C.S.I.R.O.

DIVISION OF COMPUTING RESEARCH

NEWSLETTER NO. 31 - 1st FEBRUARY, 1968

I. GENERAL

Publications Issued this Month

NL - Newsletter No. 31

LM - Library Accession List No. 20. December 1967-January 1968.

M2 and M6 - Manual Supplement No. 24 (revised). Use of Extended Character Set with ALGOL for the 3200 and 3600.
P.P. Hanlon, D.C.R., November, 1967.
This supplement replaces M.S.11 and M.S.24.

Seminars

The following seminars will be held at 2.00 p.m. in the Lecture Room of the Division of Computing Research, Clunies Ross Street, Black Mountain, A.C.T. Each is on a Thursday.

February, 22nd - Short reports: (a) Tracing facilities in Fortran,
(b) Deciphering Vocal Input.
(P.Buscombe,W.Cumpston, D.C.R., Canberra).

March, 7th - A User's Comparison of two Computing Establishments;
Manchester University and C.S.I.R.O., Canberra.
(G. Shearing, D.C.R., Canberra).

March, 21st - Impression of a Visit to Overseas Weather Computing Centres.
(C.E. Wallington, D.C.R., Canberra).

Advanced Lecture in Sydney

A talk on the use of the keyboard display consoles which form part of the 3600 computer system in Canberra will be given in Sydney on February 19th. The aim of this talk will be to illustrate how these consoles may be used to advantage by Sydney users visiting Canberra.

Anyone interested in attending this lecture is asked to contact the Education Officer, D.C.R., Canberra. Those who apply will be notified of the time and venue when these have been arranged.

Basic Fortran Courses

Melbourne - February 5th, 1968.

Canberra - February 26th, 1968.

Brisbane - A Basic Fortran Course is planned for Brisbane in March. Those interested in attending this course should write to the head of the Brisbane Branch of the Division c/- Cunningham Laboratory, Mill Road, St. Lucia, Queensland, 4067 or telephone 73121 ext. 209.

Adelaide - A Basic Fortran Course is planned for Adelaide during the week commencing April 29th, 1968. Application to attend this should be made to the Head of the Adelaide Branch of the Division.

Griffith Installation

The Griffith (N.S.W.) Branch of the Computing Research Division, located with the Division of Irrigation Research, has installed a Digital Equipment Corporation PDP-9 computer, which will be used for on-line data-acquisition and initial processing of experimental data. Further processing of data will be carried out in Canberra as at present.

In addition to the central processor, the equipment configuration includes a core memory having 8,192 18-bit words, a real-time clock, a 300 character per second paper tape reader, a 50 character per second paper tape punch, an input/output teleprinter with 10 character per second paper tape facilities, an analogue-to-digital converter, which converts an input of 0 to 10 volts into digital form with an accuracy of 0.025% at 28.5KC, and a 64-channel multiplexer to enable the converter to be used with multiple inputs.

Computing Facilities for Brisbane

A CDC3200 in Brisbane (belonging to the Bureau of Census and Statistics) is now available for use by C.S.I.R.O. people. No plotter or disc is available on this machine, but apart from this, the machine may be regarded as identical to the 3200's in the C.S.I.R.O. network. There are some minor differences but these are unlikely to be noticeable in most programs.

C.S.I.R.O. jobs are run on this machine at 1230 hrs and 1900 hrs daily. Anyone interested in using this machine should contact the head of the Brisbane Branch of the Division, c/- Cunningham Laboratory, Mill Road, St. Lucia.

VISTA Users Group

The VBS and PLOTV routines developed for VISTA (the graphical display device) have enabled users to start building up some experience with VISTA, but these routines should be regarded as an initial step in the development of VISTA facilities. As users acquire experience their requirements become clearer.

To keep users and members of the Division in touch with developments, ideas and requirements it has been decided to set up a VISTA Users Group to hold occasional

discussions on the subject. One development is described in the next item of this Newsletter.

The feasibility of having a firmly mounted camera to take photographs of VISTA pictures easily and quickly is being studied, and the possibility of having more function keys is being explored.

Some thought is being given to writing new VISTA routines, and the Group would like to know what features of the present routines users would like us to retain and what additional features are required.

Anyone who would like to express views on the use of VISTA or who would like to be notified of meetings of the VISTA Users Group is asked to write to C.E. Wallington of D.C.R., Canberra.

New Facilities for VISTA Users

A special program called BEER, ("brief easy editing routine") is available. This allows a user to input many parameters to a VISTA program (written in Fortran) by using the keyboard display console situated alongside VISTA. This is more flexible and convenient than using the VISTA keyboard or "light buttons" on the Vista screen since all input is carried out by basic Fortran READ and FORMAT statements. Some specially written compass subroutines are required in the user's program but this presents no difficulty.

