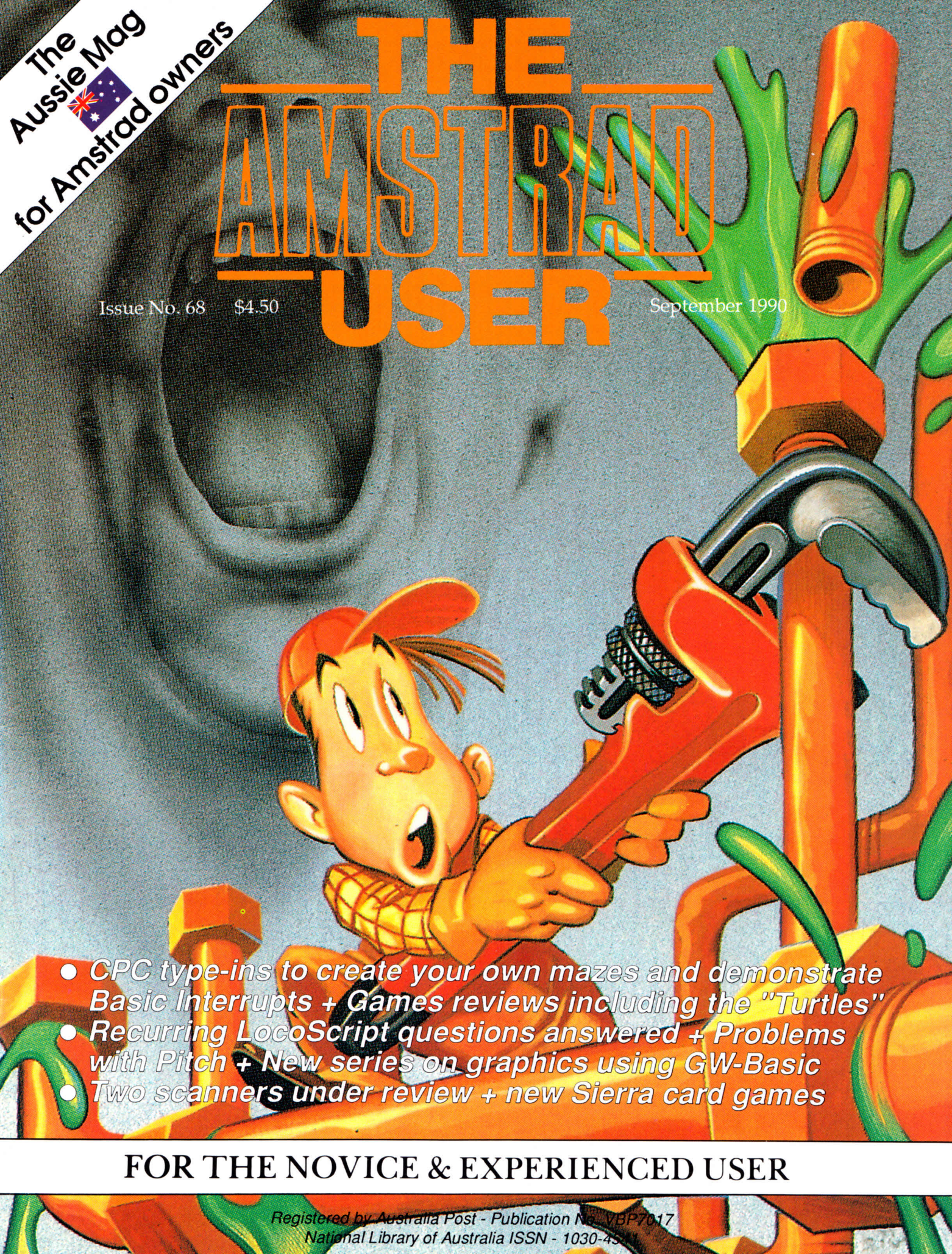


The Aussie Mag
for Amstrad owners

THE AMSTRAD USER

Issue No. 68 \$4.50

September 1990



- *CPC type-ins to create your own mazes and demonstrate Basic Interrupts + Games reviews including the "Turtles"*
- *Recurring LocoScript questions answered + Problems with Pitch + New series on graphics using GW-Basic*
- *Two scanners under review + new Sierra card games*

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FRONT COVER: The box cover picture taken from the CPC game "Pipe Mania", for which you will find a full review on page 35 of this magazine.

THE AMSTRAD USER

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All enquiries and contacts concerning this Publication should be made in the first instance by writing to The Amstrad User, 641 High Street Road, Mount Waverley, Victoria 3149, Australia. Urgent matters can be phoned through on (03) 803 9661.

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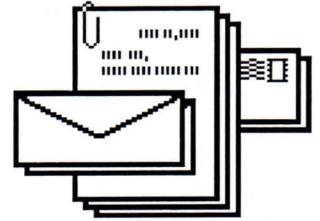
The subscription rate (for Australia) is \$45.00 for 12 issues of the magazine only, or \$80.00 for 12 issues of the magazine plus tape (for CPC range only) containing programs appearing in that issue. Postage is included in the above prices. For subscriptions to New Zealand, PNG, Solomon Islands or Vanuatu please add \$24 airmail. Other overseas prices available upon application.

Please note that whilst every effort is made to ensure the accuracy of all features and listings herein, we cannot accept any liability whatsoever for any mistakes or misprints. Contributions are welcome from readers or other interested parties. In most circumstances the following payments will apply to published material: Cartoons \$10.00 and a rate of \$15.00 per page for programs, articles etc. unless otherwise previously agreed.

Contributions will not be returned unless specifically requested coupled with a suitable stamped and return addressed padded bag (for tapes or discs).

The Amstrad User is an independent Australian magazine, in no way affiliated with Amstrad or their Australian distributors or any dealer in either software or hardware (The Amstrad User Shop excepted).

Letters to the Editor



A monthly selection of your comments, hints and tips, advice and news - all shared for the benefit of Australasian Amstrad users.



In your July 1990 issue, Olive Cotter asked about upgrading a CPC464 to full CPC6128 specifications and made reference to an earlier letter on the subject. As one who has upgraded his CPC464, might I make a few comments about what is involved and the best way that she should tackle it?

For the 464 owner who has just the basic computer without a disc drive, my advice is to sell the 464 and buy a 6128. They are readily available at reasonable prices on the secondhand market and the changeover will cost much less than purchasing the memory expansion unit and disc drive as a separate feature.

The owner who has a memory expansion unit and/or a disc drive and, who like myself prefers the 464 keyboard, now has an easier way of upgrading than when I did it a few years ago. My upgrade involved desoldering the 464 ROM, inserting a ROM socket and then fitting the 6128 ROM. This was carried out for a very reasonable price by a professional. Don't tackle it yourself unless you have worked on printed circuit boards with a soldering iron previously, as you could do irreparable damage.

As mentioned by Mike Perry in your February issue, the simple way of doing the upgrade is to purchase a ROMBOARD EXTRA from Microstyle, 212 Dudley Hill

Road, Bradford BD2 3DE, U.K. Tel: 0274-636652 at a cost of £20.00 (plus post and handling). This board has sockets for six conventional ROMs (e.g. Protect, Promerge+ and Utopia) and a seventh socket to take the 6128 ROM. It even has a cold reset button which saves turning the power off when the computer crashes as the result of a faulty program.

There is just one fly in the ointment, however. As a result of a copyright dispute between Amstrad, who manufacture the hardware, and Locomotive, who hold the copyright for the code in the ROM, spare 6128 ROMs are generally only available for repairs to 6128s, and for replacement of faulty 6128 ROMs and not for upgrades. Microstyle did have some stock at £22.95 and V.S.E. Technical Services, Unit 6, 8 Nursery Road London SW9 8BP, U.K. Tel 071-737-0234 had some at £18.50. These stocks could well be exhausted by now. V.S.E. can also supply CP/M+ discs at £21.90.

CPC464 owners who are interested in upgrading might also bear in mind that some of the most popular software needs only CP/M+ and/or the memory expansion, particularly if the D'kronics software is used, rather than Bankman. However some programs do require the 6128 ROM to operate correctly.

Peter Campbell, Nth Hobart, Tas.



I am writing to enquire about the Desk Top Publishing program from Cue Three Software, Page Publisher. I would like to know if the program is compatible with Extra Extra (font and clipart disc). Also, I own a CPC6128 and a LQ3500 printer. Is the program compatible with this printer? How many clipart pictures are there in the clipart file and how many fonts are included on the other side? You mentioned copy and transfer tools in an article; is the section that you copy set or can you vary it? Could you also tell me if I could purchase the program through the Amstrad User. It's a great mag, keep up the fantastic publications.
Jason Chaffey, Glen Innes, NSW.

Sorry we can't answer your questions here, Jason, however we can direct you to Cue Three Software themselves. You can contact them on (002) 535318



I am writing in regards to the Hall of Fame section that used to be printed in the mag many, many moons ago. Unfortunately due to too many unfaithful Amstrad games addicts you withdrew it, shame! I found it very interesting to see how high people score.

Secondly, I have a 5.25 drive on my 6128 and I would like to convert it to a default mode, as is

in drive A; Could you tell me if this possible? Any advice on this subject would be greatly appreciated.

Tony Barberi, Ascot Vale, Vic..

The answer is short and sweet and very simple ; No. It cannot be done.



I am writing to the people who have a 464 tape version and

want to copy their commercial games. All they have to do is have a double cassette deck on a radio or stereo, use a clear tape and dub the games. The same way you would record a song from one tape to another. Then you can put the original away, saving any damage (don't use a cheap tape).

And could you please put a hint sheet in your magazine of King Solomons Mine (Adv. Game Disc) I can get to the swamp with my vine, then I drown in quick sand or the mosquitoes kill me.

HELP, please please before Mum has be committed.

Sally Cowin, Tenterfield, NSW.

This is a story about Dick, and how Dick went bad without even knowing it: As Dick was growing up, his parents tried to teach him to share. If they gave Dick some candy while his friends were around, they would say "Dick, be sure to share with your friends." As a child, Dick didn't like sharing; sharing meant that he had less for himself. But eventually Dick learned to enjoy making his friends happy by sharing with them. He would have less, but they would be happy, and he liked to see his friends happy.

So Dick grew up to be a generous person. He would share everything he owned. Eventually, like all good, smart people, Dick bought a computer and some really good software. He made many copies of his cool software and gave the copies to his friends, because this

made his friends very happy. The software companies that made the cool software Dick copied had to raise their prices to cover their costs, because they weren't selling enough software. As a result, all of the people who were not Dick's friends had to pay more for their cool software. Within a couple of years, Dick's generosity put several small software companies out of business.



As the owner of a PCW9512 and being "computer illiterate",

I write to gain the assistance of you or your readers who may be able to assist me with my difficulties of using Public Domain program Games Compendium #813.

On receipt of my disc, I proceeded to make a copy, see how I have grasped the first fundamental; I used the 8000COPY utility after discovering that the disc supplied was a 178K disc.

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I then proceeded to use the chess program. This was straight forward, save for the task of familiarising myself with algebraic notation, a very new and very welcome experience that simplifies life.

The game proceeded smoothly until such time as I wanted to move my rook A1-C1, B1 & C1 were unoccupied, my opponent, Mr. Public Domain stated this move was illegal. I purposely cleared my throat several times, I entered the famous quotation from Bernard Shaw, "not bloody likely" and then realised the feelings of Mr Public Domain were beyond my influence.

In another game, when my strategies were reaching a climax, Mr Public Domain moved his king in a fashion similar to the move of a knight and declared the game stalemated.

I wonder if you, or any of your readers, could give some clue to where I have blundered. Alternatively, could anyone supply me with details of a software package that would facilitate me playing chess with my PCW9512.
Geoffrey V Flower, Devonport, Tas.

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Earlier this year (January Issue) you published my letter which detailed how Mini Office Professional could be operated from drive B: on a PCW8512. At that time I had not encountered anyone else who utilised the package and thus I had no reason to suspect that other PCW8512 owners would have any problem in conducting MOP operations on drive B:

However when a fellow club member recently bought an '8512 and accessories which included the Mini Office Pro., I found that the program 'insisted' that the respective modules needed to be loaded from drive A: - even changing the default drive via the Disc Utilities screen had no effect whatsoever. It was possible to run the modules directly, (e.g. typing in SHEET will run the spreadsheet module), but when it came to exiting to MOP's Main Menu, once again we were confronted by the request to place a Mini Office disc in drive A:.

I can only conclude that Mini Office Professional must have more than one version for the PCW range, and that the version which my colleague owns will not respond to being loaded in the B: drive.

My conclusion has been reinforced by the discovery that my colleague's version of the Word Processor is contained in a single file named WORD.COM (50K +), whereas my own version is 'split' over two smaller files, and they are namely WORD.COM and WORDA.COM.

To any reader who may have encountered difficulties by using my method, I offer my sincere apologies and assure you that I was definitely not under the influence of some exotic substance at the time. I have been conducting B: drive operations for almost a year now with great success, and in fact have repeated the 'installation' procedure on several occasions to prove it wasn't just a 'fluke'.

Dennis Murray, Newnham, Tas.



In reply to S.A. O'Callaghans reply caption (TAU 67, August 90), as far as I know, Monopoly is and always has been available for PC Compatibles, the required files are;

MONOPOLY.COM
MONOGRAF.GRA
MONOCODE.CHN
MONOLODE.000 = A total of 84,394 bytes.

The program was amongst some PD/Shareware discs given to me. If it is Shareware or PD for that matter I do not know as the relevant text file/s are missing.

Paul, Howrah, Tas.

All correspondence should be addressed to:

The Editor, The Amstrad User,
1/641 High Street Road,
Mt. Waverley, Vic 3149.

We regret we cannot give any personal replies.

CONTRIBUTIONS

We accept unsolicited articles or program contributions from readers with a view to possible publication, but in the case of programs we must insist that the coding is submitted on either tape or disc. We just do not have the time to key them all in. The tape or disc will be returned if originally accompanied with a stamped and return addressed padded bag.

PEN PALS

We can only apologise that there just isn't enough space to include all of "PEN PALS" this month. The list remains the same as last month's but for the inclusion one new name and address;

Corey Whisson (PC 1512)
Lot 134 Utley Rd
Serpentine
WA. 6205

...and the removal of

Vasko Stoyanovski
14 William St
Preston
Vic 3072

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Full report facilities are available, and the program can be set up for ANY printer, including lasers and daisy wheels.

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News Break



Our monthly update on the gossip, news, releases and the general Amstrad scene from both home and abroad.

CANON CAN ON A PCW & PC

Canon are about to release a new PCW and PC compatible 'bubblejet' printer - the BJ-10e. Hailed as the first desk-top and portable printer in one unit, it weighs in at less than 2 kilos (4lbs to be exact) and takes up no more space than a sheet of A4 paper.

The technology behind the near laser printer quality bubblejet is particularly interesting. From a laboratory accident involving the contact of a soldering iron with a syringe filled with ink came the development of a small electric

heating element on the top of each of 64 nozzles in the print head. The heat applied to the ink within a nozzle causes it to evaporate into a bubble and force out a drop of ink on to the page. Of course this all happens at a great rate of knots, in fact thousands of times per second, to a maximum of 360 dots per inch.

The replaceable ink cartridge also houses the print head and can supply some 1,400,000 character in economy mode or 700,00 in high quality print mode.

DATAFLOW SPC

Dataflow has been newly appointed distributor for the Software Publishing Corporation range of software. This includes some of the best known and most widely used and respected MS-DOS entry-level business software. (SPC was the first company to develop software that used menus rather than commands.)

Their PFS range is intuitive, featuring pull-down menus and context-sensitive help screens. It includes PFS First Choice, a widely acclaimed integrated software package containing a word processor, spreadsheet, database, communications and presentation graphics. PFS is also the well known graphic program Harvard Graphics which allows users to create professional looking charts and diagrams for their presentations. Other titles include First Publisher, First Graphics, and a range of productivity software.

FORTHCOMING CPC RELEASES

A new label called Disney Software is soon to be launched by Titus, a French software house, following a deal signed between them and the Walt Disney Company. They plan to produce games based on Disney cartoon characters as well as Disney films. The first off the rank will be **Dick Tracy** featuring scenes from the movie. Mickey Mouse and Donald Duck are expected to be seen in educational software.

While on the subject of Titus releases, Fire and Forget 2 is nearing completion. It promises to be just as thrilling as F&F1. A special combat vehicle is driven/flown along a winding road picking off members of a huge terror-

ist convoy. The obligatory 'end-nasty' is at the head of the convoy.

Domark are soon to release a new compilation called Heroes. It contains Licence to Kill, Barbarian 2, The Running Man and Star Wars. It should be available on both disc and tape. Domark are also responsible for all the James Bond-based releases. The latest to be added to their list is The Spy Who Loved Me.

Apart from Bond and the amphibious Lotus Esprit, it also features the Russian spy Anya Amasova in an attempt to outwit the arch-villain Karl Stromberg and save New York and Moscow from being nuked.

THE NUMBER YOU HAVE DIALLED...

The phone number we published last month for TRACS, the suppliers of the "Personal Ancestral File" Genealogy program for the PCW, was wrong.

