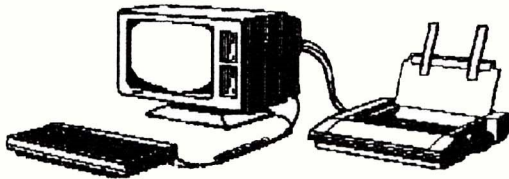# FEBRUARY 96

HEADS OF THE VALLEYS PCW USERS GROUP

Club meetings are held on the first Friday of each month at 7.30pm at the address below-

BIRCHACRE
CROES BYCHAN
LLWYDCOED
ABERDARE
MID. GLAM.
CF44 0EJ.
Tel. 01685-874972

Further details can be obtained by contacting either ROY UNDERWOOD on ABERDARE 01685-874972 or ANTHONY HILL on CARDIFF 01222-618012

The aim of the club is to further the knowledge of PCW users, so that they can derive the full benefit from their computer.

Help and advice can be given on most software, this includes such programmes as LocoScript, Masterfile, MicroDesign, ProScan, SuperCalc, Mini Office, Comms. The club also has a large library of Public Domain files.

A file transfer facility is available, i.e. copy files from 3" disk onto a 3.5" disk, also CP/M files can be copied to MS-DOS formatted disk's, and MS-DOS files copied to CP/M formatted disk's.

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EDITORIAL

Some of the newer club members may not be aware that the club has a large selection of PD (Public Domain) programmes, and a complete collection of the 8000 Plus magazine (now called PCW Plus) contained in yearly binders (12 magazines) from issue 1, October 1986. The magazines are very useful if you wish to read up on a particular subject i.e. SuperCalc, MasterFile, LocoScript, etc. The tutorials usually run over a few months, and there is an index for the previous year in every September issue, but if there is any difficulty locating a particular subject Roy has access to a reference disk contain all the subjects covered by the magazines. The magazines can be borrowed by club members, but must be left in their respective binders. PD (Public Domain) software is freely available on a large variety of subjects. Any member seeking a particular programme/subject should contact Roy or Anthony.

Also for the benefit of new members who may be experiencing a problem with their PCW/PcW the club has the diagnostic disks "PCW Check-Up" which is available to all club members. Running "PCW Check-Up" on your computer will quickly pinpoint any fault you may have on drives, memory, keyboard etc. If you require the disks to run a check on your computer contact Roy. Please return the disks as soon as you have completed the necessary checks on your computer.

Any member with an Inkjet /Deskjet/Bubblejet printer can now get black and coloured ink refills locally. The firm to contact is Inkwell, 8 Brecon Road, Abergavenny, Gwent. NP7 5UG. Tel.01873-854913. Mention the Heads of the Valleys PCW User Group for a club discount.

The response to my appeal for articles for the newsletter has been overwhelming. Two to date.

ALL FORMATS COMPUTER FAIRS

10 Feb   University of the West of England, Bristol.
11 Feb   National Motorcycle Museum, Birmingham.

AUCTIONS

No details at present.

Next Meeting 1 March 1996 7.30pm.

QUIKMYTH

QUIKMYTH is a Locofile database of Greek Mythology. Although continually updated the latest version will be sent to the buyer by return of post. As soon as QUIKMYTH2 is ready this will be sent as well. In other words, buy the first and you get the second disk without any additional cost - but only when it is ready! The second disk will also contain a mini-encyclopaedia of Norse Legend.

Why mix the beliefs of Vikings of the 8th century AD with those of the Greeks who lived five centuries before Christ? Unlike the Greek deities the Scandinavian gods lack grace but are well suited to the warlike Northmen who destroyed Lindisfarne on the 8th of June 793 AD. The Greeks influenced the development of British literature, mathematics, astronomy and philosophy without invading the British Isles. The Vikings were more direct! But in different ways, they made the two nations of Britain what they are today. The philosophy behind QUIKMYTH is that to fully understand any aspect of political, economic or social life in these islands it is useful to know a little Norse and Greek Mythology.

Both versions are on 3.5" disks. There are no 3" copies available. The database takes up 126K in its basic form, but with the Norse data added you will need about 160K free on drive M - the database works so much faster on drive M. The Greek part of the database is fully cross - referenced in that names appearing in capitalised letters have their own entry - by using this simple system the user can follow any path, or learn more about a particular name that interests him or her. The Norse section is not cross - referenced in this way but Record numbers are inserted throughout to link the various related characters and myths.

