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NEWSLETTER

No. 113

October 1970

THE UK4 SATELLITE DATA PROCESSING

The UK4 satellite is due to be launched in September next year by a Scout rocket, from the Western Test Range in California. UK4 is the latest in a series of UK/US collaborative satellites. On board will be three British experiments and one American experiment. The experiments are being co-ordinated by Mr. Dalziel, while the data processing is being supervised by Dr. Dunford.

The Jodrell Bank/R.S.R.S. experiment on board UK4 involves a small experimental team under Mr. Harrison, and will measure the intensity of electromagnetic radiation (noise) at high frequencies, and investigate its causes. The Sheffield University experiment will make similar measurements at low frequencies; R.S.R.S. are providing a small amount of assistance with this experiment also. The Birmingham University experiment will measure the temperatures and densities of electrons in the ionosphere. The Iowa University experiment will examine the intensities and angular distributions of protons and electrons entering the atmosphere.

After launch, raw data from UK4 will be received and recorded on magnetic tape by the 12 Space Tracking and Data Acquisition Stations of the NASA network. The analogue tapes will be sent to R.S.R.S. and processed in four stages. Firstly, Mr. Luscombe's group will recover the signals and convert the information into a digital form which will be suitable for input to the 1904A computer. Secondly, the tapes will be scanned by the 1904A computer and any faults will be corrected. This will be achieved by means of six computer programs which have been written by Dr. Martin with the assistance of a Sandwich Course student from Portsmouth Polytechnic. SORDID provides selected listings of data from the digitised buffer tapes. SATAN(HIGH) gives a list of error diagnostics for every

buffer tape of high speed data and writes the data, patched if necessary, to disc: SATAN(LOW) achieves the same for low speed data. SATSORT uses the data which has been written to disc by either of the SATAN programs to write an output magnetic tape in time order. STAGECHECK inspects the data which has been written to the output magnetic tape. The third stage, a suite of programs known at SATSEP, will be carried out on the Atlas Laboratory's 1906A computer. These programs, being written under the supervision of Dr. Dunford with the help of 3 programmers from the Atlas Laboratory, will convert the raw data into meaningful scientific quantities for each experimenter and carry out checks that each experiment is functioning correctly. In addition the programs will calculate auxiliary data such as satellite position, altitude and magnetic co-ordinates which will be merged with the experimental data on magnetic tapes in a form convenient for experimenters' use. To control the flow of the data and to provide rapid and easy access to any data the experimenter requires a comprehensive reference file of the tapes and their contents will be compiled. The final stage of analysis will be decided on by the experimenters after they have seen the data. The greater part of this work will be done either on the Atlas Laboratory's 1906A or the R.S.R.S. 1904A.

LIES, DAMN LIES AND STATISTICS

OR, 2 + 2 = A SUCKER

Most of you, I am sure, heard, at school or elsewhere, the chains of twisted logic which allowed a prisoner in jail, lodged in a cell containing only a table to escape, riding on a horse. Still more in line with this dissertation is the proof that a penny, via a copper, a policeman, a bobby and Bob is the same as a shilling; but figures, surely a figure can only be read one way? Not so, it depends entirely on who is doing the reading. Have you heard the saying that one can prove anything with statistics? It is not far from the truth. I have seen the same set of figures used to obtain two diametrically opposed conclusions. Statistics are extremely useful, but only if they are interpreted and used correctly and at times even statisticians disagree about how this should be done.

Crime, we are told, is increasing every year, but is this really so or is it merely that a greater percentage is being reported? The figures show a constant upward trend but obviously no one can be absolutely certain. Probably the answer is that both are happening.

Reporters and advertisers in our statistical and computerised society find it relatively easy to persuade many people to believe things which, if not outright lies, are far from the unvarnished truth. All these people need to do is

obtain figures, accurate in themselves, compare them with a second set, equally accurate when standing alone, then from the two draw an incorrect conclusion, slanted to meet their own needs. The problem has in a few cases been helped by the Trade Descriptions Act, but in just as many cases the Act has only confused the issue: there is still a long way to go.

The ways in which this logic juggling can be performed are, of course, limited, and once understood are fairly easy to pick out and evaluate correctly. The two main methods of misdirection are (i) implied perfection and (ii) effect percentage dismissal. Both are quite simple and the following are somewhat ridiculous examples of these methods.

