

DIVISION OF COMPUTING RESEARCH

NEWSLETTER NO. 50 - 1st OCTOBER, 1969

I. GENERAL

Publications Distributed this Month

NL - Newsletter No. 50

Other Publications Available

C5 - CSIR LSQFUN Minimization of sum of squares of functions of several variables.

Adapted by P.J. Ross, C.S.I.R.O., Division of Soils, St. Lucia, Queensland from M.J.D. Powell, AERE, Harwell, U.K.

C5 - CSIR MINFUN Minimization of function of one variable.

Adapted by P.J. Ross, C.S.I.R.O., Division of Soils, St. Lucia, Queensland from M.J.D. Powell, AERE, Harwell, U.K.

Q4 - CSIR DRAWCURV Curve drawing on the plotter.

G. Shearing, C.S.I.R.O., Division of Computing Research, Canberra.

Q4 - CSIR DRAWGRAF Graph drawing on the plotter.

G. Shearing, C.S.I.R.O., Division of Computing Research, Canberra.

Basic Fortran Courses

Sydney - 13 October, 1969. All places on this course are filled.

Melbourne - 27 October, 1969. All places on this course are filled.

Advanced Lectures

Brisbane - 7 October, 1969. A series of advanced programming lectures will be held at the Cunningham Laboratories over a period of about three days. Those who wish to attend should contact the Brisbane Branch of the Division (Telephone 73121, Ext. 209).

Seminars

The following Seminars will be held at 2.00 p.m. in the Lecture Room of the Division of Computing Research in Canberra. Each is on a Thursday.

9th October - Demand Processing under EXEC 8  
(A. Dumont, Univac Division, Sperry Rand).

23rd October - The Engineer and the Computer  
(J.A. Webster, Division of Computing Research)

A.N.U. Lectures

The Computer Centre at A.N.U., Canberra is continuing its course on "System Requirements for Real-time Applications" and has begun two new courses, one on "Scientific Data Analysis" and the other on "Programming Languages and Their Translators". Information about these courses can be obtained from the A.N.U. Computer Centre.

Use of Small Computers

Arrangements for the workshop on "Small Computers in the Experimental Environment" foreshadowed in the August Newsletter are now being completed. It will be held 13 and 14 October, 1969 in the Lecture Room, Division of Computing Research, Canberra.

Those who wish to attend the workshop, and who have not already done so, should complete the Registration Form available from all Branches of the Division of Computing Research and return it to the Education Officer, Division of Computing Research, Canberra, without delay.

Indexes Available

A new edition of the index (DCRINDEX) of Divisional publications is now available through SRLIST. A copy of SRINDEX is also available. This index provides a cross-referenced list of subroutines.

The Division of Mathematical Statistics has prepared a new edition of the index of statistical routines for C.S.I.R.O. computers. The index includes many routines written within the Division of Mathematical Statistics as well as routines from other sources. Application for a copy of the index should be made to: Division of Mathematical Statistics, C.S.I.R.O., Alpha House, Newtown, N.S.W. 2042.

### O SERIES Programs

The set of statistical programs developed by Dr. P.C. Owen which are resident on the 3600 disc are described in a new Technical Memorandum (69/11) available from the Division of Land Research, Canberra.

### Vista Camera

A camera is being installed in Canberra to take photographs of Vista under direct computer control.

The camera is a Robot Recorder, with automatic wind-on, a solenoid operated shutter and a 75 mm. Schneider Tele-Xenar, f3.8 lens giving a frame size of 24 mm. x 24 mm. on 35 mm. film. It is permanently mounted on a rigid support, six feet from the screen, with preset focus, enabling the camera to be treated as a peripheral device which is maintained in a ready state by the operators, and may, for instance, be used by any program, including those entered via the jobstack.

A control unit for the camera is now being completed and will soon be available for use. Software (Fortran subroutine calls in the Vistran system) to drive the camera will also be available shortly.

### Remote Teleprinters in Canberra

The remote console Teletype system is at last operating over APO telephone lines to various locations in Canberra. While the equipment has been available for a year, the lines have only now been connected.

The consoles are located at:-

Division of Computing Research, Black Mountain,  
(Remote Console Room and Computer Room)

Division of Land Research, Black Mountain,

Division of Plant Industry, Black Mountain,

Pye Laboratory, Black Mountain,

Division of Wildlife, Gungahlin,

Public Service Board, Barton, and

Forest Research Institute, Yarralumla.

Five machines may be operated simultaneously but only four of these may be over telephone lines. For the next few months a timetable is in operation whereby each user has access to the 3600 for half the working day. Further development

of the system in the near future will permit any of the present eight teletypes (plus perhaps a few more) to have automatic access to the 3600 on demand.

As data is transmitted using relays to switch a DC current in the telephone line, the present system is limited to a radius of seven or eight miles from the Canberra laboratory.

## II. 3600

### Plotting Charges

Because of the large amount of drum space pre-empted by plot documents waiting in the output lists, the PLOT routine now generates plot information in a more concise manner. Users should notice a substantial decrease in the size of their plot documents, together with a commensurate decrease in the CPU time required to generate these documents. In order to recoup paper and other costs, the rate of charge on plot documents has been increased fourfold, to 4.096 seconds per sector. Since the size of plotter documents has been reduced this will not mean an increase in cost to the user. There is no change in plotter charging on the 3200.

### Random Access EQUIP Statement

A 3600 job may now have the declaration:

```
*EQUIP,66=RA
```

enabling jobs which use the random access unit, logical unit 66, to be 3200/3600 compatible. Previously, although necessary on the 3200 the declaration was invalid on the 3600 and now, since logical unit number 66 is still automatically assigned to random access, the declaration is ignored.

### Line Printer Plotting

The subroutine QUIKPLØT, which produces on a line printer diagrams similar to AUTØPLØT, is not part of the Kwiktran library so 3600 users have had to supply their own copy. To obviate this need a copy of QUIKPLØT is now maintained as a disc document and may be called as follows:

```

*JOB,....
*DESC,DF
*DFCØPDR,52,CBC*****,QUIKPLØT
*KTN,I=52,X
*KTN,L,X,C,R
:
CALL QUIKPLØT(....)
:

```

III. 3200

There is no 3200 news this month.

IV. PUZZLE CORNER

Correct answers to last month's puzzle were received from E.E. Adderley, K. Barnes, Miss J. Clarke, J. Goncz, D. Matters, G.R. Patterson and G. Petru.

The uniqueness of the solution is shown below.

Let  $x^2 + Ax + B = (x + r) (x + s)$

and  $x^2 + Bx + A = (x + t) (x + u)$

Then  $A = r + s = tu$  and  $B = rs = t + u$ . Since  $A < B$ ,  $tu < t + u$ .

If both  $t$  and  $u \geq 2$ , then  $tu \geq 2 \max(t,u) \geq t + u$ , a contradiction.

Hence either  $t$  or  $u = 1$ . Thus  $rs = r + s + 1$ . Neither  $r$  nor  $s$  can

equal 1 and if both exceed 2, then  $rs \geq 3 \max(r, s) > r + s + 1$ ,

another contradiction. Hence one of them, say  $r$ , is 2 and  $2s = s + 3$

or  $s = 3$ . We then have  $A = 5$ ;  $B = 6$  as the only solution.

The problem this month is to write a Fortran replacement statement that will give the value of  $Y$  in terms of  $X$  for the function illustrated below.