This database is not intended for the advanced student and assumes that the user has little or no knowledge of Mythology. Nevertheless, it contains thousands of words displayed in small segments that are easily joined together - but if you do decide to buy the disk, feed back is appreciated! There are bound to be errors and although no prizes are offered if you spot a mistake, the next edition of QUIKMYTH could have your input keyed in. Whether you decide to invest £7.50 or not it is good to hear from someone else who is obviously interested in legend and fable. Remember: in the Greek Myths you will discover yourself: in a bank vault you will find only gold.

Order from;-
Derrick Gaskin
119 London Road
Brentwood
Essex
CM14 4NP.

CP/M PLUS

First the name. It seems to be called CP/M PLUS. However, once inside the covers of the documentation, it's CP/M 3. The term CP/M 80 seems to be a generic term referring to the family of CP/Ms for Z80s or 8080s.

I ordered a 'raw' version, that is, not configured to any particular system. It came on two eight inch floppy disks and was accompanied by 3kg of documentation. The disks contain the files required to generate the BDOS, an example BIOS, a large HELP file, and numerous utilities including 2 assemblers, a debugging program, an editor, a linker, a library program as well as those required for routine file manipulation.

The documentation came in two ring-binder files and consists of 5 modules: the User's Guide, Programmer's Guide, System Guide, Programmer's Utilities Guide and Symbolic Instruction Debugger Reference Manual. There is also a pocket guide to the Symbolic Instruction Debugger. The documentation is well presented and of a high standard. I recognise some parts as being lifted from the old CP/M 2 documentation but its largely new and a complete contrast to Digital Research's documentation for CP/M 2. It is impossible for me to be sure how new users would get on, but my guess they would handle the User's Guide with a little outside help. The rest is for programmers only and, apart from a few minor gaps, is fine for them. Incidentally, why do they call it a User's Guide - surely they expect more than one person to use it. In addition there is an extensive HELP file on disk which covers the same material as the User's Guide. I discuss this later.

BANKED AND UNBANKED VERSIONS

CP/M 3 comes in two versions. The unbanked version is a slightly cut down version which is loaded into a single bank of memory - that is it can utilise a maximum of 64K bytes of memory - and requires the same hardware facilities as CP/M 2. Because is offers more facilities than CP/M 2 it occupies more core, about 13K instead of the 6 or 7K that CP/M requires (on my system) and hence less space is available for the user's programs.

The banked version uses 2 or more banks (blocks of 64K bytes) of memory. One of these is used for storing one's program and about 4K of CP/M. The rest of CP/M resides on one of the other banks of memory and any remaining memory is used for disk and directory buffers. I will describe these buffers in the next section. Thus about 60K of memory is available for the user's program and a substantially larger than usual area is available for CP/M.

To run banked CP/M 3 one must of course have a computer with at least two banks of memory and the necessary hardware for selecting the bank to be accessed. In addition, to permit communication between banks one must have about 4K of memory, at the top of the memory range, which is accessed independently of which memory block is currently selected. This is known as common memory. My CPU board (model CB2 produced by SSM) purchased in 1980 has 4K of memory which doesn't know anything about bank select and which is accessed in preference to external memory and so very easily provided me with the common memory facility. I don't know whether this was just luck or whether the board's manufacturers predicted the appearance of CP/M 3.

My system currently has two 64k blocks of memory and one 16K one and a memory mapped disk drive. I have sketched out a map of its memory allocations in figure 2. Note that a copy of the CCP is stored in memory so that it can be loaded almost instantly without accessing the disk at each warm boot.

BLOCKED DISK TRANSFER

CP/M programs usually expect to transfer data to and from disks in records of 128 bytes. However the disks themselves frequently work more efficiently if larger blocks, say 1024 bytes, are used. If one wants to read a file sequentially, that is, starting at the beginning and then reading it in order, there is no problem. The operating system reads the first 1024 byte block into a buffer and passes each of the first eight 128 byte records across to the program as they are required. Then the second block is loaded and the process continues. Writing is similarly straight forward. The problem arises when a program is reading from and/or writing to several files. Usually there is only one buffer area for the blocks so if, for example, a program wants to read a 128 byte record from one file and then write a 128 byte record to another, the original 1024 byte block read into the buffer by the initial read will be destroyed by the write operation and will have to be reloaded when the second record is required to be read. In the worst situation each record read will require a disk operation as opposed to one every $1024/128 = 8$ record reads and each write will require both a read and a write operation. Similar considerations will apply when one is randomly accessing files - that is reading or writing records in an order that is not sequential. The resulting disk operations are likely to be very slow and subject the disk drive and floppy disks to unnecessary wear.