It should have read 0011 44 (for the UK), then 272 682321. Sorry about that!

AUSSIE MADE PC MENU SYSTEM

There is nothing particularly new about PC menus. Most start with a text screen listing available options from which the user can select a number or letter corresponding to the required option which in turn may correspond to a batch file calling up a directory and .EXE or .COM file invoking the option. For newcomers this may present problems. A knowledge of how batch files work, how to create them and how to fix them if they go wrong is necessary. Then there's the time taken to make them look presentable with ASCII borders. Another point quite often overlooked is that while each batch file may only take a few bytes, DOS allocates around 2k per file. There are ways round the problem, but not for newcomers.

To the rescue comes a new menu package "MenuMaker", from Australian software developers 'Kedwell Software' in Brisbane. Installation is achieved simply through its own install file with a few easy prompts on the way. It also creates (or modifies) a file to provide fully automatic loading at turn-on. Once loaded, menu items

can be added at will by simply pointing to them (with mouse or keyboard) and giving them a menu name. MenuMaker is ideal for the beginner because it is so simple to use, yet is just as good for the expert because it allows as much expansion as required. The software is supplied on a standard 5.25" disk and comes with a 16 page instruction manual. It costs \$47.50.

For the more experienced software and systems developers, Kedwell Software have a second version called "MenuBank". It includes all of the facilities that MenuMaker offers but also allows complete customisation of the menu screen, graphics and so on, to help achieve the aims of the developer more thoroughly. It also provides enhanced features such as password protection, hot keys, 9 levels of security, multi-user implementation, full colour and the complete IBM character set. MenuBank is supplied in dual format, and will cost you around \$195.00.

All enquiries to Kedwell Software on (07) 379 4551 or fax (07) 379 9422.

PCW ACCOUNTS

Slipping in under the shadow of a newly released package for the PC comes the same package for the PCW. Digita's System 3 (PC version reviewed in July '90) will be a welcome sight for PCW owners who have been looking for an inexpensive system including stock control, invoicing and cashflow control.

The PCW version has been written specifically for this machine and each module can be used independently or integrated as required. The invoicing module can be used to produce invoices and statements, the stock control module offers inventory, stock valuation and price list facilities, and the cash flow controller - you guessed it - control cash flow.

The System 3 package has sold immense quantities for other machines, particularly the Atari ST. "This is an important release for the PCW, and we are expecting the same kind of response" reports Digita's Jeremy Rhyll. The product (both PC and PCW) costs \$129.00 and is imported by Pactronics. It is available from dealers or The Amstrad User by mail order.

CAT & MOUSE

IAD have just released the Qtronix Mouse. Better known as the "Mighty Cat", it is designed for use with IBM PC/XT/AT/PS-2 and compatible computers.

That's good news for Amstrad 2286 or 2386 owners who would prefer a different style of mouse, but for PC1512, 1640 or 2086 users you are stuck with the mouse you've got! More good news for AT users is that if you need to preserve the serial port on your Amstrad, you can purchase a Bus card to take the mouse.

The cost of the mouse is \$119.95 and for the optional Bus card \$46.95. Both are available from The Amstrad User.

FUN SCHOOL 3 DUE SOON

Most CPC and PC users will recall the phenomenal success of the FunSchool 2 series of programs which amazed everyone by hitting the software charts - a province normally occupied by games.

Clearly Database have been encouraged by this and are soon to release the Fun School 3 series, by all accounts an even better series than its successful predecessor.

For a start, the age breaks have been adjusted slightly. The three packages in the series will now cover: Under-5s, Five to Seven, and the Over 7s. The graphics have been improved to a level comparable with many high class

games, and the whole series has undergone development under the keen eyes of leading educationalists.

Each package has six programs featuring the familiar teddies, robots and frogs and have been designed to encourage development of a range of early learning abilities, including numeracy, comprehension and word skills. Rumour has it that there will also be a version for the PCW, but at the time of writing this could not be confirmed.

The new series will be distributed by Pactronics and we will be featuring a full review of it as soon as we can.

The Rings of Artek - 2



With fingers finally recovered, now it's time for Part Two of the continuing saga from Barrie Eaton.

Part One left you suspended mid-incantation; to break the suspense of your serial adventure, this month we continue to feed you Barrie Eaton's challenging game program.

A long way from achieving your main aim as yet, Princess Shareen remains unrescued but awaiting your gallant arrival. Meanwhile, the evil sorceress, Smyrna, continues to prove herself to be a seemingly invincible foe. Knowing the three rings of Artek to be the key to her downfall, she will go to all possible measures to thwart your quest.... destroying you in the process. Beware of her spies!

When your sufficiently nail-bitten fingers start tapping you should find yourself in familiar territory. To allow you to find your footing we have begun by overlapping last month's portion of the program from "460 DATA 0..." onwards, so prepare yourself for the long journey ahead....

```
460 DATA 0,0,110,0,in a cave inhabited by three witches
. They stand around a cauldron muttering incantations
and stirring the contents,0,0,0,109,in a cave in the
rockface.A river flows to the east
470 DATA 99,0,112,0,on a pathway that runs alongside a r
iver,100,0,0,111,on a half hidden footpath,0,0,114,0,in
the main hall of the castle,102,0,115,113,inside the c
astle keep.A main hall runs from east to west
480 DATA 0,0,116,114,in the main hall,0,0,0,115,on wind
ing steps that take you to the top of a tower.A door
lies before you,106,117,118,117,in the woods,118,118,11
9,117,in a wood
490 DATA 0,0,120,118,in a back alleyway.A wood lies to
the west,108,0,0,119,inside a corner store.It contain
s many items that may be of value,0,0,0,0,in a graveya
rd.It is a forbidding place.
500 DATA 1,** red ring **,2,bag of gold,0,parchment,0,a
quill,0,a sword,0,steel key,13,a green bottle,0,a brac
elet,40,** blue ring **,58,rope,74,a flower,0,an amulet
510 DATA 0,a crystal,105,** green ring **,0,iron key,0,
```

```
a charm,111,a log,0,talisman,0,large key
520 DATA 1,red,1,red ring,2,bag,2,gold,2,bag of gold,3,
parchment,4,quill,5,sword,6,steel,6,steel key,7,green b
ottle,7,bottle,8,bracelet,9,blue,9,blue ring,10,rope,11
,flower,11,rose
530 DATA 12,amulet,13,crystal,14,green,14,green ring,15
,iron,15,iron key,16,charm,17,log,18,talisman,18,magic
talisman,19,large,19,large key
540 WHILE qq%<10
550 PEN 3:PRINT"You are-":PEN 1:PRINT loca$(posi%)
560 LET xxx=INT(RND*121+1):IF xxx=posi% THEN xxx=posi%
570 IF posi%=xxx THEN PRINT:PRINT"The evil Eye of Smyrn
a has found you."
580 IF posi%=xxx AND ar<>1 THEN PRINT:PRINT"The Eye sen
ds out a flash of light and strikes you in the heart."
:GOTO 3730
590 IF posi%=xxx AND ar=1 THEN PRINT:PRINT"The Eye send
s out a flash of light and strikes you in the heart.Ho
wever it has no effect due to your protection."
600 LET zzz=INT(RND*120+1):IF zzz=posi% THEN zzz=posi%:
bn=posi%
610 IF ss=2 THEN GOTO 640
620 IF posi%=zzz AND zd<>1 AND ss=1 THEN PRINT:PRINT"Ar
tek again appears before you.He utters a word then quick
ly disappears again. The word is.....";PRINT CHR$(69
)+CHR$(84)+CHR$(69)+CHR$(82)+CHR$(78)+CHR$(73)+CHR$(65)
:ss=ss+1
630 IF posi%=zzz AND zd<>1 AND ss=0 THEN PRINT:PRINT"Ar
tek appears before you.He says..... Sometimes it pays
to walk through water.He then leaves again in a puff o
f smoke.":ss=ss+1
640 IF posi%=20 AND (ab=1 OR aj=1 OR ap=1) THEN PRINT:P
RINT"As you possess at least one of the rings you are ab
le to pass through.":loca%(posi%,1)=8
650 IF posi%=28 AND ba<>1 THEN PRINT:PRINT"A three head
ed beast suddenly appears in front of the entrance and s
tops you from going any further"
660 IF posi%=28 AND ar<>1 AND an<>1 THEN PRINT:PRINT"It
```



```

senses you are unprotected and with avicious snarl lunges toward you.":GOTO 3730
670 IF posi%=93 AND bb<>1 THEN PRINT:PRINT"A two headed beast suddenly appears in front of the entrance and stops you fromgoing any further"
680 IF ze=1 THEN PRINT:PRINT"As the evil queen Smyrna lies dead she disappears and in her place appears the princess Shareen finally free from the evil power that kept her prisoner.":GOTO 3810
690 IF posi%=93 AND at<>1 AND ar<>1 THEN PRINT:PRINT"With a vicious snarl it pounces upon youand devours you.You become one more of its victims.":GOSUB 3730
700 IF posi%=120 AND zf<>1 AND zj<>1 THEN PRINT:PRINT"A n elderly gentleman stands at the counter and watches you"
710 IF posi%=8 AND zk<>1 THEN PRINT:PRINT"Smyrna stands before you and sneers."
720 IF posi%<>8 AND zk=1 THEN zk=0
730 IF posi%=108 AND ac=1 AND af<>1 AND zn<>1 THEN GOSUB 4420
740 IF posi%=64 AND zm=1 THEN obj%(2)=64:zm=0:zn=0
750 IF posi%=104 AND zp=1 THEN PRINT:PRINT"As you have already been here and taken the amulet you get sent to another place":posi%=45:PRINT:PRINT loca$(45)
760 IF zp<>1 AND posi%=104 AND an=1 THEN PRINT:PRINT:PRINT"The Warlocks put a curse on this room. You are transported to another location":zp=1:posi%=45:PRINT:PRINT loca$(45)
770 IF posi%=30 AND ai=1 THEN PRINT:PRINT"you are protected and may proceed.":loca%(posi%,1)=21
780 IF posi%=62 AND (ab=1 OR aj=1 OR ap=1) THEN PRINT"Having at least one of the rings allows you to enter the forbidden zone":loca%(posi%,1)=50
790 IF posi%=43 AND zr=1 THEN obj%(10)=43 ELSE IF posi%=56 AND zr=1 THEN obj%(10)=56
800 kk=0
810 a$="":IF loca%(posi%,1)>0 THEN a$="North"
820 IF loca%(posi%,2)>0 AND LEN(a$)>0 THEN a$=a$+",South" ELSE IF loca%(posi%,2)>0 THEN a$="South"
830 IF loca%(posi%,3)>0 AND LEN(a$)>0 THEN a$=a$+",East" ELSE IF loca%(posi%,3)>0 THEN a$="East"
840 IF loca%(posi%,4)>0 AND LEN(a$)>0 THEN a$=a$+",West" ELSE IF loca%(posi%,4)>0 THEN a$="West"
850 IF LEN(a$)=0 THEN a$="Nowhere at all!"
860 PRINT:PRINT:PEN 3:PRINT"You can go:- ":PEN 2:PRINT a$
870 e=0
880 FOR x=1 TO 19:pp%=0:IF obj%(x)=posi% THEN pp%=1
890 IF pp%=1 THEN 910
900 NEXT:GOTO 940
910 IF e=0 THEN PRINT:PRINT:PEN 3:PRINT"You can see:- "
920 PEN 2:PRINT obj$(x):e=e+1
930 GOTO 900
940 PEN 1:PRINT:PRINT:PRINT"What do you wish to do now?":PRINT:INPUT "",z$

```

```

950 z$=LOWER$(z$):y$=LEFT$(z$,2):x$=LEFT$(z$,3):w$=LEFT$(z$,4):o$=LEFT$(z$,5):q$=LEFT$(z$,6):p$=LEFT$(z$,7):r$=LEFT$(z$,8):u$=RIGHT$(z$,9):t$=RIGHT$(z$,10)
960 CLS
970 IF (y$="n" OR w$="go n") AND loca%(posi%,1)<>0 THEN kk=1:posi%=loca%(posi%,1)
980 IF (y$="s" OR w$="go s") AND loca%(posi%,2)<>0 THEN kk=1:posi%=loca%(posi%,2)
990 IF (y$="e" OR w$="go e") AND loca%(posi%,3)<>0 THEN kk=1:posi%=loca%(posi%,3)
1000 IF (y$="w" OR w$="go w") AND loca%(posi%,4)<>0 THEN kk=1:posi%=loca%(posi%,4)
1010 IF kk=0 AND (y$="n" OR y$="s" OR y$="e" OR y$="w") THEN kk=1:PRINT"You can't go in that direction":PRINT
1020 IF kk=0 AND (w$="go n" OR w$="go s" OR w$="go e" OR w$="go w") THEN kk=1:PRINT"You can't go in that direction":PRINT
1030 IF p$="get key" THEN PRINT"Which key?":PRINT:GOTO 1400
1040 IF r$="get ring" THEN PRINT"Which ring?":PRINT:GOTO 1400
1050 IF x$="get" OR w$="take" THEN kk=1:GOSUB 1470
1060 IF y$="i" THEN kk=1:GOSUB 1810
1070 IF r$="drop key" THEN PRINT"Which key?":PRINT:GOTO 1400
1080 IF u$="drop ring" THEN PRINT"Which ring?":PRINT:GOTO 1400
1090 IF w$="drop" THEN kk=1:GOSUB 1850
1100 IF w$="forc" THEN kk=1:GOSUB 2110
1110 IF o$="unlo " OR q$="unloc " OR p$="unlock " THEN kk=1:GOSUB 2150 ELSE IF w$="unlo" THEN GOTO 1400
1120 IF o$="clim " OR q$="climb " OR w$="go u" OR w$="god" THEN kk=1:GOSUB 2340 ELSE IF w$="clim" THEN GOTO 1400
1130 IF o$="span " OR w$="lay " THEN kk=1:GOSUB 2450 ELSE IF w$="span" OR x$="lay" THEN GOTO 1400
1140 IF x$="sco" OR w$="scor" OR o$="score" THEN kk=1:GOSUB 2280
1150 IF w$="cut " OR o$="clea " OR q$="clear " OR o$="move" THEN kk=1:GOSUB 2550 ELSE IF x$="cut" OR w$="clea" OR w$="move" THEN GOTO 1400
1160 IF w$="tie " THEN kk=1:GOSUB 2200
1170 IF w$="ask " THEN kk=1:GOSUB 2740 ELSE IF x$="ask" THEN GOTO 1400
1180 IF w$="say " THEN kk=1:GOSUB 2500
1190 IF o$="call " THEN kk=1:GOSUB 2970
1200 IF o$="thro " OR q$="throw " THEN kk=1:GOSUB 2480 ELSE IF o$="throw" THEN GOTO 1400
1210 IF o$="kill " THEN kk=1:GOSUB 2580 ELSE IF w$="kill" THEN GOTO 1400
1220 IF w$="walk" THEN kk=1:GOSUB 2250
1230 IF o$="stan " OR q$="stand " THEN kk=1:GOSUB 2300 ELSE IF o$="stand" THEN GOTO 1400
1240 IF o$="jump " THEN kk=1:GOSUB 2820 ELSE IF w$="jump" THEN GOTO 1400

