I.   GENERAL

Publications Issued this Month

NL - Newsletter No. 27

LM - Library Accession List No. 17. July/August, 1967.

Other Publications Available

C3 - CSIR EL2   Evaluation of Incomplete Elliptic Integral
of the Second Kind. 3200/3600 Fortran.
Authors: G.S. Masters and R.N. Walker, C.R.S., Sydney.

D6 - CSIR EULER   Series Summation. 3200/3600 Fortran.
Author: G. Shearing, C.R.S. Canberra.

E1 - CSIR TWØDINT   Non-linear Interpolation of a Function
of two Variables. 3200/3600 Fortran.
Author: G. Shearing, C.R.S., Canberra.

N1 - CSIR PULSER   Program Timing Routine. 3600 only.
Author: P.P. Hanlon, C.R.S., Canberra.

Q4 - CSIR CURVPLOT   Automatic Curve Plotting on the
Plotter. 3200/3600 Fortran.

H1 - CSIR DYNA   Optimization of a Constrained Non-linear
Objective Function. 3200/3600 Fortran.
Author: K.P. Tognetti.

SP - Seminar Paper No. 9. The Concept of Syntax.
Authors: M.B. Clowes and D.J. Langridge (C.R.S.,
Canberra) and R. Zatorski (Dept. of Science Languages,
University of Melbourne).

Computer Stationery

Users of the network are reminded that if they require their
output on other than the standard single or multi-part paper they
should obtain the necessary supplies for themselves. This applies
particularly to blank paper (white or coloured), N.C.R. paper and
all kinds of adhesive labels. Similarly, the Section does not
provide users with covers for binding line-printer output.

Disc Files

Computers in the C.S.I.R.O. network are presently having their
total storage capacity increased by the addition of disc files.
Some notes on the use which it is planned to make of these
facilities is given below for both the 3200 and 3600 systems.

3200 Disc System

Each 3200 computer system of the C.S.I.R.O. network is currently being equipped with a Disc Controller and a Disc Drive, the latter driving a Type 853 Disc Pack of capacity 4 million characters (i.e. one million 3200 words). Together with the disc equipment two extra data channels are being installed, and one magnetic tape transport is to be removed from the configuration in the near future.

The primary current aim of this change in configuration is to give an improvement in speed of compilation and loading of programs. Apart from this the user should see no change for the present in the mode of operation in the subsidiary areas.

It should be noted that in the normal operating environment the disc pack is considered to be non-interchangeable, as controlling system software will be stored on the pack.

3600 Disc System

The 3600 computer in Canberra is being equipped with a disc controller and Type 813 non-interchangeable disc file of 100 million characters capacity (i.e. $12\frac{1}{2}$ million 3600 words).

It is proposed to make approximately 10% of this available to DAD users as a random access bulk store, similar to the random access facility for the drum. The remainder of the disc file will be used by the DAD system as a bulk store of serial documents. It is a design aim that documents on the disc should survive most DAD system failures, and that, in any case, it would be most unlikely that all documents would be lost as a result of a single failure.

It is hoped that these facilities will be available for general use in the next few months.

Interpreting Card Punch

The Section has recently installed an I.B.M. 029/C22 interpreting card punch in the Data Preparation room at Canberra. This punch (and the I.B.M. 029/A22's already installed in Adelaide, Canberra, Melbourne and Sydney) have keyboards equipped for the 64-character set used by C.S.I.R.O. The C22 machine can interpret (i.e. print) along the top edge of a card the

information punched in the body of the card. Thus, source program
and other decks which have been punched by the computer or card
reproducer can have printing added.

As the C22 operates quite slowly (10 cards/minute for a
full card) only a limited amount of material can be accepted for
interpretation. The process can be speeded up if users indicate
which columns they do <u>not</u> want interpreted.

Users #are reminded that a printed copy of a deck of cards
satisfactory for most purposes can be obtained by using a *LIST
control card. The deck:-

```
          *JØB, charge, ident, 2
          *LIST
             .
             .
          cards to be listed
             .
             .
          *EØD
```

will produce a printed listing of the card deck. Every end-of-
file card will cause a new page to be begun. Any cards may be
included except *DØC, *JØB, or *EØD.

Brisbane

As noted in the July Newsletter, Mr. D.R. Ross, formerly
acting Officer-in-Charge of the Adelaide subsidiary, is to be
C.R.S. consultant in Brisbane. He will take up duties on
4th September in one of the visitors rooms in the western
extension of the Cunningham Laboratory. Initially about two
thirds of his time will be spent in Brisbane and the remainder
in Adelaide. His postal address is:

```
          Computing Research Section
          C.S.I.R.O.,
          Cunningham Laboratory,
          Mill Road,
          St.Lucia,
          QUEENSLAND    4067

          Telephone:  73121 ext. 209
          Telegraph:  CORESEARCH, Brisbane.
```

\# That is, users of the 3600.

Griffith

Mr. J.A. Shaw, who is a hydrologist with the Irrigation and Water Supply Commission of Queensland, has been appointed to a position as C.R.S. consultant at the C.S.I.R.O. Irrigation Research Laboratory, Griffith, N.S.W. He is expected to take up his new post in October.