(i) Implied perfection

Four out of five doctors use Peter's writing paper:-

It is an old joke, but one which illustrates the point perfectly, that it took the firm only three months to persuade four doctors to use Peter's 'poorer' papers. Naturally, they had no difficulty in finding the fifth. However, old joke though it may be, unless one realises that advertisements of this type refer to a particular four out of five, a completely false impression is created.

The same of course applies to any product which claims, by comparison, that it is superior to its competitors, even though, as in some cases, this is done by claiming near equality with a third product, which should for some obvious reason, usually price, be superior. If the manufacturer of a cheap family car compares it with a £5000 prestige model, his claims must naturally be viewed with some suspicion. If his advertisements say (a) It has the same road holding quality. ("That's good isn't it dear.") (b) The same economical petrol consumption. (Mine drinks the stuff.") (c) The same breath-taking acceleration. ("You know I wouldn't mind one of those."), it must be appreciated that in all probability, (a) The road holding is not particularly good on either model, (b) Petrol consumption which may be economical for the sort of car which costs £5000 will almost certainly not be for a small family one and (c) The acceleration may be the same, but you can be quite sure that it will not last for so long, assuming that it is any good on the other car anyway. The breath it takes may be a gasp of horror and fury.

Naturally no advertising man in his right mind would be so blatantly obvious with his false claims, but it serves to illustrate the point.

(ii) Effect Percentage Dismissal

In war it is safer to be a soldier than a civilian:-

This startling statement, if true, should lead to a swift increase in the recruiting figures of the armed forces. This is an example which I actually saw used and, though the phraseology was far more roundabout, this is what the article had to say. In this particular case the war referred to was the Vietnam conflict,

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but the proof could equally well apply to any other. It was stated that the death rate is lower in the armed forces than in the civilian population. No doubt this is true, but it is not really attributable either to the precautions taken by the Americans to protect their troops, or to the inaccuracy or lack of aggression of the North Vietnamese forces. The explanation is a far more simple one. The civilian population consists almost entirely of babies, people aged over fifty and those unacceptable to the armed forces for medical reasons. All of these people are, of course, far more likely to die than the soldiers themselves, who are, generally speaking, young and fit. The death rate among the very young, the old, the sick and the disabled is comparatively so high that it would be greater than that caused by almost any possible war.

In a similar manner suspicion must be levelled at a statement which infers something on the lines of:-

Since the majority of murders take place in the home; most being committed by people who are related to, or close friends of, the victim; a person would be safer if instead of staying at home he went for a midnight tour of the Soho back streets.

This brilliant conclusion completely ignores the obvious fact that whilst the majority of the population spend a fair percentage of their time in the home, comparatively few will ever enter Soho at all. However those people who take everything they read as being the gospel truth will no doubt be pleased to hear that, following this amazing discovery, I feel free to impart to them a closely guarded secret, provided, of course, that they promise not to pass it on. They do? Oh! Good. Well, the secret is, (writing drops to a whisper), that it is safer to drink sulphuric acid than to walk down the street. This is of course obvious, since far more people are killed whilst doing the latter.

I shall be here tomorrow, will you?

W. E. Figure

The Ariel Satellite Processor

Chaos reigns in A Spur Main Lab. Some think the machine has broken down, others that a penny has been lost but this short note should allay all fears. We are modifying and renovating our digitiser. Processing of Ariel-III tapes stopped on 31st July - 3 $\frac{1}{2}$ years and 15,569 digitised files after launch. The satellite is still orbiting but it will be lucky to see the New Year in.

C. Medhurst

Special Relationship Dept.

RR GYRS GNST GLRC LWNK
DE GTWL 038
06/2247Z
FM R. O. BRITNER CODE 531
TO STADIR/FTMYRS
INFO GNST
LWNK/NIGHTSHIFT
GLRC/J. REEVES
DLD/H. W. SHAFFER CODE 530.1/1. Y. GALICINAO CODE 531

REF: GYRS 28/2014Z SEP
GNST 05/1221Z SEP
MULLARD DIODE OA95 NOT CARRIED BY ELECTRONIC SUPPLY FIRMS THIS
AREA. OA95 NOT LISTED IN ANY CROSS REFERENCE OR EQUIVALENTS
MANUALS HERE. HOWEVER, WINKFIELD ADVISES THAT BRITISH CROSS
INDEX LISTS EQUIVALENT COLONIAL DIODE AS IN618 REPEAT ONE EN
SIX ONE EIGHT. GOD SAVE THE QUEEN.