```


cpc type-in

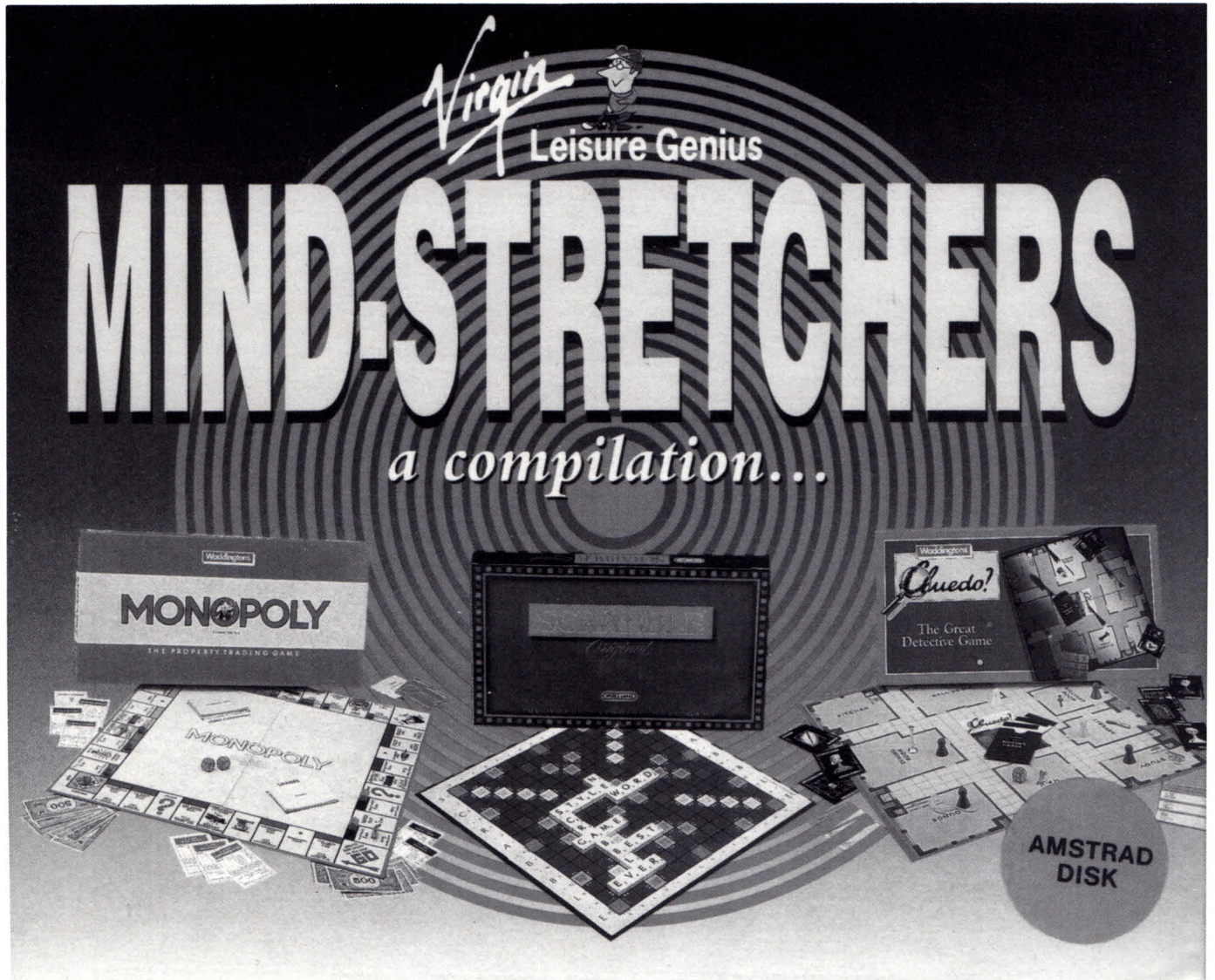
```
1250 IF o$="give " THEN kk=1:GOSUB 2850 ELSE IF w$="giv
e" THEN GOTO 1400
1260 IF w$="flo " OR o$="floa " OR q$="float " THEN kk=
1:GOSUB 3040 ELSE IF o$="float" THEN GOTO 1400
1270 IF o$="turn " THEN kk=1:GOSUB 3150 ELSE IF w$="tur
n" THEN GOTO 1400
1280 IF q$=CHR$(101)+CHR$(110)+CHR$(101)+CHR$(114)+CHR$
(103)+CHR$(121) THEN kk=1:GOSUB 2950
1290 IF o$="exam " OR q$="exami " OR p$="examin " OR r$
="examine " THEN kk=1:GOSUB 3170
1300 IF w$="quit" THEN kk=1:GOSUB 3520
1310 IF o$="push " OR o$="slid " OR q$="slide " THEN kk
=1:GOSUB 3080 ELSE IF w$="push" OR o$="slide" THEN GOTO
1400
1320 IF o$="open " THEN kk=1:GOSUB 3600 ELSE IF w$="ope
n" THEN GOTO 1400
1330 IF w$="drin" THEN kk=1:GOSUB 3630
1340 IF w$="swim" THEN kk=1:GOSUB 3670
1350 IF w$="save" THEN kk=1:GOSUB 3860
1360 IF w$="load" THEN kk=1:GOSUB 4020
1370 IF w$="help" THEN kk=1:GOSUB 2130
1380 IF kk=0 AND MID$(z$,4,1)=" " THEN PRINT"I don't un
derstand the word ";PEN 2:PRINT LEFT$(z$,3):PRINT:GOTO
1410 ELSE IF kk=0 AND MID$(z$,5,1)=" " THEN PRINT"I do
n't understand the word ";PEN 2:PRINT LEFT$(z$,4):PRIN
T:GOTO 1410
1390 IF kk=0 AND MID$(z$,6,1)=" " THEN PRINT"I don't un
derstand the word ";PEN 2:PRINT LEFT$(z$,5):PRINT:GOTO
1410 ELSE IF kk=0 THEN PRINT"I don't understand the fi
rst word.":PRINT:GOTO 1410
1400 IF kk=0 THEN PRINT"Please be more specific":PRINT
1410 WEND
1420 IF r=0 THEN GOTO 1430 ELSE IF LOWER$(RIGHT$(z$,3))
=" it" THEN RETURN
1430 l$="":FOR x=1 TO LEN(z$):IF MID$(z$,x,1)=" " THEN
l$=RIGHT$(z$,LEN(z$)-x):x=200
1440 NEXT:r=0:l%=0:IF LEN(l$)<3 THEN RETURN
1450 FOR x=1 TO 30:IF LEFT$(get$(x),LEN(l$))=l$ THEN l%
=1:r=x
1460 NEXT:RETURN
1470 IF RIGHT$(z$,4)=" all" THEN FOR z=1 TO 19:IF obj$(
z)=posi% THEN GOSUB 4460:GOSUB 4550:IF full=1 THEN GOTO
1480 ELSE all=1:GOSUB 4490:GOSUB 1580:GOSUB 4530:IF ca
nt=0 THEN PRINT"You get ";obj$(z):all=0:obj$(z)=0:inv$(
xx)=obj$(z)
1480 IF RIGHT$(z$,4)=" all" THEN full=0:cant=0
1490 IF RIGHT$(z$,4)=" all" THEN NEXT:PRINT:RETURN
1500 GOSUB 1420:IF l%=1 THEN 1530
1510 PRINT"You Can't!":PRINT:RETURN
1520 RETURN
1530 e%=0:FOR x=1 TO 19:IF obj$(x)=posi% AND obj$(get$(
r))=posi% THEN e%=1
1540 NEXT:IF e<>1 THEN PEN 2:PRINT"You can't see a ";g
et$(r):PRINT:RETURN
1550 IF r=16 AND zr=1 THEN PRINT"You Can't!":e%=0:PRINT
```

```
:RETURN
1560 FOR x=1 TO 6:IF inv$(x)="" THEN x=10:GOTO 1580
1570 NEXT:PRINT"Your hands are full!":PRINT:RETURN
1580 IF r=1 OR r=2 THEN ab=1
1590 IF (r=3 OR r=4 OR r=5) THEN ac=1
1600 IF r=6 THEN ad=1
1610 IF r=7 THEN ae=1
1620 IF r=8 THEN af=1
1630 IF r=9 OR r=10 THEN ag=1
1640 IF r=11 OR r=12 THEN ah=1
1650 IF r=13 THEN ai=1
1660 IF r=14 OR r=15 THEN aj=1
1670 IF r=16 AND zr<>1 THEN ak=1
1680 IF r=17 OR r=18 THEN am=1
1690 IF r=19 THEN an=1
1700 IF r=20 THEN ao=1
1710 IF r=21 OR r=22 THEN ap=1
1720 IF r=23 OR r=24 THEN aq=1
1730 IF r=25 THEN ar=1
1740 IF r=26 THEN as=1
1750 IF (r=27 OR r=28) AND zm=1 THEN at=1:zm=0 ELSE IF
(r=27 OR r=28) AND zm<>1 THEN at=1
1760 IF r=29 OR r=30 THEN au=1
1770 IF all=1 THEN RETURN
1780 e%=0:FOR x=1 TO 6:IF inv$(x)="" THEN inv$(x)=obj$(
get$(r)):e%=1:x=10
1790 NEXT:IF e%=0 THEN PRINT"Your hands are full!":PRIN
T:RETURN
1800 obj$(get$(r))=0:a%=a%+1:PRINT CHR$(7):RETURN
1810 PEN 3:f%=0:PRINT"You are carrying :-"
1820 FOR x=1 TO 6:IF inv$(x)<>"" THEN PEN 2:PRINT inv$(
x):f%=1
1830 NEXT:PRINT:IF f%=0 THEN PEN 2:PRINT"nothing at all
!":PRINT
1840 PRINT:RETURN
1850 IF RIGHT$(z$,4)=" all" THEN FOR z=1 TO 19:FOR y=1
TO 6:IF obj$(z)=inv$(y) THEN inv$(y)="" :GOSUB 4490:obj$(
get$(r))=posi%:PRINT"You drop ";obj$(z):all=1:GOSUB 18
90:all=0:GOSUB 4510
1860 IF RIGHT$(z$,4)=" all" THEN NEXT:NEXT:RETURN
1870 GOSUB 1420:e%=0:FOR x=1 TO 6:IF inv$(x)=obj$(get$(
r)) THEN inv$(x)="" :e%=1:a%=a%+1
1880 NEXT:IF e<>1 THEN PEN 2:PRINT"You are not carryin
g a ";get$(r):PRINT:RETURN
1890 IF r=1 OR r=2 THEN ab=0
1900 IF r=3 OR r=4 OR r=5 THEN ac=0
1910 IF r=6 THEN ad=0
1920 IF r=7 THEN ae=0
1930 IF r=8 THEN af=0
```

"Whaddaya mean that's all?" Never mind - you can give your fingers and your mind a rest. Look forward to next month's issue to resume your adventure exactly where you left off!



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If you were to run the program now you would get:

```
Timer 0
Timer 3
Timer 2
Timer 1
```

See?

You will have noticed already that after the interrupt subroutines have executed, Arnold just sits at line 140 twiddling his thumbs. From this you will have correctly surmised that each interrupt has only happened once. This is the only difference between the two interrupt keywords: AFTER only does it once, but EVERY keeps on doing it until you tell it to stop.

AFTER is of limited use really. I suppose you could use it for setting a time limit on a game:

```
10 AFTER 30000 GOSUB 9999
```

The above would give you 10 minutes to succeed in doing whatever you had to do. Note that the length of time must be supplied as a positive integer or integer-variable. This means the largest number you can supply is 32767, which is a little under 11 minutes. Some books on CPC programming tell you the upper limit is 255. Ignore them, it's all lies.

The smallest number you can use is 1. Watch out for typing errors, though, because AFTER 0 GOSUB <line.no> and EVERY 0 GOSUB <line.no> will be accepted by the Basic interpreter and cause nothing to happen every zero seconds. In other words, the interrupts won't work.

Also remember that if you are only using one interrupt, the Timer Number does not need to be specified; it will default to 0.

Now before you go any further, change the timings of the AFTER example program. Play about with it. Once you understand the basics of how Timers operate, you're safe to pass on to matters more advanced.

We've already seen that higher priority Timers can interrupt lower priority ones, but not vice-versa. This is where things can get confusing because a low priority interrupt may not execute at exactly the right time; it will wait until its big brothers have had their say first - unless we can knock the big brothers out for a while. And we can.

DI and EI are the tools we need to disable and re-enable interrupts. By putting DI at the beginning of a low priority interrupt subroutine we can protect it from being walked over by all other Basic interrupts. To re-enable it we actually need do nothing because the act of RETURNing from a subroutine under control of an interrupt does it for us. EI is there for the times you want to re-enable interrupts before the end of the subroutine.

Note that DI doesn't totally disable all interrupts forever and everamen - it just disables them until an EI or RETURN is executed. The Timers are still running, and the program will remember how many interrupts

have been missed. When they are re-enabled, they will take back what is 'owed' to them before releasing control to the main program again. This usually causes things to speed up suddenly.

Pressing ESC (once or twice) doesn't halt the Timers either - it does exactly the same thing as DI. You can see this for yourselves later by breaking out of the Clock program, waiting 30 seconds or so, and then typing CONT.

We'll see how to stop interrupts from interrupting later. Just now though, let's look at a simple example of how DI should be used. (The indentations in lines 1010 and 1020 are there to make the example more readable):

```
100 EVERY 100,0 GOSUB 1000
110 EVERY 10,1 GOSUB 2000
120 GOTO 120
999 '
1000 DI : PRINT"*** Timer 0 ***"
1010     FOR delay=1 TO 1000:NEXT
1020     RETURN
1999 '
2000 PRINT"Timer 1" :RETURN
```

Run the above program and you should get ten "Timer 1" messages, one "*** Timer 0 ***" message, and then a pause followed by the sequence repeated ad-infinitum. The important bit is the pause caused by line 1010.

Now break into the program, remove the DI from line 1000 so that it reads:

```
1000 PRINT"*** Timer 0 ***"
```

and run the program again. This time there's no pause, leading you to believe that the delay loop in line 1010 isn't executing. In fact it is, but it is being interrupted every fifth of a second by Timer 1 because it has a higher priority.

So where does EI come into it? Well, suppose the low priority subroutine being controlled by Timer 0 had some graphics commands in it - to draw a few boxes on the screen perhaps - and the last thing you want is a half-drawn box on the screen while the program does something else for a tick. In a case like this you would surround the important graphics commands that you don't want interrupted with DI and EI:

```
999 '
1000 do this
1010 do that
1020 DI
1030     draw
1040     some
1050     boxes
1060 EI
1070 do this
1080 do that
1090 RETURN
```


programming

Above, "do this" and "do that" can be interrupted by higher priority Timers, but "draw some boxes" cannot. Get the picture?

To disable an interrupt completely we need to use the REMAIN keyword. Its function is to 'steal' all the 50ths of a second the timer has left, leaving it, as it were, with no fingers to count on.

If you've not played with interrupts before, then you may be under the impression that the only thing you can do with REMAIN is PRINT it. Those rushed CPC handbooks have a lot to answer for!

In the Real World you would use REMAIN to halt a timer thus:

```
halt, (a dummy variable to halt)
= REMAIN(x), (the timer you want)
```

A 'dummy' variable is a variable whose value you're not particularly interested in either before or after an operation - it's just there to enable you to carry out that operation. The 'x' in brackets after REMAIN is the important bit, and should be the number of the Timer you want to halt. This applies to Timers being run by both AFTER and EVERY.

Before we halt a Timer, though, we have to set one running, so let's move on to EVERY in more detail now, and see how to stop and start it.

```
100 ' REAL-TIME CLOCK
110 '
120 MODE 1
130 LOCATE 1,1:PRINT "00:00:00"
140 hour=0:mins=0:secs=0
150 EVERY 50,3 GOSUB 1000
160 GOTO 160
170 END
180 '
999 ' Clock Interrupt S/R
1000 secs=secs+1
1010 IF secs=60 THEN
    mins=mins+1:secs=0
1020 IF mins=60 THEN
    hour=hour+1:mins=0
1030 IF hour=24 THEN hour=0
1040 LOCATE 1,1:IF hour<10 THEN PRINT
    HEX$(hour,2) ELSE WRITE hour
1050 LOCATE 4,1:IF mins<10 THEN PRINT
    HEX$(mins,2) ELSE WRITE mins
1060 LOCATE 7,1:IF secs<10 THEN PRINT
    HEX$(secs,2) ELSE WRITE secs
1070 RETURN
```

Okay, a real-time 24hr clock is probably the most obvious example I could have chosen, but it is also self-documenting because 'telling the time' is a concept we all find second nature once we are out of short trousers. The only things that might confuse you in the above listing are the HEX\$ and WRITE bits. HEX\$ is a sneaky way of getting the program to print a zero before single-digit numbers, and WRITE puts numbers on the screen without a leading space. (A leading space

would erase the colons between the numbers).

The starting time can be altered by changing the values of 'hour', 'mins' and 'secs' in line 140. In the example it is set for midnight.

Once the program has passed the EVERY command in line 150 it just sits at line 160 doing nothing - it's the interrupt that is doing all the work. In practise, this - line 160 - is where the main part of your program would start.

Right. Let's halt the Timer now by putting a REMAIN somewhere. Insert a new line in the Clock S/R:

```
1065 PRINT REMAIN(3)
```

Okay, okay. I know I said you should use a dummy variable with REMAIN, and so you should. This is just to show you how long the interrupt subroutine took. Run the program again, and your screen should end up like this:

```
00:00:01
 48
```

The '48' is the number of 50ths of a second that were left in Timer 0's countdown before we halted it. In other words, the interrupt subroutine took no more than 2/50ths of a second to execute.

This is a useful thing to know if we want to run more than one interrupt. It means that we have 48/50ths of a second to do some other things before the next 'tick' of our clock. You can DELETE line 1065 now.

So let's do another interrupt - a jolly little tune (I don't think). Add these lines to the Clock listing:

```
152 EVERY 5,2 GOSUB 2000
1998 '
1999 ' Tune Interrupt S/R
2000 ON SQ(1) GOSUB 2020:RETURN
2010 '
2020 IF tone=0 THEN RESTORE 2040
2030 READ tone=SOUND 1,tone:RETURN
2040 DATA 60,60,53,47,60,47,53,80
2050 DATA 60,60,53,47,60,60,63,63
2060 DATA 60,60,53,47,45,47,53,60
2070 DATA 63,80,71,63,60,60,60,0
```

The tune interrupt is called upon every 10th of a second (5/50ths) in order to keep the sound queue nice and full. You'll notice that as fast as the tune is playing, the operation of the clock will not be affected in any way.

Okay, let's throw in another interrupt. How about one to check a couple of keys so we can toggle the clock and music on and off? Yes? Fine.