The obvious solution is to use several buffers so each file being read or written can have its own buffer. This is what CP/M 3 does, with the buffers being stored in the extra memory banks so that they don't reduce the space available to programs. To see what difference this makes in practice, I carried out a series of time trials with CP/M 2, the unbanked version of CP/M 3 with only one buffer block and the banked version with a large number of blocks available. The results are given in table 1. The first example was with ratfor, a program which reads a file containing a program written in ratfor ("rational FORTRAN") and translates it to regular FORTRAN. Thus one file is read and another is written. The program makes little attempt to block the input and output. The second example is a regular FORTRAN compile with one file being read and two written. In this case the material does tend to be read and written in chunks so less rereading and rewriting of the buffers might be expected than in the ratfor example. Minor differences in the timings are probably not significant since the timings depend to an extent on the way the files are placed on the disk and this varies from run to run.

Since no blocking is required for the disk using 128 byte blocks (a standard single density disk), CP/M 3 does not use its blocking-deblocking code and the timings for the two versions of CP/M 3 are the same. For the disk using 1024 byte records, CP/M 2 and the unbanked (or more accurately the single buffer) version of CP/M 3 perform about as well as for the disk with 128 byte records for the ratfor example and somewhat better for the FORTRAN compile. However gains are made for both examples when the banked version of CP/M 3 is used. In fact, for the ratfor example the difference in disk activity was quite dramatic, almost continuous disk activity was replaced by just an occasional access when the banked version of CP/M 3 was used. The final set of tests was with a virtual disk - that is RAM memory being used to simulate a disk. 'Disk' transfer times are negligible and all 3 operating systems work equally well. I think the increase in speed with CP/M 3 is well worth having but it is not nearly as large as some people would have us believe.

A similar system applies to the disk directories. Directory information for each file occupies 32 bytes so multiple buffer deblocking is also used for them. One can also configure CP/M 3 to use more efficient methods of scanning the directories to find a requested file. I can imagine such techniques would be important for high capacity hard disk but cannot detect any difference with my 1 megabyte floppy disks.

Note that CP/M 3 does not use the buffers when it does not have to, for example when the disk itself uses 128 byte records or when whole blocks can be loaded directly into memory, say when loading a program. CP/M 3 does not appear to make a consistent effort to minimise disk operations with random access files beyond the simple buffering I have just described and so, for normal use, there is no sense in allocating vast amounts of memory to the disk buffers.

FOOLS PARADISE

If you refuse to believe that money is the root of all evil, and so decide to spend a pound on the National Lottery in the hope of picking up the jackpot, how will you select your numbers? For the benefit of punters who want to know the exact odds against winning that elusive top prize, the number of **combinations, (any six from forty-nine), is calculated as follows:

$$\frac{49*48*47*46*45*44}{2*3*4*5*6}$$

The result means that to guarantee winning the jackpot, you would need to speculate £13,983,816. The odds reflect the total number of possible selections, while unlike a sweepstake, you might be required to share the top prize. A marginal increase in the expectation of a return for your "investment" could be gained by joining a syndicate, but the odds would still be nearly fourteen million to one against each member's bid for the jackpot.