06/2249Z OCT GTWL

RR GTWL GYRS GNST GLRC
DE LWNK 026
07/0928Z
FM ROYALISTS/CODE ALL
TO GTWL/R O BRITAINER CODE 531
GYRS/STADIR
INFO/GNST
GLRC/J REEVES
GTWL/H W SHAFFER CODE 530.1
GTWL/I Y GALICINAO CODE 531
GTWL/R REUSCHLEIN AND ALL SECRET ROYALISTS CODE 531

REF: GTWL 06/2247Z OCT GYRS 28/2014Z SEP
A A AMEN,
THE LIGHT HAS DAWNED.
TEA WILL BE SERVED ON THE LAWN.

07/0940Z OCT LWNK

Revoluting Machines Section

THIS IS GEORGE 3 MARK 4.1 ON 14OCT70
08.47.22 ← LN MDL1, FDA3MDL
ERROR IN LN : USER NAME PARAMETER MISSING
08.47.45 ← LN MDL1, :FDA3MDL
TYPE PASSWORD ← FDA3MDL #
ERROR IN LN : FDA3MDL HAS OVERDRAWN HIS MONEY BUDGET
08.48.23 ← DAMN YOU!

ERROR IN DAMN : THIS COMMAND IS NOT ALLOWED IN NO USER CONTEXT
08.49.10 ←

Congratulations to:

Mr. and Mrs. Geoff. Douglas on the birth of their son, Alistair Simon on 30th September at Stanley F.I.

Welcome to:

I. J. Brothers	Asst. Experimental Officer (Chilbolton)
E. W. Smith	S.E.O. (on secondment from Met. Office)
Miss E. B. Zbikowska	S.A.
Miss M. Thompson	S.A.
J. D. Ewart	A.E.O.
Miss C. A. Spears	C.A.
D. Wright	A.E.O.
M. C. W. Sandford	S.O. (returned from unpaid leave)
A. F. Pill	Messenger P/T

Resignations

D. C. B. Whittet	Vacation worker
V. A. Mase	Machine Operator (Casual)
E. M. Thornber	Sandwich Course Student
E. Mackenzie	" " "
Miss B. Kroczak	Vacation Worker
G. L. Mollet	C.O.
J. D. Ewart	A.E.O. (Completed 3 year tour in Falklands)
M. J. Eeles	Vacation worker
W. R. Hare	" "
M. Fortune	Sandwich Course Student
C. M. Comer	E.O.
M. J. Batten	Sandwich Course Student
I. Innes	E.O.
S. Mrowka	Vacation worker
Miss H. Mason	" "
J. A. Crawford	S.A. (Special leave without pay)
Mrs. D. L. Sills	Cleaner P/T
S. N. Thomas	Labourer
Mrs. H. B. Peel	Messenger P/T

Other changes

C. R. Carter	E.O. (Left U.K. for Singapore)
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Station News

The Director attended a N.A.T.O. seminar on Space Communications held at the Lincoln Laboratories of the Massachusetts Institute of Technology from 30th September to 2nd October and gave a paper on Absorption and Scattering at millimetric and centimetric wavelengths in the atmosphere in relation to problems of co-existence of space and terrestrial communications systems.

While in the United States he also took the opportunity to go to Washington to have discussions with N.A.S.A. on matters of interest to the R.S.R.S. and also with the COMSAT organisation on C.C.I.R. problems relating to the forthcoming World Administrative Radio Conference of 1971.

Dr. Horner became a member of the Space Policy and Grants Committee of the S.R.C., on October 1st, and was elected Chairman of the Facilities Working Group of this committee.

Two Induction Courses will be held at the Station. The first, on October 27th and 28th, will be for those of Executive Officer grade and above. The second, on October 29th and 30th, will be the first of the new type of courses for Clerical Officer grades and below.