Add these lines:

```
154 EVERY 50,1 GOSUB 3000
2998 '
2999 ' Keypress Interrupt S/R
```



```

3010 IF INKEY(16)>-1 THEN GOSUB 3050
3020 IF INKEY(79)>-1 THEN GOSUB 3100
3030 RETURN
3040 '
3049 'CLR to toggle clock on/off
3050 haltclock=(NOT haltclock)
3060 IF haltclock=0 THEN EVERY 50,3
      GOSUB 1000
3070 IF haltclock=-1 THEN
      halt=REMAIN(3)
3080 RETURN
3090 '
3099 ' DEL to toggle music on/off
3100 haltmusic=(NOT haltmusic)
3110 IF haltmusic=0 THEN EVERY 5,2
      GOSUB 2000
3120 IF haltmusic=-1 THEN
      halt=REMAIN(2)
3130 RETURN

```

This last interrupt brings me onto an important feature of Basic Interrupts, the fact that INPUT or LINE INPUT will temporarily disable all interrupts whilst it waits for the user to input something. It acts just like DI does.

INKEY and INKEY\$ on the other hand, can both be interrupted by all of the Timers. Therefore, if you are using interrupts in your program, and it is important that they continue running smoothly at all times, ALWAYS use INKEY or INKEY\$ to get user input.

The little subroutines at 3050 and 3100 give practical examples of how to switch Timers on and off. The two lines:

```

3050 haltclock=(NOT haltclock)
3100 haltmusic=(NOT haltmusic)

```

toggle a variable between 0 and -1. If haltclock equals 0, then (NOT haltclock) will equal -1. If haltclock equals -1, then (NOT haltclock) will equal zero. It's called 'Boolean Logic'. Don't ask me to explain it here, it'll only confuse matters. I shall explain it another time perhaps.

So, now we have three interrupts running, and we have the basics of some of the features that professional programmers use to 'polish' their games. We have continuous music whilst the game's going on (the 'game' in this case is represented by: 160 GOTO 160). We have a real-time clock. We have a pause button (by stopping the clock), and we can switch the music off if it starts to grate.

Now I want you to be really brave and stick another interrupt in on Timer 0 yourselves. Don't be too ambitious - try something simple first like changing the border color every few seconds. And when you've done that, see if you can replace "160 GOTO 160" with something more useful.

Again, small is best at first.

And so we part. Hmm? What's that you say? You want to know the quickest way to get to the bar in a pub packed with novice CPC programmers? Simple as

winking. Just hide under a very strong, heavy table and whisper, "CP/M". Tarra (hic).

THE FULL LISTING

```

100 REM Real Time Clock
110 REM The Amstrad User - Sept 90
120 MODE 1
130 LOCATE 1,1:PRINT "00:00:00"
140 hour=0:mins=0:secs=0
150 EVERY 50,3 GOSUB 1000
152 EVERY 5,2 GOSUB 2000
154 EVERY 50,1 GOSUB 3000
160 GOTO 160
170 END
180 '
999 REM Clock Interrupt Routine
1000 secs=secs+1
1010 IF secs=60 THEN mins=mins+1:secs=0
1020 IF mins=60 THEN hour=hour+1:mins=0
1030 IF hour=24 THEN hour=0
1040 LOCATE 1,1:IF hour<10 THEN PRINT HEX$(hour,2) ELSE
      WRITE hour
1050 LOCATE 4,1:IF mins<10 THEN PRINT HEX$(mins,2) ELSE
      WRITE mins
1060 LOCATE 7,1:IF secs<10 THEN PRINT HEX$(secs,2) ELSE
      WRITE secs
1070 RETURN
1998 '
1999 REM Tune Interrupt Routine
2000 ON SQ(1) GOSUB 2020:RETURN
2010 '
2020 IF tone=0 THEN RESTORE 2040
2030 READ tone:SOUND 1,tone:RETURN
2040 DATA 60,60,53,47,60,47,53,80
2050 DATA 60,60,53,47,60,60,63,63
2060 DATA 60,60,53,47,45,47,53,60
2070 DATA 63,80,71,63,60,60,60,0
2998 '
2999 REM Keypress Interrupt Routine
3000 WHILE INKEY$="" :WEND
3010 IF INKEY(16)>-1 THEN GOSUB 3050
3020 IF INKEY(79)>-1 THEN GOSUB 3100
3030 RETURN
3040 '
3049 REM CLR to toggle clock on/off
3050 haltclock=(NOT haltclock)
3060 IF haltclock=0 THEN EVERY 50,3 GOSUB 1000
3070 IF haltclock=-1 THEN halt=REMAIN(3)
3080 RETURN
3090 '
3099 REM DEL to toggle music on/off
3100 haltmusic=(NOT haltmusic)
3110 IF haltmusic=0 THEN EVERY 5,2 GOSUB 2000
3120 IF haltmusic=-1 THEN halt=REMAIN(2)
3130 RETURN

```


Revamping RESTORE



Joseph Elkhorne puts an old program in a new suit to up-date your "missing files" bureau.

When I turned in last month's column, I received my first reader letter via the magazine. Craig Davis comments "the first column I read is Serendipity". It's always nice to find that someone is satisfied with what I am attempting!

Referring to the May column, Craig says he believes Absolute Addresses should be included in the source format. There are several reasons why this is not done. For one thing, although CP/M has a standard program origin at 100 hex, it is possible to relocate blocks of code other in places of memory. This can be done with RMAC, the Relocatable MAC-roassembler utility.

Further, it is possible to write code which can be used with a BASIC program. This would be a sub-routine accessed with the CALL command. Amstrad machines are more powerful than many, because of the parameter passing ability. The machine code gives you flexibility that may better suit your application than sticking only to the high-level language.

As the user manual says of CALL: "Not a command to be used by the unwary".

Suppose, for example, you plan your program, write the machine code sub-routine, import the hex values via BASIC and poke them into memory above the interpreted program. Then you modify the BASIC a wee bit.... and the machine code jumps are then not valid. Oops!

Unless you have some linear code in which case it does not matter, or take advantage of the Z-80 relative jump capability, take care!

In any case - to get back to the main point regarding source code, the source comes before assembly anyway. Only when the source statements are processed by the assembler to become object code do absolute addresses come into it.

As Craig is just beginning the thorny subject of assembly language, I will reiterate the processes that have been covered so far. A source file is created, with your word processor or CP/Ms ED, and saved. The proper identification of the file is 'filename.ASM'. Then one uses MAC to process the source code; the

outputs are a .HEX file, a .SYM file, and a .PRN file. The latter will have the addressed appended.

The .HEX file will not run itself. It is a string of hexadecimal ASCII bytes. This file is further processed by HEXCOM to produce the .COM file, which is the program that runs.

The above refers to CP/M Plus, of course. With the 2.2 version, one uses ASM to process the source code; and LOAD then creates the executable language program.

Although I have not tried it, it should be possible to read a .HEX file from a BASIC program to ease the process of POKEing it. That would be much more viable than an horrendous string of data statements to key into the main program listing.

Finally, Craig would like 'a BASIC compiler for CP/M that produces executable .COM files'. Well, I know that Microsoft made one - BASCOM. There may be some public domain versions around. If anyone has access to a firm source on this, drop us a line.

(Oh well, look at the bright side, he could have asked for COBOL!)

I understand a certain distributor took umbrage at one of my reviews which has already been published. He apparently did not care for my 'let the chips fall where they may' attitude. Tsk tsk!

When I owned a Sinclair Spectrum, I was constantly amazed at all the 'rave reviews' in the UK magazines. I could hardly credit that so much software was so good. My suspicions were often confirmed on purchasing a given product. I vowed then that when I had the opportunity to assess software or hardware that I would give the reader a fair go.

It is not my brief to turn sow's ears into silk purses. Nor am I inclined, as often happens in dramatic criticism, to exercise my rapier-like wit at the expense of the product, to the exclusion of fair play.

What you get is the facts as I see them. Any box mover that wants to compare professional credentials is welcome to call me. My number's in the book.

And, speaking of books, I read them before I

review them, making notes on the way. That's a technique some of the literary types in the newspapers should take heed of. Often, because of the time involved, it's less than a labour of love. But any less - IMHO - would be a disservice to everyone.

Now, we're going to look at RESTORE yet again, to inspect a few programming points.

First of all, as previously mentioned, it is good practise on programs of any size for the programmer to create his own stack area. This leaves nothing to chance. CP/M naturally has to maintain a stack and in short examples, the user can access it.

If you haul out the September 1987 issue of TAU, you can peruse the .PRN file as presented. The program begins by zeroing the HL register pair with the LXI instruction. Then we have one I've not discussed - a 16-bit addition, the DAD SP mnemonic.

Simply, this is a Direct Addition of a 16-bit register to the HL register. One has the choice of BC, DE, SP (the stack pointer) or HL itself. One caution should be observed: this type of addition does not set the flag register!

So, you clear HL and then grab the CP/M stack pointer value, and put it in a safe place, near the end of your program. That's the label OLDSP and the SHLD is another new instruction. This is a 16-bit manipulation, Store HL Direct.

You reserve storage space at the end with a DS pseudo-op and finally plant the STKTOP label. Once assembled, this absolute address becomes the user stack area.

The stack usually holds return addresses, so the system knows where to go back to from a subroutine. But one can also use PUSH instructions, remember, for temporary storage of values. What happens if you have lots of nested subroutines and PUSHes and you've not made a big enough stack area? Well, the least bad thing is to overwrite the end of your program. This would corrupt the CP/M stack pointer you so carefully saved. On exiting the program, the system might crash.

RESTORE allows you to see the directory entries. The way it does this is to use a new System Call - two actually, to match a filename you provide. You know that the * and ? symbols can be used as wildcards on the command line. They substitute for characters in the file identification.

The operating system is smart enough to fill out when it sees the asterisk. Your program, however, pokes the ? into the 11 places in the system File Control Block, one by one. This will be interpreted as 'any name will do'.

We provide a simple 'user interface' before we get to the nitty-gritty. This prompts the user and waits for a response. We then tell CP/M that we wish to search for the first occurrence of 'the' filename. The real work is done from label DO: by establishing the File Control Block, hooking into the o.s. and returning with a Directory code.

This returned value will be 0, 1, 2, or 3 for a valid directory entry and corresponds to the position of the entry in the directory record. A value of FF returned means 'no file'.

Now, this Search for First is a tricky point. Remember that a directory entry has a finite size. What happens when you go beyond one 'extent', or group of pointers to physical locations on the disc? Simple - another directory entry is created. In this way, your file FRED can expand as needed.

Search for First to match 'FRED' would find the head end of that specific file. Search for Next would continue to find the remainder of the FRED file. I had trouble with this in the beginning. It is not a search for the first file name as such - the system call is a search for the first match. In our program however, we're saying any match will do.

The first access to the disc prints one directory record, consisting of four names, along with system information. The user is then prompted for a response, which can be to select an appropriate file by numerals 1 to 4; quit, by using Control-C; or continue searching the disc by hitting Enter.

System information, hmmm! Weird set of bytes. The filename is recognisable. Other bytes are used by CP/M itself in mysterious ways; the second line of the directory entry holds the location of the file. We'll do an in-depth analysis of this at another time, though I did gloss over it in the Restore article.

Once we've found a match, we must continue looking for the 'next' matches, as we've already found a 'first' one. Assuming you haven't hit Control-C or one of the appropriate numbers, the program 'falls through' the tests and jumps to DLOOP: to look for the directory code return value. We increment this and exit on zero, as the o.s. is telling us no more files exist to be checked.

Any valid code (0-3) will now pick up the Search for Next Function and jump back to the DO: point.

Each time you hit Enter, the program is stepping to the next file name. This process continues until you get tired of playing the game or CP/M can't find any more files.

Opting for an automatic exit was a compromise. I didn't want to leave it to the user; otherwise, an inexperienced player might continue merrily on. This does mean if your erased file is at the tail end directory record with no other existing file, you can't get at it. I said it was a compromise!

You could remove the JZ DONE to try to get around this limitation if you wish. Unfortunately, it doesn't work. CP/M knows you're trying to fool it, and the disc drive will emulate the woodpecker sound of an old Commodore drive.

Incidentally, you remark - I see a directory entry starting with, say, 03, but when I check the directory from the command line with DIR, it's not there! It would be if you were in User area three. Not a lot of users bother with multiple user areas; they can be handy for keeping files separated, but generally it's a

bit fiddly. In CP/M Plus, you can force the o.s. to show you other areas by DIR[Gn] where n is a number 0 through 15.

Anyway - if you were wondering - this program will 'move' files from other user areas, the same way it recovers those which have gone missing.

We are normally in User Zero and using this program to look for a file we foolishly erased. Its entry will begin with E5. When you find the one you want, you type the number corresponding to the position on the display. Now, we enter the BLOCK: area, move the directory entry to the FCB, zero the first byte, and encounter yet another function.

Yes, friends, we're Making a new file - even though it's an old one. With that accomplished, we write the really important bytes, which allow the o.s. to find the data. At last, (wait for it) we summon the Close File Function and say farewell.

The program retrieves the system stack pointer and exits to the command line via a warm boot. The two key mnemonics are LHL D for Load HL Direct, getting the value from the memory location where you left it, and SPHL, which loads the HL contents into the stack pointer. Shuffling is necessary because of the microprocessor's limited instruction set.

Before I abandon the discussion of RESTORE, you will have to make sure you've processed all the directory entries for a given file. If not, your work will remain incomplete.

Looking back on old programs is always a bit of an embarrassment. If I had this one to do over, it would be better. Even so, it fulfils its purpose. It's rescued me more than once!

By now, you've been exposed to nearly all of the types of 8080 orders. You should be able to work your way through most 8-bit and 16-bit transfers and simple arithmetic. We'll hold the logical types for another time. There's also variants of the Calls, Jumps and even different style of Returns. And I'm sure that Rotations will have your head spinning.

Last month, I made some mention of the File Allocation Table. Since I had my little problem, a number of people have responded to BBS messages. I'm told that the Advanced version of Norton's Utilities will enable the reconstruction of a file from cluster data.

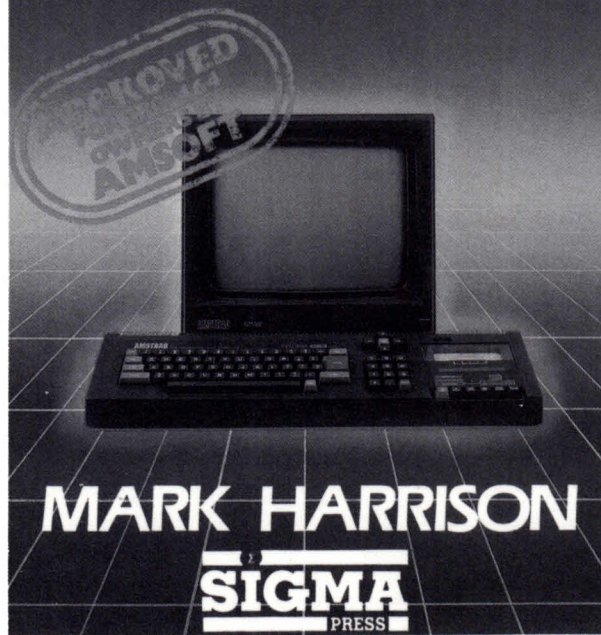
As you'll recall, I ended up with a valid file, albeit greatly truncated. The MS-DOS equivalent of RESTORE would not have helped, as a directory entry still existed.

Understanding FAT is a goal in itself, one which I still pursue. I'll publish my findings in due course.

One final BBS note: the 22nd of July was a sad day, as The Witch's Brew went off the air. Sysop Erika Matlen is to be commended for keeping the board going for better than two years. The faithful users are looking forward to the time when she wins Tattslotto and TWB returns, bigger and better than ever. ■

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We bring you yet another type-in, this time leaving room for your own originality to take it to completion.

Ian Duffy has written a routine that makes an ideal foundation for a game; a "do-it-yourself" maze generator. Because many checks are needed to calculate the maze sequence, you may find the listing a little lengthy. For example, where a path branches and whether or not it comes to a dead end needs to be calculated. However, great things come of hard toil, so it is worth the trouble.