Staff News

Mr. D.C. Knight, Officer-in-Charge of the Adelaide subsidiary who has been overseas for the past 10 months, has resigned from C.S.I.R.O. He has accepted a post as computer manager for King's College in London.

Mr. B.P. McDowall, an experimental office at the Adelaide subsidiary will take over from Mr. Ross as Officer-in-Charge of the subsidiary as soon as Mr. Ross finally relinquishes his position there.

Mr. P.D. Fitzgerald is now in charge of all three shifts in operation on the 3600 machine in Canberra.

Puzzle Corner

The correct answer to last month's puzzle was sent in by Miss J. Clarke, Mrs. G. Keig, G. Petru, J. Tilley and D.C. Vernon.

Perhaps surprisingly there was a unique solution to the problem. Of the 68 four digit squares, 36 have four different digits. The right-most pair of digits in a square are restricted - they repeat in lots of 25 and there are only 20 pairs of different digits. A little experimentation with some tables of squares (or a computer) yields the answer:-

$$\text{KING} \equiv 3721 = (61)^2$$
$$\text{KNIGHT} \equiv 327184 = (572)^2$$

This month we ask:

If the minute and hour hands of a clock are interchanged, how many different possible times could the clock show?

II.   3600

Saving Documents on the Drum

Facilities exist in the DAD system for saving documents from the drum on tape and later restoring them. These facilities will normally allow documents remaining at the end of a day's running to be restored next morning.

Since the saving of documents can lead to a scarcity of drum space, an automatic facility, called FLUSH, exists for purging some documents from the drum, when the available space falls below a certain limit. These documents are lost without trace.

The exact algorithm for flushing has not been finalised, but documents are selected on the basis of their last activity date, and the form of their ident. Older documents are flushed first and also documents whose ident ends in two numeric characters. Users should take care that documents which they wish saved do not have numbers in this position. If a system "crash" occurs, all documents on the drum are lost. It is hoped that when the disc software is complete, programmers will be able to keep documents in the system for long periods, with much greater reliability than at present.

Read Only Units

The DAD system has been changed so that an attempt to write, erase or write an end-of-file on a logical unit set to RØ will cause job termination with the diagnostic:

WRITE ON RØ UNIT

on the standard output unit. Previously, the request was rejected. This alteration also applies to special DAD requests to insert or delete from a drum document.

New CIDER Facility

A feature has been added to CIDER so that it is now possible to skip forward to a specified statement (record). This request must be made in message mode and it has been included in the message which asks: Set Tabs?, Rewind?, Finish? etc. An extra message has been added to this list which says:

SKIP TO STATEMENT -----? ---

The statement required should be entered before the question mark, and as with all other messages, YES should be entered after the question mark. CIDER will read through the document, extract the first five characters of each record, squeeze out blanks and underlines, and compare them with the characters typed on the screen which will also have blanks and underlines removed. When a match is found, CIDER will return to function key control in RECORD mode with the required statement positioned at the top of the screen and the remainder of the screen filled with the following records.

If no match is found CIDER will return to function key control in record mode with the document at the end of document and the display screen adjusted accordingly.

It is possible to skip to a statement number in a Fortran program or, for instance, to the RUN card in a program or listing. To skip to a RUN card the first five characters of the card must be entered on the screen, e.g. if the run card was:

        *RUN

then *RUN should be typed on the screen. If however it was:

        *RUN, 4, 1000, 1

then *RUN, should be typed on the screen.

COBLOC

COBLOC is a programming system developed by the University of Wisconsin which enables digital simulation of analogue computation. The DRUM SCOPE version of COBLOC has been modified to run under the DAD system, and is now available to interested users. COBLOC is entirely written in 3600 COMPASS, thus restricting its use to 3600 only. Further information can be obtained from Mr. P. Hanlon, C.R.S., Canberra and COBLOC is described in IEEE, Trans. EC-15, 74 (Feb., 1966).

Network Flow

The Control Data Network Flow Routine (CDC Publication 60130500) is now available for use with the DAD system.

Core requirements of the DAD system place greater restrictions on the number of arcs and the number of nodes that the network flow system can handle. Under DAD, the maximum number of arcs is limited to 3000, and the maximum number of nodes to 1000.

III. 3200

Overlay Control Cards

It is now possible to use 3600 type control cards to put overlay control cards on the load-and-go tape on the 3200s. The form of the card is:

$$^7_9MAIN, lo, lgo$$

$$^7_9OVERLAY, lo, no, lgo$$

$$^7_9SEGMENT, lo, ns, lgo$$

where lgo is the load-and-go tape logical unit number, lo is the overlay tape logical unit number and no and ns are the overlay and segment numbers. This eliminates the need for ^7_9XFER, lgo cards in this context although this form is still accepted.

Note that the cards:

$$^7_9MAIN, lo$$

$$^7_9OVERLAY, lo, no$$

$$^7_9SEGMENT, lo, ns$$

must not be used in binary decks for the 3200.