seem to have plenty of keen people around this year, so we are hoping for a very successful season.

Chris Boulton

A Century of Satellites

This month the useful series of notes on "Forthcoming Satellites" has reached number 100. These notes, based on the NASA Operations Plans, are compiled by Dr. Hopkins.

Guide to S.I. Units?

Americans are apt to jeer at British units and measures, sometimes quoting as an example the velocity unit "furlongs per fortnight". They don't realize that this is virtually a metric unit (though not on the approved S.I. list):

$$\begin{aligned} 1 \text{ fg fnt}^{-1} &= (220 \times 36 \times 2.54) / (14 \times 24 \times 60) \text{ cm min}^{-1} \\ &= 0.9979 \text{ cm min}^{-1} \end{aligned}$$

Quite suitable for scientifically measuring the speed of snails, or the progress of administrative documents.

Anon

Letter to the Outstations

Dear Colleagues,

The lightning-flash count has increased noticeably during the past few weeks and from time to time a local thunderstorm has taken place. Trees are thick and green, grass is thick and green, and here and there, standing water, if not yet of a similar consistency and colour, is at least still standing. Sumer is icomen in.

Meantime in the park the Solar Observatory thrives. Recent climatic conditions seem to have done much to bring about an increase in the number of small dishes, plaintively sun-seeking, which seem to have sprung up overnight. One such dish, or two, seems no more than mechanic ingenuity; with greater numbers there is a suggestion of organism, of mind, of need of nourishment. Each and every one turns to look for the sun; an example of the triumph of hope over experience.

Or is it? Might not these machines, like an audience watching a high-wire act, be half-hoping for the thing to slip and fall from the sky. Perhaps they know more than Newton, more than all of us, certainly more than,

Yours sincerely,

The Editor

Reprint List May 1969

- D. A. Bryant,
G. M. Courtier, and
A. D. Johnstone
Modulation of auroral electrons at large distances
from the earth.
J.A.T.P. 1969. 31. 579-592.
- D. L. Croom and
R. J. Powell
Outstanding Solar Radio Burst at 4-2 mm.
Nature 1969. 221. 945-947.

Internal Memoranda

324. WILLIS, D. M.
Electrostatic field at the magnetopause.