Providing that you don't exceed the limit of the screen size, you can choose the size of your maze as you set it up - everything else should follow suit. Lose yourself in this one - and have fun!

```

10 ' Maze
20 ' by Ian Duffy
30 ' The Amstrad User September 1990
40 ' Main loop
50 MODE 2: DIM branch(30,1)
60 WHILE loop=0
70 GOSUB 1080 'Initialise
80 WHILE loop=0
90 maze%(x,y)=1
100 GOSUB 170 'Make the maze
110 WEND
120 GOSUB 930 'Print the maze
130 ERASE maze%
140 WEND
150 CLS:END
160 'Choose direction, branch ?, end ?
170 r=INT(RND*100)+1
180 d=2:GOSUB 850
190 IF C=0 THEN GOSUB 520:RETURN 'End path
200 IF r<e THEN GOSUB 520:RETURN 'End path
210 IF r<25 AND c>1 AND bran<31 THEN GOSUB 250 'Branch
220 GOSUB 390 'Move
230 RETURN
240 'Branch
250 z=INT(RND*c)+1
260 b$=MID$(c$,z,1)
270 IF b$="1" THEN maze%(x-1,y)=1:nx=x-2:ny=y:GOSUB 340
280 IF b$="r" THEN maze%(x+1,y)=1:nx=x+2:ny=y:GOSUB 340
290 IF b$="u" THEN maze%(x,y-1)=1:nx=x:ny=y-2:GOSUB 340
300 IF b$="d" THEN maze%(x,y+1)=1:nx=x:ny=y+2:GOSUB 340
310 c$=LEFT$(c$,z-1)+MID$(c$,z+1,4):c=c-1
320 RETURN
330 'Branch stack handler
340 maze%(nx,ny)=1
350 branch(bran,0)=nx:branch(bran,1)=ny
360 bran=bran+1:left=left-1
370 RETURN
380 'Move
390 WHILE c>1:GOSUB 760:WEND 'Close off exits
400 s$=c$
410 h=1:GOSUB 760:h=2 'Make a path
420 d=1:GOSUB 850
430 WHILE c>0:GOSUB 760:WEND
440 c$=s$
450 IF c$="1" THEN x=x-2
460 IF c$="r" THEN x=x+2
470 IF c$="u" THEN y=y-2
480 IF c$="d" THEN y=y+2
490 left=left-1
500 RETURN
510 'End path
520 d=1:GOSUB 850
530 WHILE c>0:GOSUB 760:WEND
540 IF left=0 THEN loop=1:RETURN
550 IF bran=0 THEN GOSUB 600:RETURN
560 bran=bran-1
570 x=branch(bran,0):y=branch(bran,1)
580 RETURN
590 ' Search for bit of path ...
600 x=cx:y=cy:flag=0
610 WHILE flag=0
620 x=x+2
630 IF x>mx THEN x=1:y=y+2
640 IF y>my THEN y=1

```


cpc type-in

```

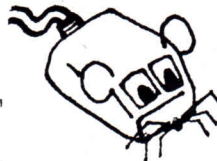
650 IF maze%(x,y)=1 THEN GOSUB 690
660 WEND
670 RETURN
680 ' ... Is it next to a space ?
690 d=2:GOSUB 850
700 IF c=0 THEN RETURN
710 cx=x:cy=y
720 h=1:GOSUB 760:h=2:flag=1
730 c$=b$:GOSUB 450
740 RETURN
750 'Fill in walls, break them
760 z=INT(RND*c)+1
770 b$=MID$(c$,z,1)
780 IF b$="1" THEN maze%(x-1,y)=h
790 IF b$="r" THEN maze%(x+1,y)=h
800 IF b$="u" THEN maze%(x,y-1)=h
810 IF b$="d" THEN maze%(x,y+1)=h
820 c$=LEFT$(c$,z-1)+MID$(c$,z+1,4):c=c-1
830 RETURN
840 'Search surroundings
850 c$=""
860 IF x-2>0 THEN IF maze%(x-d,y)=0 THEN c$=c$+"1"
870 IF x+2<mx THEN IF maze%(x+d,y)=0 THEN c$=c$+"r"
880 IF y-2>0 THEN IF maze%(x,y-d)=0 THEN c$=c$+"u"
890 IF y+2<my THEN IF maze%(x,y+d)=0 THEN c$=c$+"d"
900 c=LEN(c$)
910 RETURN
920 'PRINT maze
930 CLS
940 FOR f=0 TO my
950 FOR g=0 TO mx
960 q=maze%(g,f)
970 IF q=1 THEN PRINT " ";ELSE PRINT CHR$(143) ;
980 NEXT g
990 PRINT
1000 NEXT f
1010 WHILE INKEY$<>":WEND
1020 LOCATE 17,25:PRINT "Press S to stop else any for a
nother maze";
1030 a$=""
1040 WHILE a$="":a$=INKEY$:WEND
1050 IF a$="s" THEN END ELSE loop=0
1060 RETURN
1070 'initialise
1080 mx=0:my=0
1090 WHILE mx<5 OR my<5 OR mx>79 OR my>23 OR mx MOD 2=0
OR my MOD 2=0
1100 CLS:PRINT "Enter width and height of maze separate
d by commas, odd numbers only"
1110 INPUT"eg 11,19. Must be between 5,5 and 79,23 :",m
x,my
1120 mx=INT(my)
1130 WEND
1140 mx=mx-1:my=my-1
1150 secs=mx*my/20

```

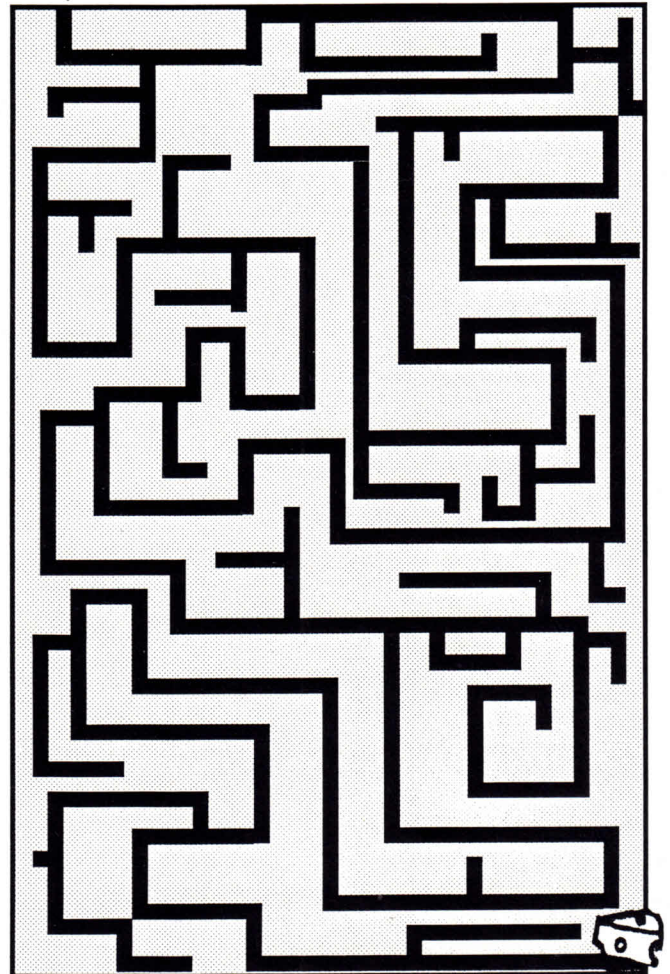
```

1160 IF secs<10 THEN PRINT:PRINT "The maze will be prin
ted shortly"
1170 IF secs>10 THEN PRINT:PRINT "Please wait about";RO
UND (secs,-1);"seconds"
1180 left=mx*my/4-1
1190 e=5
1200 IF mx<9 OR my<9 THEN e=10
1210 IF mx>9 AND my>9 THEN e=0
1220 DIM maze%(mx,my):bran=0
1230 FOR f=0 TO mx:maze%(f,0)=2:maze%(f,my)=2: NEXT f
1240 FOR f=1 TO my-1:maze%(0,f)=2:maze%(mx,f)=2:NEXT f
1250 FOR f=2 TO my-2 STEP 2
1260 FOR g=2 TO mx-2 STEP 2
1270 maze%(g,f)=2
1280 NEXT g,f
1290 maze%(mx-1,0)=1
1300 maze%(1,my)=1
1310 x=mx-1:y=1:h=2:loop=0:cx=-1:cy=1
1320 RETURN

```



In case you haven't the inclination to create your own maze, we have provided you with a mouse that needs your help to find its cheese.



Second Chance at Success



Our happy ending sees Peter Gowing and the purchase of his PCW as a happy beginning to business.

It still bothers me how close I came to spending an enormous sum of money on a combined word processing, data base and stock control system. Now in all fairness it must be said that for my hard earned pennies I would be buying an integrated system allowing word processing, text and file processing, accounting, forecasting and information systems to be developed using the same instructions and data.

The software would have been tailored specifically to my day to day business running requirements. The machine itself was a Transtec Z80A 8 Bit processor with 64K of random access memory, a twin disc drive each with 5 1/4" diskettes holding 2 x 400K characters and 8K read only memory, a separate qwerty keyboard, a 25 line x 80 character amber or green monitor and a Juki 6100 printer with various daisy wheels plus two days full instruction for the operator. Seems reasonable, you might think, if that's what you want and you can afford it.

Well affording it is another matter! I don't suppose I will ever know as the system would have been leased and in any case totally academic now as my company closed unable to support a workforce of ten and a 7000 square foot factory. There is no doubt that had the computer system been in my hands twelve months prior to the closure things would have been very different. To maintain control of your business, however small, it is essential to know where you are and where you are going at any one time.

IF AT FIRST YOU DON'T SUCCEED...

Two years on I have restarted and totally restructured my company with only myself, my wife and an Amstrad PCW8512 running the company from an office at home, with a turnover and profit exceeding that of my old company. With just a few weeks eyestrain and a SuperCalc 2 program I know exactly where my company is and exactly where it's going.

It must be said that if this article is dedicated to anyone it must be the small business owners who

think the computer, at the mere touch of a button, will transform their business and bring them instant success.

O.K. so I'm one of the fortunate few having a second crack at getting my business right. I knew I had a good, saleable product, but there was no point in retracing my steps trying to reform the company with a factory and staff. It hadn't worked the first time around, and the market hadn't changed so I saw no reason for it to work now.

The only sensible alternative was to contract the work out, providing we could maintain a reasonable and competitive price. This would of course eliminate the biggest problem - overheads. As you can imagine, ten staff and a factory accrued an awful lot of expenses.

The next problem to overcome was administration, which wouldn't automatically disappear with the factory. The administration would still consist of innumerable replies to enquiries, orders to suppliers and invoices etc., so a typewriter was obviously essential. Stock control, accounting, book keeping and forecasting was likewise high on the priority list to ensure the success of the new company.

I knew that there were any number of microprocessors and necessary software on the market that would take care of my modest requirements. But which one should I go for, and more importantly how much would I need to spend? One thing was for sure at the outset, the computer system that was going to transform my original business was financially out of reach, even on lease.

Specialist magazines seemed the best course of action at the time, and bearing in mind that I had taken very little interest in computers for over two years I was puzzled to find that almost every other page contained the word Amstrad. Surely these were the people who made cheap hi-fi systems, and I didn't recall them having a particularly good reputation for reliability either. However, after reading several articles about microprocessors suited to the small business, and considering finances carefully,

case in point

	A	B	C	D	E	F	G	H	I	J	K	L	M
SUPERCALC 2 WORKSHEET 86/87													
	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL		
6: NET SALES	7272	13830	11613	14016	16896	19878	11855	15615	17643	15435	144053		
8: MATERIALS	7215	2652	9414	16805	18087	12837	5311	8609	14217	11124	106271		
10: GROSS PROFIT	57	11178	2199	-2789	-1191	7041	6544	7006	3426	4311	37782		
12: BANK CHARGES	95	0	0	137	0	183	46	77	46	32	616		
13: STANDING ORDERS	194	194	194	194	194	194	194	194	194	194	1940		
14: ADMINISTRATIVE	333	6	44	392	57	15	323	29	102	221	1522		
15: PETROL /SUNDRIES	62	55	71	72	55	178	78	743	154	307	1775		
16: ADVERTISING	0	103	343	215	33	126	243	22	421	98	1604		
17: TELEPHONE	0	0	0	255	0	0	202	0	0	255	712		
19: TOTAL EXPENSES	684	358	652	1265	339	696	1086	1065	917	1107	8169		
22: PRE TAX INCOME	-627	10820	1547	-4054	-1530	6345	5458	5941	2509	3204	29613		

During these few days my wife and I had mastered LocoScript, the wordprocessing software supplied with the 8000 series machines. We created templates to suit our previously printed letterheads, invoices and orders. Although the Amstrad printer doesn't achieve the high standards I had become accustomed to, it still outshines some leading electronic typewriters. The various print styles available, together with a little work designing templates and the result can be very professional.

During the twelve years of self employment owning a motor accessory shop, a garage and a company which manufactured two sports cars per week, I have never had a precise stock count - nothing to boast about I admit, but how many small businesses share my dilemma? I can now present my accountant, in about 60 seconds, with the value of my entire stock to the nearest cent at any time during the financial year. Costings can now, in a matter of minutes, be checked against the last invoice and updated.

the Amstrad 8256 did seem to have the potential I needed.

So I went out to scour the country side for Amstrads and information. When I finally got home, I was like a kid with a new toy finding it very difficult to heed the Amstrad manual instructions to "wait do not plug in yet". Patience prevailed and my enthusiasm did not wane. For two weeks every evening, sometimes into the early hours of the morning and certainly during the day when possible, I would be tapping away determined to make this computer earn its keep.

Instead of waiting until the end of the year for my company performance figures I can readily check profit and loss at the end of every month. One of the most tedious and time consuming tasks for any small business falls at the end of each quarter when columns of figures require totalling for the treasury.

Conveniently, each of my sales and purchase lists will now total at my command, separating the tax from net and gross figures.

I refuse to grant Messrs Amstrad and the writers of SuperCalc 2 all the credit for my new found office 'superefficiency'. It has taken some eight months of enjoyable but immensely rewarding hard work to reach the stage where my computer has replaced the staff I once relied on so heavily.

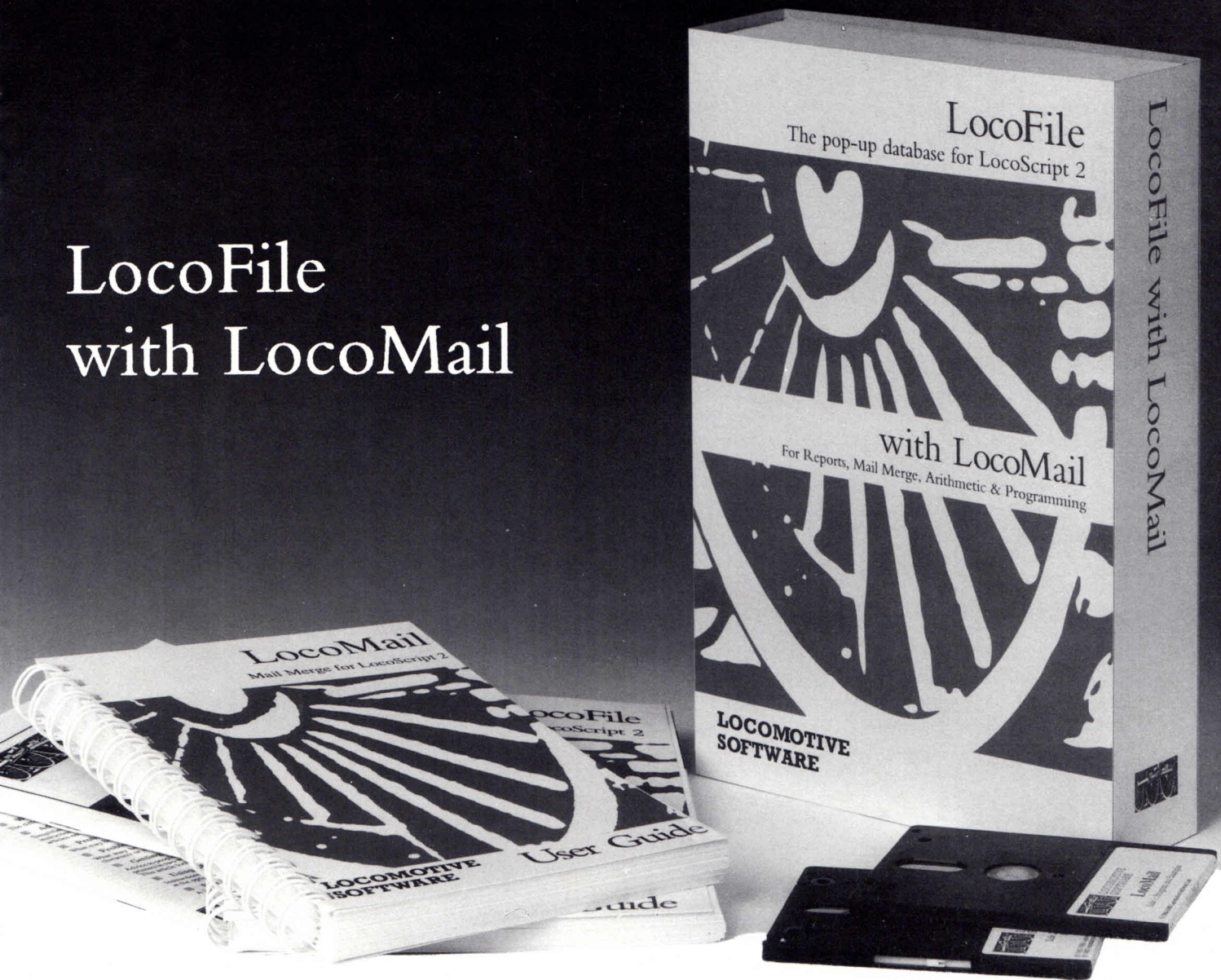
If there are any readers without any previous computing experience who are contemplating the purchase of a microcomputer for their small business, TAKE NOTE: there are no miracles and there is no such thing as 'at the touch of a button'. You must be prepared to pay for the ground work to be carried out by a professional in your home or office.