Sports and Social Club

Film Shows

The following films will be shown at 1 p.m. in the Boardroom on the dates given.

<u>Date</u>	<u>Film</u>	<u>Distributor</u>
November 9th	Carefree Cooking (Literature provided)	Stork Cookery Service
December 7th	A Key to Progress (Trading in S.E. Asia)	P.F.B.
January 4th	Transit Supervan (Comedy?)	Ford Film Library
February 1st	Portrait of a Man. (Story of William Lever, around late 18th-early 19th Century)	Unilever
	+	
	The Structure of Protein	
March 1st	Advance into the Unknown (U.S.A.'s space project)	P.F.B.

Bonfire

The bonfire will be held on November 5th at 6 p.m. Drivers are still needed to ferry children to and fro. Would volunteers please sign the list on the Notice Board?

Bridge Club

The Bridge Club AGM held during September attracted a higher than usual attendance. Once the retiring committee had been re-elected for a further year of office, the meeting considered the problem of increasing the attendance on Club Nights. After some discussion, it was decided that these should be held regularly on the first Thursday in each month at 6 p.m., and the first this season was held on October 8th attracting 12 players. The date of the next Club Night has been changed, for pyrotechnic reasons, to Tuesday November 3rd when we know that there will be an even greater attendance.

We have also played against Road Research at Crowthorne, our first match of the season, and unfortunately lost by 15 IMP's despite having built up a slight lead of 7 IMP's at the half-way stage.

R. J. Pratt

Letter to the Outstations

Dear Colleagues,

It has been in mind for some time to give you tidings of the thing outside the loo. This object has indeed been the subject of correspondence intended for publication here, though since withdrawn, for the gradual unfolding of events has overtaken the even gradualler unfolding of the Newsletter. Not for us the snap judgement of the daily press, all vox pop. and vulgar rush.

This thing then; it came silently in summer, an inert box of tin or some such, about four feet high; it stood against the wall, it did nothing. In time though, we were assured, water, cool and clear, would gush from it, all it lacked was a blow from the staff of a latter-day Moses. We're a bit short on patriarchs, but M.P.B.W. said they'd do what they could.

Men came, wires were connected, men went away; leaves yellowed and fell and the thing became another facet of gentle autumn melancholy. Yet another small enterprise engendered then stillborn. Came the day of putting in of pipes and with it that gleam of hope which twists the knife of despair. A day later some bold spirit reported that he had pressed the button and received a gentle stream of liquid at a height and angle conveniently placed to fill the shirtsleeve. One yet bolder tasted and saw. Water yes curséd cloudy and smelling of oil, but water near enough, tepid though it be.

Two days more and a baleful red eye on the switch showed that the machine had begun to consume electricity, surely all should now be as it was foretold. Not so. The box when touched remains inert, no quiver of anticipation or even revulsion greets our caress. The button pressed, a stream of fluid spouts boldly out - for some two seconds - then falls away to a near dribble, a dismal clanking coming from within the engine.

It maybe that M.P.B.W. Rods (Mosaic, Plastic) are no fit substitute for the genuine Old Testament article, or perhaps it's really a kinetic artpiece. Whatever it is, it's a tease, promising always, but flinching after the first preliminary, and appeasing not a whit the appetites of any, including

Yours sincerely,

The Editor

October 1970

List of Reprints

M. R. Bowman
L. Thomas
J. E. Geisler

The effect of diffusion processes on the hydrogen and oxygen constituents in the mesosphere and lower thermosphere.
J.A.T.P. 1970 32. 1661-1674

D. A. Bryant
G. M. Courtier
and G. Skovli

Electron density and electron flux in a glow aurora.
J.A.T.P. 1970 32. 1695-1704

J. E. Hall
P. H. G. Dickinson
and A. J. Hall

(4) Observations of Solar Ionizing Radiations during the eclipse.
Nature. 1970 226. 1105-1107

G. R. Thomas
R. Dalziel
W. Donaldson

Esro 1 Satellite observations of 1-30 MeV protons during the 25th February 1969 Solar event.
Conference Proc 1969. Esro Convention Noordwijk 16-19 September

L. Thomas

Errata. The effects of ions on the propagation of E.L.F. and V.L.F. waves in the lower ionosphere.