Remember we have been looking at the number of possible chances without considering the probability factor which is described in the Oxford Dictionary as "the likelihood of an event measured by the ratio of the favourable chances to the whole of the chances." - The factor is recognised as a science, but it cannot be applied to the lottery.
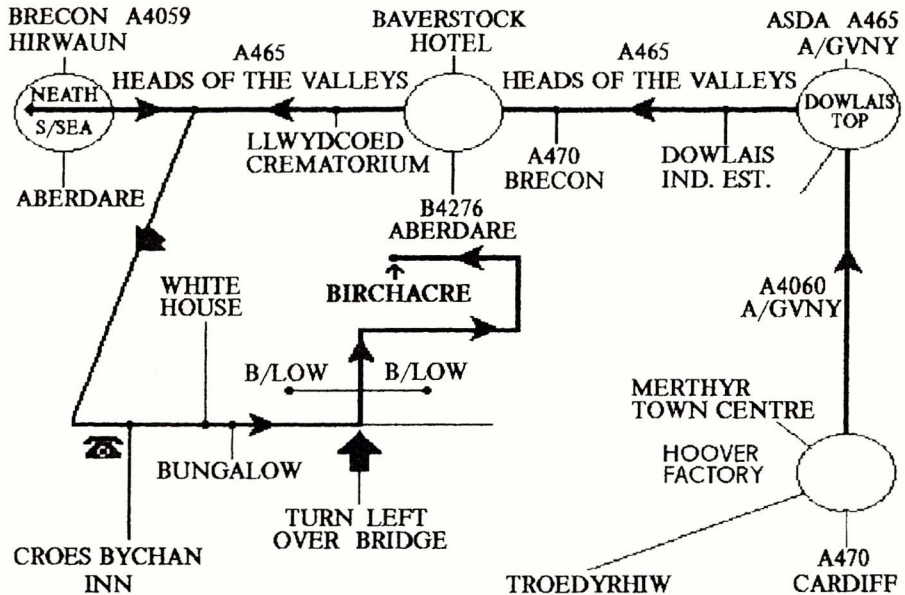
Arithmetic or geometric progressions eg (1 3 5 7 9 11), or (4 6 8 10 12), and even the sequence (123456), are each as likely to appear as family birth dates or past results.

Before the current National Lottery, a "ping pong" machine was used to find the 65,000 apparent random numbers to loop in to BASIC. Try running the program below which originally appeared as a pools predictor in a past edition of our favourite magazine. Now adapted for use with the N/L., see how it avoids selecting what are sometimes called improbable chances, but you have been warned.

The same six numbers should not appear each time because the number generator is reseeded by the PCW internal clock.

```
10 INPUT "How many on each board"; n% : DIM marked% (n%)
20 INPUT "How many selected";x%: RANDOMIZE PEEK (64504!)
30 FOR j%=1 to x% : magic%=INT(n% * RND(1)+1)
40 WHILE marked%(magic%) : magic% =INT(n% * RND(1)+1): WEND
50 marked% (magic%)= -1 : PRINT magic% : NEXT j%
```

** A permutation i.e.,6 from 49 in every order would cost £1007,888,777.

Vic Webster

BRECON A4059
HIRWAUN   A465   BAVERSTOCK HOTEL   A465   ASDA A465 A/GVNY

NEATH S/SEA   HEADS OF THE VALLEYS   HEADS OF THE VALLEYS   DOWLAIS TOP

LLWYDCOED CREMATORIUM   A470 BRECON   DOWLAIS IND. EST.

ABERDARE

B4276 ABERDARE

WHITE HOUSE   BIRCHACRE   A4060 A/GVNY

B/LOW   B/LOW

MERTHYR TOWN CENTRE

HOOVER FACTORY

BUNGALOW

TURN LEFT OVER BRIDGE

CROES BYCHAN INN   TROEDYRHIW   A470 CARDIFF

Go to the last roundabout on the A470 Merthyr/Cardiff road and take the third turning left A4060/Abergavenny. Follow this road for approx. three miles to the roundabout on the A465 Heads of the Valleys road, take the 2nd turning left A465 Neath/Swansea road. Follow this road for approx. 6 milesa until you come to the Baverstock Hotel on your right hand side, the next turn on the left (opp. hotel) is the B4276/Aberdare, ignore this turn. 100 yards further on is another left turn sign-posted Llwydcoed Crematorium, ignore this turn also. Carry on for another mile until you come to cheverons painted on the road indicating a right and left turn. Turn left here and [*] follow the road for 300yds. you will come to a pub on your left and a telephone box on your right (the pub is called the CROES BYCHAN INN) next to the pub is a large white house , then a bungalow, turn left after the bungalow across a small river bridge into a lane. Follow this lane for 30yds. (ignore the turnings into the bungalows on your left and right) until you come to a "T" junction in the lane, turn right here and follow this lane for 200yds. This will bring you into BIRCHACRE. If you get lost, phone (874972) from phone box opposite the pub, and someone will come and meet you.

The distance from the Dowlais Top roundabout to the turn off the Heads of the Valleys road is about 8 miles.

From Neath/Swansea take the A465/Abergavenny road for half a mile until you come to the cheverons painted on the road, turn right (sign-posted Llwydcoed) follow as from [*] above.