If you refuse to lay out several thousand dollars on an integrated package, there is only one option left open to you, and that is to slog through the software manuals. However, if you do not have the time or the inclination, you may as well just stick to your old pen and paper system. If, like me, you treat it as a hobby, looking forward to the next discovery as the machine improves the performance of your company, you and your business will never look back, I promise.

	A	B	C	D	E	F	G	H	I	J	K	L	M
SUPERCALC 2 WORKSHEET 86/87													
	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL		
6: NET SALES	0	0	0	0	0	0	0	0	0	0	SUM(B6:K6)		
8: MATERIALS	0	0	0	0	0	0	0	0	0	0	SUM(B8:K8)		
10: GROSS PROFIT	B6-B8	C6-C8	D6-D8	E6-E8	F6-F8	G6-G8	H6-H8	I6-I8	J6-J8	K6-K8	M6-M8		
12: BANK CHARGES	0	0	0	0	0	0	0	0	0	0	SUM(B12:K12)		
13: STANDING ORDERS	0	0	0	0	0	0	0	0	0	0	SUM(B13:K13)		
14: ADMINISTRATIVE	0	0	0	0	0	0	0	0	0	0	SUM(B14:K14)		
15: PETROL /SUNDRIES	0	0	0	0	0	0	0	0	0	0	SUM(B15:K15)		
16: ADVERTISING	0	0	0	0	0	0	0	0	0	0	SUM(B16:K16)		
17: TELEPHONE	0	0	0	0	0	0	0	0	0	0	SUM(B17:K17)		
19: TOTAL EXPENSES	SUM	SUM	SUM	SUM	SUM	SUM	SUM	SUM	SUM	SUM	SUM(M12:M17)		
	B12:B17	C12:C17	D12:D17	E12:E17	F12:F17	G12:G17	H12:H17	I12:I17	J12:J17	K12:K17			
22: PRE TAX INCOME	B10-B19	C10-C19	D10-D19	E10-E19	F10-F19	G10-G19	H10-H19	I10-I19	J10-J19	K10-K19	M10-M19		

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A smattering of LocoScript questions which perplex, and answers which will keep you with a full head of hair.

Q. Is it possible to include graphics which have been created on another system in a LocoScript document?

A. You cannot incorporate graphics directly into a LocoScript document but it is possible to leave space in your document and then print the graphics on it at some later stage. To do this you will need to reserve a space in the document by typing RETURNS with suitable 'Keep codes' above or below the line marking the end of a page. With the facility for defining your own characters, it may be possible to define some characters that would enable you to do simple graphics. In any event, graphics can only be achieved on a dot matrix printer.

Q. Although I have no difficulty in setting up new Stock Layouts, I find I lose them when the machine is switched off.

A. Stock Layouts are part of each individual document and they are saved with the document when you save it to disc. If you want to make Stock Layouts available to other documents, you should set them up in a template. Any documents that you then create will automatically be able to use these Stock Layouts. It is also possible to give old documents a set of Stock Layouts by moving the text into a new document via the 'Insert Text' feature. You

can then use the layout exchange and replace facilities to keep existing layouts, or replace them with one of the new Stock Layouts.

Q. The LocoScript version with which you recently supplied me does not appear to support bidirectional (high speed/draft) printing on my 8512 when using italics.

A. Bidirectional printing can only be achieved where the level of complexity allows. Printing backwards when using italics is too complex an operation and as a result LocoScript will only print italic text in one direction. This rule applies to both LocoScript 1 and 2.

Q. If the message 'Disc Full' appears you lose all the editing that has been done in that session. Why can't you remove the disc and replace it with another, and then save it, or save the edited material in a temporary file in drive M?

A. When 'Disc Full' appears, you don't necessarily have to lose all the editing. The message tells you which drive is full and if you take the 'Run Disc Manager' option you can move or erase documents to make more room. It's only if you cancel the operation that you will lose the editing. You cannot change the disc while

you are editing a document because part of the file has already been saved on the disc. Due to the restrictions of the CP/M compatible filing system used, it is not possible to save parts of documents in different discs.

Q. I am having difficulty in obtaining satisfactory right alignment once the justification has been set. The end of the lines sometimes appear jagged especially when there are capitals in the line. The difficulty only occurs when I am using proportionally spaced print, which I use all the time. Is there any printer driver that will correct this?

A. We suspect that you are selecting proportional spacing via a setting on the printer itself. Where this printer has this facility, we advise you not to select it. LocoScript 2 sends all OF the necessary information the printer needs to justify proportionally-spaced text. If both LocoScript 2 and your printer adjust the spacing, errors are likely to occur.

Q. I am confused about the paper I use in my printer. I use 11" continuous most of the time and would like to make this the 'norm'. Whilst I can get this right as far as my document is concerned I can't seem to get the printer to do likewise. I always get the menu up asking me if I wish to use the paper intended for the

document. Is there any way I can overcome this?

A. When LocoScript is loaded, it sets up the printer for a particular paper type - usually A4 single sheet stationery. Your document is set up for a different paper type - 11" continuous, so you get the message asking you to 'Change to paper intended for document'. If you select this option, LocoScript sets up the printer for this paper type and you shouldn't see this message until you load LocoScript again.

You can change the paper type that LocoScript sets up the printer for by updating the printer defaults in your settings file. LocoScript 2 gets the information displayed in the Printer Control State from the Settings file on your start-of-day disc when you start up. So to make '11" continuous' the 'norm' for your printer, press f6 from the Disc Manager screen to display the Settings menu, select the option for Printer Defaults and press Enter. Check at the top of the menu that you will be setting the defaults for the right printer, then select 'Default Paper Type', press Enter and tick '11 continuous'. Then press Exit and Enter until you have returned to the first menu. Press Exit and accept the option to write the Settings file back to your Start-of-day disc. When you load LocoScript in the future, your printer will automatically be set up for this paper type.

Q. The LocoScript manual describes the steps necessary to set up or edit a paper type. One of these steps is the specification of a printer left offset for the paper type, implying that a "left offset" field should appear in the paper type menu between the height and the width and the gap fields. As this facility does not appear to be present, there is no way of associating a left offset with a paper type. I would be grateful if you could tell me if this is in fact the case, as the only remedy appears to be either contortion of the ruler

margins, or manually setting the left offset when using the printer.

A. You haven't seen the Left Offset option in this menu because you've been working with single sheet stationery and the Left Offset only appears in the Paper Type menu for continuous types of stationery. It doesn't appear in the menu for single sheet paper types because, whereas the location of continuous stationery is fixed by the position of the tractor feeds, the position of single sheet stationery is nothing like as fixed and so a fixed Left Offset is not very useful. On continuous stationery, for example labels, the Left Offset can ensure that you always print on a label - not on the backing paper.

You can set the Left Offset for your continuous stationery by selecting 'Paper Types' in the f6 Settings menu. Position the cursor over the continuous paper type you use, press Enter and a menu will be displayed with the details of the paper type. Set the Left Offset and then with the cursor over 'Set new details', press Enter. When you leave the Settings menu, remember to accept the option to write the new Settings file on your Start-of-day disc otherwise the Left Offset will revert to its old setting.

Q. On changing the layout it appears to be changed, but then reverts to the previous layout when I return to the document. This happened several times and is rather frustrating. Where can I have gone wrong?

A. From your description of this problem, it sounds as though you are changing the layout by using the f2 Layout menu on the Pagination screen. The Change Layout option here changes Stock Layout 0 reserved for your header and footer text. Your changes will have no effect on the layout of your document unless you pull a copy of the new Stock Layout 0 into your document.

To change the layout in your

document, move the cursor to a position after the Layout code, or anywhere in the document if you only use one main layout throughout. Then press f2 for the Layout menu and select the option 'Change Layout'. Once you have made the required changes, press Exit to return to your document, and you'll see LocoScript relaying the text up to your current cursor position.

Q. I find the phrases section very useful for my own everyday phrases, but every so often my phrases disappear and the original phrases reappear although I have deleted them. As you can appreciate this is very annoying as I must repeat the procedure of deleting the original phrases and re-inserting my own. Other users in the office have also found this happening. Can you explain why this should happen and perhaps solve the "Mystery of the disappearing phrases?"

A. When you load Loco Script, the phrases file PHRASES.STD on your Start-of-day disc is automatically loaded and becomes the set of phrases currently available for use in your documents.

If you set up new phrases, you must save them back into PHRASES.STD on said Start-of-day disc to make the changes permanent. If you forget to do this you will lose them when you switch off the machine.

Alternatively, you can save a set of phrases as a file on a data disc. But you must remember that only PHRASES.STD in group O on your Start-of-day disc will be automatically loaded when you start up. ■

We have included in this article the questions about LocoScript that are most commonly asked. In fact the list is much longer, so we may give you a few more in later issues. Please remember though, we just cannot answer individual problems, as the time spent on mail would detract from time spent on the magazine!

Problems with Pitchers



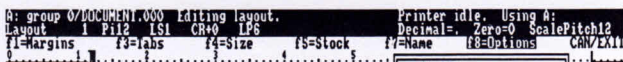
On-screen and printed images unite to resolve Scale Pitch problems blown way out of proportion.

Scale pitch is the pitch in which the Ruler line is measured. Its purpose is to let you measure the margin and tab position in a pitch that comes naturally to you. The Scale pitch you choose affects the appearance of your document both on the screen and when it is printed.

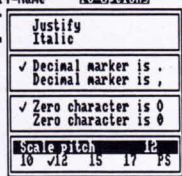
As many of you have noticed, what looks right on the screen doesn't always look right on the printer. One way of making documents on the screen and the printer match would seem to be to use different Scale pitches at different points in your document. But we always advise you to use the same Scale pitch throughout - to see why, read on!



10 "characters" = 1 inch



12 "characters" = 1 inch



THE RULER LINE

The Ruler line at the top of the screen is marked out in "characters" to help you calculate your margin and tab positions. It is Scale pitch that determines the actual size of these "characters" on the page. For example, as we have illustrated on the right, if the Scale pitch is 10, then 10 of the "characters" marked out equals one inch. If the Scale pitch is 12, then 12 of the "characters" represent one inch.

SCREEN EFFECTS

When you measure the Ruler line in the same pitch as the Character pitch that you are using, then your

text will not go past the margins on the screen. (The exception to this rule is PS, which we discuss later.)

If you temporarily change Character pitch, your text won't match up with your righthand margin. This is because LocoScript cannot show the changes in character size on the screen. However, LocoScript still calculates how many of the characters will fit onto the line when it is actually printed and breaks the line at the right place.

For example, if you change from a Character pitch of 12 to a Character pitch of 10, your margins won't move. But your characters are wider and so fewer of them will fit onto the line. The text will therefore fall short of the righthand margin on the screen because LocoScript works out how many characters will fit onto the line and then breaks the line at the correct place. Of course, when you print out the document the margins will be in the correct places. You may feel tempted at this point to change the Scale pitch so that your text matches up with your screen margins again - but don't give in to temptation! There is no need to worry about these screen effects - they are quite correct. If you change Scale pitch, you'll change the position of your margins and then your document won't print correctly.

As an example of changing Scale Pitch within a document let us suppose that you have decided you want a lefthand margin of one inch.

In your first layout, where you are using a Character pitch of 12 and a Scale pitch of 12, you set the lefthand margin position at the 12th character position along the Ruler line. This gives you the one inch margin you wanted.

In your second layout you are using 10 pitch characters. If you change to a Scale pitch of 10 in this second layout then this will alter the distance to your lefthand margin. Ten of the new Ruler line "characters" now equals one inch, but your margin is still positioned at the 12th "character" position. Therefore when you print the document, the text in the second layout will start printing 12/10 of an inch from the lefthand edge of the paper, that is 1/5 of an

inch more than before; which is not what you had intended at all. You will also get similar problems with your right margins and all of your tab stops.

You could get around this by calculating some new margins and tabs to get the same effective position. The calculation: "old position * new pitch / old pitch" would give you the margin and tab values you would need to use for your text so that it prints without these positions changing on the paper.

But these are exactly the sort of calculations that Scale pitch was designed to help you avoid. If you always keep the Scale pitch the same throughout your document, you won't have to make any calculations about the position of your margins and tabs on the page; LocoScript will do this for you. Your text will always print using the same margin positions because the scale on the ruler line hasn't changed.

The appearance of your document when it is printed is more important that the way your text is displayed on the screen. So don't worry about the screen effects which result from changing Character pitch within a document. LocoScript cannot show you different sized characters on the screen but it always calculates the line breaks so that the document prints correctly. The effects you see on the screen of lines appearing to break before or after the margin is LocoScript showing you where the real line breaks are.

If you let LocoScript handle Character pitch changes on the screen in this way and resist the temptation to "correct" it manually, LocoScript will always print your documents correctly.

If you can keep your head when all about you are losing theirs, perhaps you've misjudged the situation.

Do not do unto others as you would have them do unto you. Their tastes may not be the same.

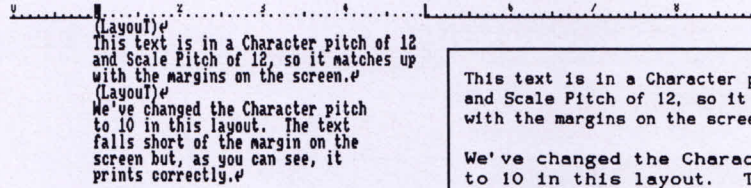
PROPORTIONAL SPACING

When using a Character pitch of PS with a Scale pitch of PS, the text will not always line up with the righthand margin correctly: sometimes it will fall short of the margin and sometimes it will pass it.

This happens because in proportional spacing the widths of the characters differ and, like changes in Character pitch, these differences cannot be represented on screen.

However, LocoScript calculates the line breaks accurately and the text will print out correctly.

You should note that the Scale pitch of PS is the



This text is in a Character pitch of 12 and Scale Pitch of 12, so it matches up with the margins on the screen.

We've changed the Character pitch to 10 in this layout. The text falls short of the margin on the screen but, as you can see, it prints correctly.

same as the Scale pitch of 12. It has been included so that the menus relating to pitch are consistent.

JUSTIFIED TEXT

Changing the character pitch can also affect the way justified text is represented on the screen. Justified text is usually displayed with a straight righthand edge.

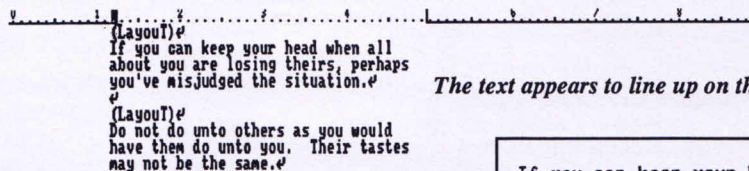
If the Character pitch gives you a larger size character than the Scale pitch, the text will appear justified on the screen (with large gaps between the words!) as well as printing correctly. But if you select a Character pitch which is smaller than the Scale pitch, you will find that your text will not retain its justified appearance on the screen. This happens because you have already passed the screen's right hand margin when the line breaks and so it is not possible to make the line look justified. Of course, you will find that it prints justified.

WHEN YOU CAN CHANGE SCALE PITCH

The only time we recommend that you do change the Scale pitch is when you are using a different Character pitch to the default Scale pitch that LocoScript has set your document up for. If you always work in a Character pitch of 10, then that's the pitch you tend to think in, so its best to change the Scale pitch to 10 in all the layouts. Then you'll see an accurate representation on screen of how your text will be printed.

You can ensure that future documents always use the same Scale pitch by setting up a template. If you set up all the Stock layouts you use with this Scale pitch, you won't have to worry about changing it in the future. Your documents will then be displayed on the screen and printed as you intended. ■

An example of changing the Scale pitch



The text appears to line up on the screen...

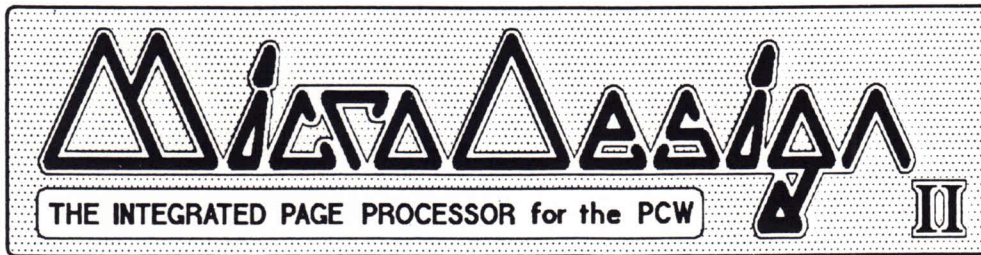
...but printing it gives you a very different result!

If you can keep your head when all about you are losing theirs, perhaps you've misjudged the situation.

Do not do unto others as you would have them do unto you. Their tastes may not be the same.

... at last ... **SERIOUS DTP** on the

AMSTRAD PCW



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MicroDesign II provides all the essential features of DeskTop Publishing and Graphic Design on the Amstrad PCW. It operates under CP/M as a self-contained and fully integrated program.

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Character Size and Line Spacing are adjustable up to 160 points, and the system handles up to eight columns of text on one page including Automatic Margins, Gutters, and Dividers.