The purpose of this note is to familiarise potential users of the possibilities now open to them. These techniques will be fully described in a future Technical Note.

Further facilities to be provided will allow a user to study mathematical functions, contour maps and perspective views of mathematical surfaces.

Anyone interested in using VISTA in these ways is asked to contact G. Shearing of D.C.R., Canberra.

Telex Facilities

The Sydney Branch of the Division has now acquired a Telex machine and messages may be sent to AA21301.

Staff News

Mr. P.R.A. Rutter has joined the Adelaide Branch of the Division as a consultant. He was formerly with E.M.I. (Aust.) Pty. Ltd. where he was concerned with the development and installation of a real-time control system.

II. 3600

Print Limit

The wording of the diagnostic which occurs when a job terminates abnormally on the 3600 because it is referencing a document longer than the limit implied or specified for that document has been changed from

PRINT LIMIT

to

DOC LENGTH LIMIT

It is hoped that the new wording reflects the true situation more accurately than did the older version, in that the document may be a print, plot, punch or even an input document, and the limit violated may have been the print limit specified on a Run card, or may have been the document length specified on an Equip card, or may have been the default limit (256 sectors) set by the system.

New Loader Diagnostic

A new diagnostic has been added to the LOADER, viz.

OVERLAY COMMON LENGTH ERROR

This message implies that reference has been made in an overlay or segment to a common block with a length greater than the length specified when the block was originally defined in main or in an overlay.

Label Call

The "reel" parameter of the LABEL macro and of the LABEL subroutine is now interpreted, for drum documents or random access units, as setting a length limit (in sectors) for that logical unit. If it is 0, the normal default limit of 256 is assumed. No other checking of the parameter is performed.

The primary purpose of this change is to allow a display program to set document limits or random access block sizes. Display programs requiring only small amounts of random access space will thus be able to request this with a greater likelihood of having it allocated than in the past when the request always had to be for 256 sectors.

TIMEF

The function TIMEF(X) which provides the current reading of the 3600 clock has been changed. It still provides a clock reading in milliseconds but this is incremented at 100 millisecond intervals whereas it was previously incremented each millisecond. Although coarser, the value now returned is accurate since it is unaffected by the operation of the display consoles and by the time consumed by BREAKIN jobs.

Speed Tip

The DATA statement is provided to enable constants within a program to be readily pre-set. Its operation is however, relatively slow. A large array may be assigned constant values with a statement such as

```
DATA  (KEVIN = 10000(1))
```

but less machine time is consumed by initializing the array with the statements

```
DØ  99  I = 1, 10000
99  KEVIN (I) = 1
```

In an actual test, a program using the above DATA statement consumed 167 seconds while with the DO loop only 26 seconds were required.

Dimensioned variables except those in common are cleared to zero before the execution of a program commences so it is unnecessary to perform this operation at the beginning of a program.

Comments to Operators

Users at the Canberra site can arrange to have a comment typed on the output typewriter by including the following cards at a suitable place amongst their control cards e.g. after the EQUIP cards at the head of the job.

```
* FILE , 64
  comment to operator (e.g. CALL SMITH TO VISTA)
* FILE END
```

The manner of operation of the monitor precludes the use of this method to direct the operators in setting up output devices such as the plotter or the printer. Such instructions should be included on the Job Request Form (and on Equip cards if applicable) and not be typed out. Jobs submitted from users not present at the Canberra site should not use the typewriter. Jobstack users should be aware that the *CTO control card causes a comment to be printed on the manifest dispatched to Canberra with the Jobstack tape, but that the *CTO card is deleted from the tape.

III. PUZZLE CORNER

The people who submitted correct solutions to the puzzle for December are Miss J. Clarke, Miss L. Harris, A. Molloy, G. Petru, S. Rance, E. Roberts, G. Stott, S. Stuart and G. Weatherhead.

The solution is as follows:-

1	2	3	4
6	5	6	1
5			
7	7	4	4
6			
2	7	0	4
7			
9	6	0	4

Using the facts that the numbers are all perfect squares and that perfect squares can only end with 0, 1, 4, 5, 6 or 9 it is fairly easy to narrow down the possibilities for 4 down and 7 across to just a few pairs of numbers and the rest can be found with the help of a table of squares and by trial and error or a little reasoning.

This month's problem concerns a customs officer who arrived at a smuggler's lair on a tiny island just after the smuggler had left. It was a foggy night and visibility was poor. If the customs officer knew exactly how much earlier the smuggler had left and that the smuggler was travelling at a constant known speed in a straight line but in an unknown direction, could he steer a course in the faster customs launch that must eventually meet up with the smuggler? If so, describe the course.