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**Bold, Double, Highlight,
Outline, Italic, Underline**

Page Templates allow 'stylesheets' to be composed and saved containing settings for Page Format, Columns, Character Spacing, Line Spacing, Type Size, Text Format etc.



GRAPHICS

An extensive range of Graphic Art and Design facilities are provided, including Lines, Shapes & Pattern Fills; Cut, Copy & Paste; Rescale, Rotate & Reflect.

MicroDesign II includes a library of over 400 patterns and symbols which can be used for diagrams and shading effects.

Clip-Art and other graphic material can be created in MicroDesign II or imported from a wide range of other software products.

FONT DESIGN

The Integrated Font Designer allows the user to create their own typefaces of up to 96 characters. Characters can be copied from each other or from a drawing and edited using features such as Reflect.

PAGE LAYOUT

Both Landscape and Portrait A4 page formats are provided as well as a very high resolution Strip format (512Kb RAM recommended for best results). Full Cut, Copy & Paste operations are provided for perfect layout control.

TEXT EDITING

The integrated Text Editor provides essential word-processing facilities within MicroDesign, and has full Cut, Copy & Paste facilities. It supports controls for Typestyle and Text Formatting features used during Typesetting.

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MicroDesign II is fully compatible with Locoscript 2, Protex, Wordstar, AMX Stop-Press, NewsDesk International, The DeskTop Publisher, Master-Scan...

It is fast and friendly to use with mouse or keyboard, and is compatible with the AMX or Kempston mouse.

The ability to Undo or Redo the last operation means no fatal mistakes. The menu system has been carefully designed to make it easy to find and control all operations.

MicroDesign was used to design, typeset and print its own 120 page User Manual.

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ENTERTAINMENT

Reviewed this month:

- *X-Out*
- *World Cup Yr 90 Compilation*
- *Ultima VI*
- *Fighter Bomber*
- *Teenage Mutant Ninja Turtles*
- *Dan Dare III*
- *Pipe Mania*
- *Might & Magic*
- *Might & Magic II*

X-OUT

Rainbow Arts' shoot-em-up sensation

CPC Disk - \$39.95
CPC Tape - \$29.95

From the depths of outer space to the depths of the world's greatest oceans came the alien forces of Alpha Centauri. Out of their savage attacks on all air, sea and land borne craft grow the united efforts of the world's super powers - project Deep Star, the ultimate war machine. Deepstar increases in power and weaponry with each vicious encounter. Now you are called to command. Destroy the continuous onslaught of aliens that threaten the future of all mankind.

The plot of X-Out is vague to say the least. From what I can gather from the booklet, the Alpha Centauri race was nearly destroyed in an ancient war, and since then they have been hiding out at the bottom of our oceans only to surface again to give us a hard time. I could be mistaken?

But X-Out is a game that needs no introduction. A shoot-em-up has got to be pretty damn good nowadays to convince our jaded gamers out there. Well X-Out is just that, and dare I say that it is probably the most impressive shoot-em-up to grace our CPC screens to date.

On loading, you are presented with a rather confusing weapons shop which includes an unparalleled array of alien bashing accessories. After selecting one of the four basic fighter models, you can arm your ship with missiles, jumpbombs, electric bows, claw arms, flame

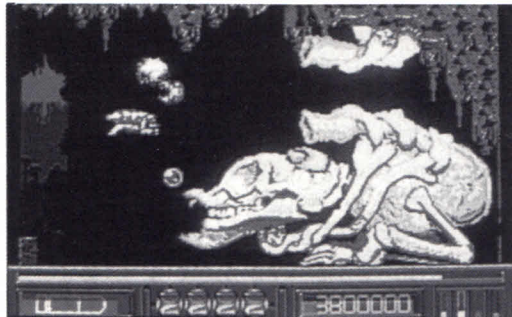
throwers (what good are these underwater?), smart shots, armoured drones, teuton lasers, extra shields and more! You can also deploy satellites which surround your ship and protect you from the more devious attackers.

Once you have figured all this out (it takes a while), you can get to business. X-Out boasts 8 levels, 160 screens, 40 different alien types and over 50 objects on screen at once, phew! Although impressive to say the least, I won't go into describing the aliens and the ominous guardians at the end of each level, its a story you have all heard before.

The graphics are great, the varied background scenery scrolls smoothly, while your ship and the enemy sprites look as good as they possibly can in the CPC's mode 0 (no mean feat!). All sprites move at a

hectic pace, and no matter how many objects are on the screen at once, the action never seems to slow down, and your ship fires just as fast as you can hit that little red fire button. My only complaint is the sound effects. There's no music at all and the effects themselves are nothing more than bursts of white noise, but this is a weakness that you will hardly notice.

Overall, X-Out is a true shoot-em-up that is a prime example of the renewed interest in CPC software. It just goes to show that you definitely can teach an old dog new tricks.



CENTRE

WORLD CUP YEAR 90 COMPILATION

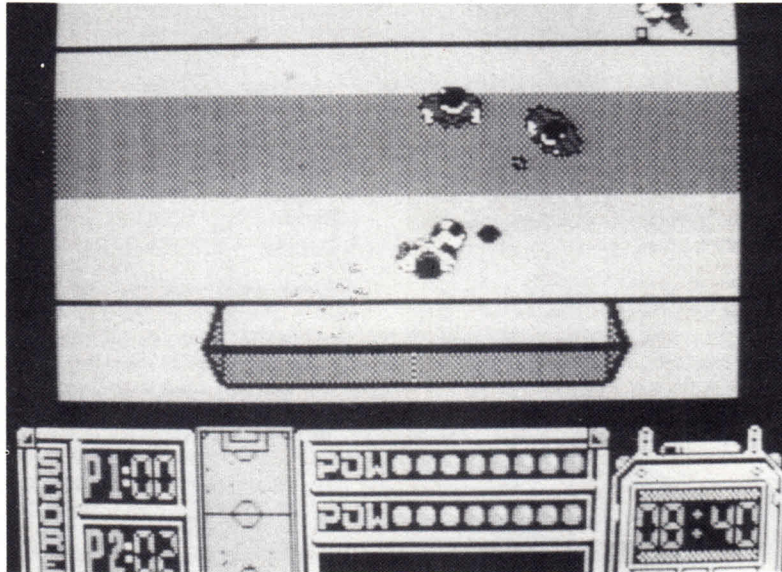
Australia catches up with the excitement, from Vector

CPC Disk - \$49.95

CPC Tape - \$39.95

As you should know, the 1990 World Cup was held in Italy, and the eventual winner was West Germany. The software industry is not ignorant of this, and as a result there are a lot of programs being released to commemorate the World Cup. Unfortunately, while their release was timely for the U.K. market, they are arriving in Australia too late to fully cash in on the hype of the big event. Well, that's not too bad if the programs are any good. One of the first to arrive is **WORLD CUP YEAR 90 COMPILATION**, and in it there's a lot of soccer action.

The first game in this package is **GARY LINEKER'S HOT SHOT**. In this, you get to play either the computer or a friend. You can choose the control method you want, and the team you want to control. There are four levels of difficulty, with Division 1 being the hardest and Division 4 the easiest. The match time is also adjustable. You look down on the pitch from above, and the players in each team are very detailed. The playing field occupies the top two-thirds of the screen, with the bottom holding the score panel and a schematic of the pitch which shows the position of the players. A good feature here is a rectangle which shows where the current screen is on



the field. You control all players except the goalie; at all times both are computer controlled. This, in fact, is the only drawback with this game, as it makes it very difficult to score. All in all, a good soccer game only let down by the difficulty in scoring.

Second offering in the compilation is **KICK OFF**. This was originally released on the 16-bit format last year, and was an outstanding success, and the CPC version only came to light in U.K. in April this year. In **KICK OFF**, you can again play against the computer or a friend, but before getting down to a serious season, you can practice the skills needed including taking penalties, or play against opponents of different standards. You also get to set the time limit for each game, and two 45 minute halves are just that. The game is again viewed from above, but this time the playing pitch is the left two-thirds of the screen, with the score panel on the right. Pitch

markings are fairly basic, with only the field outline, a rectangle to simulate the goal, and a cross representing the centre to be seen. The big failing is the standard of the sprites, which appear almost as blobs on the screen (the player shadow that is next to the single colour sprite causes this). Even though it doesn't look good, **KICK OFF** is very playable. This is caused by the fact that it's easy to play and fast. All in all, a very playable game spoilt by poor graphics.

The last game in this pack is **TRACKSUIT MANAGER**. You take control of a national side at the end of a disastrous World Cup campaign (England is the default country, but you can change that if you want, and know about 30 players from the country you choose), and you manage them over a four year

period. The first two years your team must strive to win the European Nations Cup, and in the second half of your tenure it's off to the World Cup. Through a series of menus, you get to recruit for your squad, scout the other teams you expect to play, arrange friendlies, arrange a tour (five matches in ten days), as well as play the required fixtures in the ap-

propriate Cup round. Once you have a match to play, you get to pick your team (but make sure you get a player report before you make your final selection), set your team and individual players tactics and play the match. Once you start the game, the only control you have over the play is to decide when to make a substitute. Match play is displayed in a central window in text form, and a schematic of the pitch shows where the play is actually taking place. A good managerial game which isn't confused by redundant graphics.

Included in the package is a World Cup result chart, which gives you snippets of World Cup history. All in all, this is a good compilation. It's a pity that it reached us after the great event was over, but the games, previously unreleased here, are worth buying on their own. All three in one package is great value for money, and a must for soccer fans.

FIGHTER BOMBER

Flight simulation in the world of 3D, from Activision

PC 5.25" - \$69.95

The first flight simulator to feature solid graphics was CHUCH YEAGER'S AFT. The only thing this missed was the ability to blow something up. Well, ACTIVISION have released a flight simulator that is based on the Curtis E. LeMay Trophy, an annual bombing competition that is conducted in the United States involving different air forces (the RAF have actually won this recently). And you get to choose the plane that you want to fly.

Upon opening FIGHTER BOMBER, the first thing you'll notice is the OPERATIONS GUIDE. This is a very comprehensive manual, which contains data on

all the aircraft and weapons available in the programme. You'll also notice that this is a general manual, designed to suit all versions of the game, and contains the warning that not all versions have all the features listed. Along with this manual is a quick reference guide for the CPC version. This contains information specific to the CPC version, including

control keys. Unfortunately, a lot of the controls mentioned are wrong, and a lot of trial and error is needed to discover how to work the programme. Even the loading instructions are wrong; (CPM is quoted, but RUN"DISC is the way to go). Ignore this minor fault and load the game; it's worth it. A funny thing about the manual is that it doesn't tell you how to fly the planes. I don't think this is a drawback, because each of the planes is very easy to fly, and it doesn't take long for you to get the hang of taking off and landing.

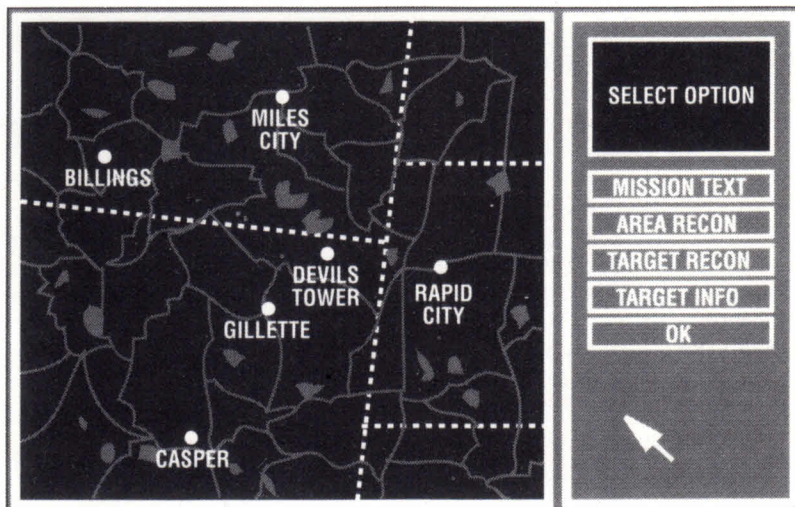
The loading screen features a representation of the box art, along with a jaunty tune. This is a good intro to the game and just a hint of things to come. Next comes the pilot screen, with a chance to enter up to seven pilots. Then comes the aircraft selection, with only four being available on the CPC. These are shown in colourful 2D (similar to the picture on the back of the box) or 3D, which rotates the aircraft around so that you can get to see it from a number of angles. Information on the individual aircraft can be called up, giving you a summary of the data in the manual. After choosing your aircraft (I like the

Mig-27 and the Saab Viggen best), you get a breakdown of your current pilot status, which is saved automatically to disc after each flight, ...and then it's into the missions.

There are four types of mission - Cover, Tactical, Strategic and Offensive. There are two different missions in each category. On first loading, you can only access Free Flight (used to allow you to get used to flying the aircraft and exploring the four states that your future missions will fly over) and the first of the covert missions. This is a simple out and back mission, and you have to successfully complete this

before you proceed to more difficult ones. Once you complete a mission, you get a chance to refly it or return to the selection menus. Also from here, you can get a debrief of the mission that you have just completed.

Graphically, FIGHTER BOMBER is very good. All the planes and landscape features are solid 3D, and



Mission briefing screen.

each aircraft has a different instrument panel. You can view your plane from a number of different angles, and even rotate up and over your plane in flight. Landscape scrolls by a bit slowly, but that doesn't detract from the playability of the game. As well as your ground targets, air targets appear at random times during your mission, and it gives you a buzz to blow one out of the sky. Instruments are kept to a minimum, but this in no way detracts from the game. Once you ignore the sloppy Quick Reference Guide, you are presented with a good programme that quickly gets you hooked.

FIGHTER BOMBER is not the most accurate flight simulator ever produced, but it is good. The graphics are very detailed, even if the screen scrolling is a bit on the slow side. Completing a mission gives you a good feeling, and you can't wait to try the next one. It's a pity that the crew responsible for the CPC Reference Guide didn't take as much care with it as the programmers did with the game, because otherwise FIGHTER BOMBER would be a great package. Now it's a great game let down by sloppy instructions.

TEENAGE MUTANT NINJA TURTLES

PC Dual - \$69.95

From Ultra - Somebody Had To Do It!

Yo dudes, like, I have here this mega-amazing game that's like, mondo tubuloso. But why am I talking like this? Looks like I've been sucked into the latest craze to sweep our fair nation. Everybody wants to get into the act! Let's face it, you either love Turtles or you hate 'em....but regardless of your opinion, direct from fad-city inevitably comes fad-merchandise. Keep your mind open, you may be surprised. Those of you immune to the mass hysteria caused by waves of fashion may find yourself enjoying this game, even against your well established anti-Teenage-Mutant-Ninja-Turtle principles.

This fad is not a mindless one, so be prepared to sit forward on your seat and get into the struggle for justice - (is that what we're fighting for?) Oh, and by the way, the more sensitive among you who find themselves prone to disillusionment should try to be tough, because reality is nothing like the T.V. series - the good guys don't always win. At least not while I'm playing.

Even the introductory screen is entertaining, as well as informative. So although it makes the "guys" look a little less cute than they are on T.V., (I suppose to make the player feel more tough than teenage), it lets you make their acquaintance properly before you begin. I will advise you, though, to read your instruction manual carefully before beginning this game, as you will need to be familiar with each character's personal traits in order to utilise them to their full potential, and fumbling through on a learn-as-you-go basis would be the least effective way of gaining your skills.

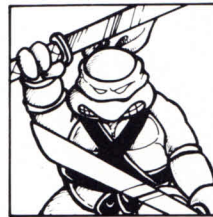
Just like in real life (?) your ultimate objective is to obtain the evil Shredder's Life Transformer gun in order to return your rat-friend, Splinter, to his natural human form. But let's not jump the gun (get it?) just yet, because there is a long trail of terror you'll have to follow before you get to that stage.

So where does a Turtle begin? Well, I'd have thought that was obvious. No heroic adventure is complete without its defenseless female shoved somewhere into the plot to make the hero/es look more gallant and less "career" orientated. And naturally, being defenseless - but being a woman of the 90's, definitely not dumb - April O'Neil is in need of rescuing. Therefore your first priority is to rescue April from her captors; in this case, Bebop and Rocksteady; Shredder's two thugs-cum-sidekicks.

To reach the final stage, (which takes place at the Technodrome), after a successful first mission, you must overcome five more levels of adventure without allowing all four Turtles to be captured by Shredder's Foot Clan warriors. Which really means passing through thirtyfive or so stages, as each level is

comprised of several 'levels-within-levels'. Are you following? Good, because there is a lot to learn.

Along the way your every instinct will be challenged both above ground and below, and on top of this you have the added pressure of an ever-depleting lifeline that runs down if it is not regularly refuelled with selectively situatedhave you guessed yet?...PIZZA! However, should your Turtles be captured all is not lost, providing at least one Turtle remains free to rescue them. That is, of course, if you can find them.



LEONARDO™

You'll not be bored, this I can promise, as the Turtles are free to roam no less than eight different scenes - each bustling with an unrepitive array of characters and action. This will keep you busy! Still, you needn't fear getting lost in this catacomb-like arrangement, as one tap on the escape button in an emergency situation and you will be returned to the information screen which provides you with a map indicating your location, an option to change characters should you choose, and some advice from either Splinter or April - albeit sometimes pretty useless.



MICHAELANGELO™

The graphics are anything but dull, and because of the wide variation of imaginative characters you will find that the screen is a constant source of amusement - (keep an eye out for your splat Turtles when death occurs on a road. Not that I'm encouraging you to be thrilled by anything so horrific!) All emphasis on variation yet again, you will not be disappointed by the musical accompaniment. The tune changes constantly according to your game position, and also has that amazing power to drive you crazy if you have to listen to it over and over and over again.... which is one of those endearing qualities that make the better games so appealing.)

A colourful, action-packed game that will test your skills, keep you entertained and perhaps leave you feeling more Turtle-tolerant than you may previously have been, I hereby recommend Teenage Mutant Ninja Turtles. All in the name of fun.



DONATELLO™



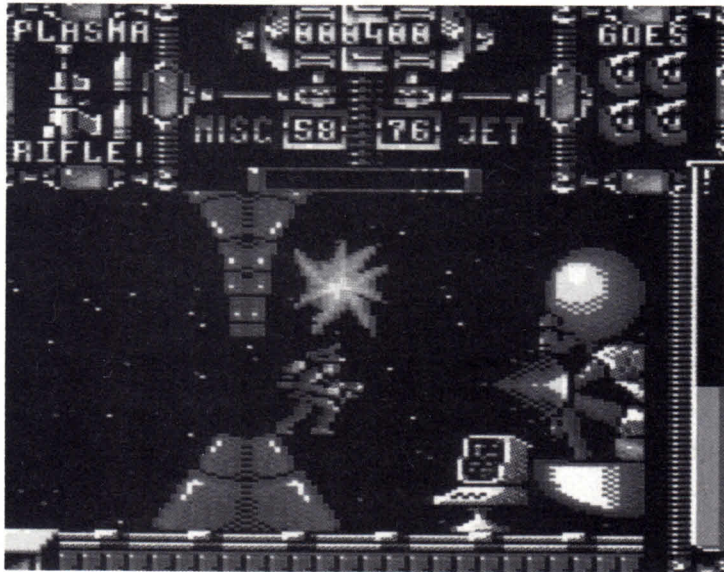
RAPHAEL™

DAN DARE III

The fight against evil continues

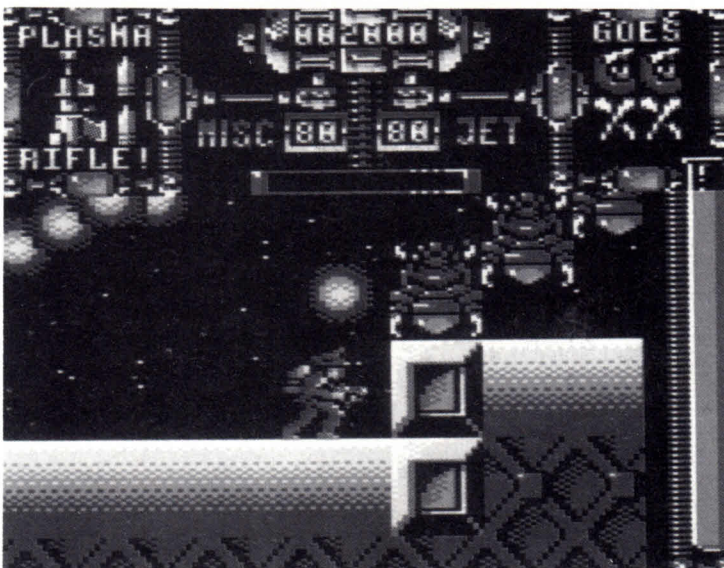
CPC Disk - \$39.95
CPC Tape - \$29.95

The fate of all mankind hangs in the balance. The Mekon menace is back again determined to conquer and dominate the human race. In doing so the evil Mekon has vowed to wreak his vengeance upon his arch enemy, Colonel Dan Dare. In this effort, the



Battle with the Mekon on Level One.

Mekon has conducted a series of horrific genetic experiments on a variety of life-forms, turning them into an army of Treen slaves. The Mekon decides that Colonel Dan Dare would be the perfect human subject to further his experiments on, and so Dan is captured by the Treen slaves and brought to the



Getting into danger on Level Two.

Mekon's scientific satellite. But Dan soon escapes the Mekon's grasp, and finds himself trapped in the endless corridors of the giant satellite. You must help Dan explore the satellite and gather enough rocket fuel to get you home safely, while tackling the Treen slaves and the other mutated beings that will try to stop you.

In case you don't know, Dan Dare was the main character of the famous fifties cartoon strip of the same name. Unlike our over the top American friend Flash Gordon, Dan Dare was a Colonel of the OUN Interplanetary Space Fleet, and a very stiff upper lipped Englishman at that!

The game starts with Dan being imprisoned in the storeroom of the satellite (what a convenient place to be locked up!). This will be your reference point throughout the game. Here Dan can stock himself up with a plasma rifle (lazer to the less informed), a battery pack, a smart bomb, bouncing bombs, extra ammo, fuel for your jet-pack, and even an extra life if you are lucky. You will have to return here if you run low on items or fuel.

Somewhere on each level, you will find the Mekon. When you think you have plundered enough for one section, blast the Mekon until he (it?) flees to the next level. On leaving, he will leave a key that will activate the teleport module to the next level. The teleport system is dangerous to say the least. Donning his space suit, Dan plummets through a "space corridor" consisting of a series of winding squares that rush towards you at an alarming rate. If you manage this, you will appear on the next level, shaken but unharmed.

Here you must go through the same process of Treen bashing until you reach the Mekon and grab another key to the next level, and so on. Once you have found all the fuel canisters, you can rush back to the store, fuel your rocket, and go home.

Although the plot and general theme of Dan Dare III is fairly predictable, the game itself is great fun to play. Dan rushes about on his jet pack through the colourful and distinctive corridors of the satellite, while an impressive parallax starfield scrolls in the background. The Treens and their more mutated accomplices are large and move about quickly - and I mean quickly. The whole game has a very fast and playable feel about it, and the sound effects are OK too.

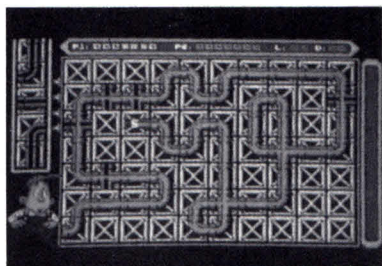
Overall, Dan Dare III is a worthy successor to the other excellent games in the Dare series. It's a bit difficult, but that is only due to the speed of the game (the transport section will make your hair stand on end!). If you want a fast and playable exploration game for the CPC, I can't think of anything better, even if Dan Dare himself is a bit of a has been!

PIPE MANIA

A classic puzzle arcade game from Empire

CPC Disk \$39.95
CPC Tape \$29.95

If you are constantly bothered by a dripping faucet in the middle of the night,...CALL THE PLUMBER!! Doing it yourself can be hazardous to your household.



Pipe Mania gives you a choice of four playing modes, including One Player; Two player; Expert One Player; and for the budding apprentices among us, Training mode.

A typical puzzle-type game, It demands more brain than brawn in the quest for success. So, with hard helmet over your thinking cap and a spanner in your hand (or is that in the works?), off you go...

A little more stressful than being a painter faced with a blank canvas, you will find yourself presented with a playing grid that is empty except for the starting piece.

The object is to score as many points as possible by constructing a continuous pipeline from the starting piece.

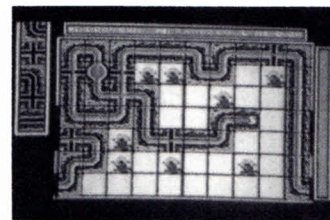
As you play, pipe sections appear in a dispenser to the left of the grid. The trick is to learn to place these sections in a pattern that anticipates connections any number of moves in advance. The amount of time you are given to connect the pipes before the Flooz starts to flow decreases as you progress up through the levels.

Pipe construction isn't as easy as it seems, as you need to anticipate where the given portion is going to be required and plan your structure ahead of time. The rest depends on the luck of the draw, and if you allow the Flooz too many options chances are it will not flow in the direction you want it to.

You may breath a sigh of relief, as you do

not need to fill the entire surface area to win on any given level. You need only to beat the Flooz through a specified number of pipes in order to qualify for the next level. But beware!

One slip-up and you will have to return to level One and begin all over again. It will keep the beginners on their toes; just when you get the hang of it.... "What, it's not following me?" If the screen had a bathroom it would be flooded. As would the kitchen, laundry...



Experience is the best teacher, so time and dedication should find you advancing to bigger and better things. This may lead to disappointment, as you will find that the already simple graphics do not alter on the second level, or any subsequent levels. You can choose to look at this from one or two perspectives - you can be openly critical and say that the design qualities of an otherwise good game are dull and monotonous, or you can view the simplicity as a refreshing lack of pretension that doesn't distract the player from the down-to-earth purpose of the game. Either way, I feel that the graphics could be better.

If you are looking for aural entertainment you will find the background music fairly average. Here, though, you are at an advantage, because if it gets too monotonous you may exercise human-kind's power over machine-kind by turning the volume down.

Bad points aside, you will be happy to know that the game does reward the player as higher levels of skill are attained. (Discrimination against bad players?) Expert mode is definitely more colourful, and - if you choose to look at it philosophically - more interesting, as you are given a choice between the pipes from two separate dispensers, which gives you a greater potential of possibilities.

It is not an action-packed game; the challenge lies in speed coupled with anticipation and strategy. Satisfaction, therefore, can be tremendous if you find

logical challenges rewarding. Despite the less than thrilling graphics, Pipe Mania is a challenge not to be laughed at. I, too, could have as-tounded myself had I been able to venture beyond certain "Game Over" screens!



MIGHT & MAGIC

Book One, by New World Computing Inc.

PC 5.25" - \$49.95

MIGHT & MAGIC

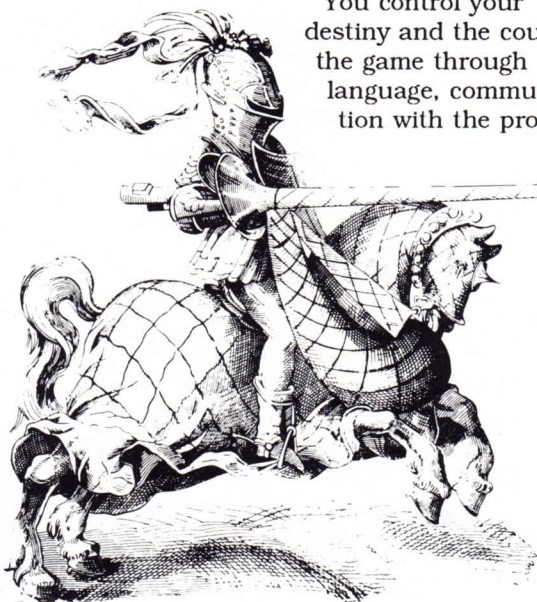
Set your brain on think mode and shut off all but your elementary senses - if you have an imagination you will have to use it profusely. If you are looking for visual stimulation you won't find it here.

A fantasy, role-playing adventure game, they tell you in the instruction booklet that "The object of an adventure game is the game itself, rather than a particular goal." Great! You think; content without the conclusion! A book without a closing chapter! You would expect such contents, based on that principle, to be at least a little bit exciting. Even a tiny, tiny, small, minute, piddly little bit exciting. True? Wrong.

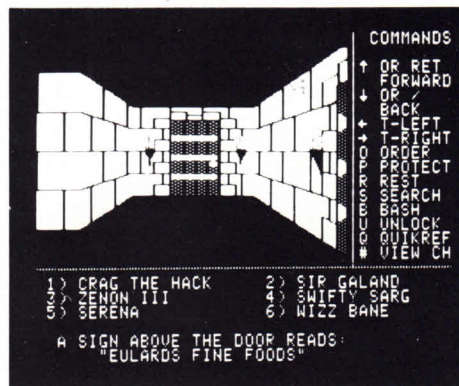
I found this adventure extremely average. Does 'average' have an extreme? We have just invented one. As it is so close to a Dungeons & Dragons type arrangement I suggest that you stick to playing it manually, because there is really little difference. Your own imagination is more adequate for this game than the computer's, and can operate at its own pace. The only advantage of having this sort of game packed readily into a computer is that you need only have one player and so rely only on your electricity supply for convenience.

The graphics are simple-ish. You are given a three-dimensional viewpoint from the perspective of your party in an unclearly marked setting, and as all of your moves are made verbally there is little variation between what you see from one view of the screen to the next. Every doorway looks the same. The occasional smudge on a brick may differ, but food for the aesthetic senses it is not.

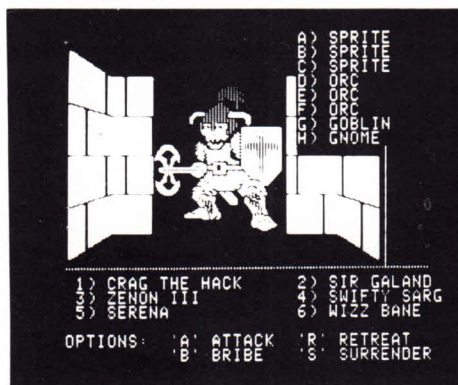
You control your destiny and the course of the game through language, communication with the program.



Your power, therefore, rests heavily on choice. Once you know your characters and their abilities you can inevitably make the game more interesting... so plodding through the boring beginnings may reap some rewards.



From this point of view you may like to consider it to be a good, basic introduction to this alternative



game format, for those who are unaccustomed to the role-playing style.

All in all, though, it is better to relearn the old "Don't judge a book by its cover" lesson and

look beyond the fancy box cover illustrations, and beyond the colourful map they include, to view the real substance of your game. Couldn't see much? There you have it.

N.B. Futures look rosy when they have already happened - don't let this influence your approach to Might & Magic II, as advancement has allowed it some substantial improvements.

MIGHT & MAGIC II

As soon as you enter into Might & Magic II you will immediately notice the improvements against the original Might & Magic. The spirit of the screen is lifted by a sudden explosion of colour, as though the pallid mark one version has suddenly come to life. Ah, that's more like it.

The instruction booklet is more lucid than the first, beginning with an allegorical prologue and a history of Cron to open the adventure and give you some idea of where you stand.

When you begin, the uncharted world is as strange and as unfamiliar to you as it is to your

MIGHT & MAGIC II

Gates to another world

PC 5.25" - \$49.95



characters. It is up to you to map the world while travelling through it.

You are able to create new characters or to use the ones that the game provides; as in all games of

their own. You will always have the option to refuse any quest offered.

Naturally, you will also encounter the 'monsters' of the world. Not all of these monsters will be a threat to you; the dangers they pose will vary in degree and will be generally proportionate to the experience level of your party.

As you begin trekking through the now interesting scenery you will discover that doorways are labelled, the flames move, (everything that's not nailed down moves), the creatures and what-have-you that you encounter are more animated and you have a better communication between you and your computer. The adventure runs much more smoothly, although the most annoying point common to this type of game is that you need to keep swapping discs to continue beyond some situations. For example, I had to swap discs twice just so that a "humble wizard" could remind me to find his goblet.

As you rewrite the adventure each time you begin a new game, and the concoction of characters that you can create is seemingly endless, it is a game that you can become absorbed in on a long term basis. If you have the mental energy and the imagination to spend, good luck on your journey!



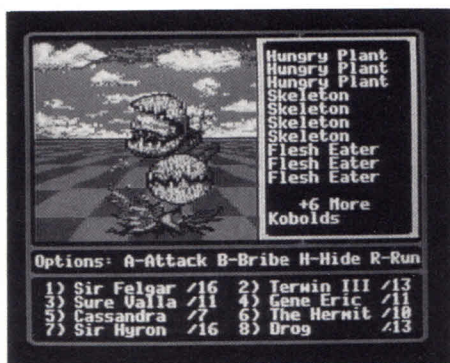
this sort, the more you play the more familiar it becomes, and the better you are able to choose the most effective characteristics from the broad selection offered to your characters.

Any character that you create starts out a little wet behind the ears. He or she is 18 years old and is at experience level one.

Different classes of characters wear different types of armour and use different types of weapons. Each also has a backpack, in which up to six items may be carried at any one time.

Spells are restricted to certain classes of characters. There are 96 in all, which are divided into the categories of cleric and Sorcerer.

As you journey you will meet various inhabitants of the world who may offer you quests, or seek your assistance on quests of



GW-Basically Speaking



For the not-entirely-unbegun beginner, Gary Koh offers guidance through some interesting parts of GW-Basic programming.

So you have unpacked your brand new IBM compatible PC and are wondering what to do with it? Somewhere on your MS-DOS discs you will find something called GW-Basic. As everyone should have it GW-Basic seems a good way to begin looking into programming.

This is not going to be a series on Basic in the strict sense. There will be more articles on GW-Basic appearing in the coming months, but I will not be repeating what hundreds of other people have already written in other magazines. Instead, these articles will be aimed at the more experienced Basic programmers, like those who are moving from Locomotive or Mallard Basic to Basic on IBM compatibles, and will be introducing features of GW-Basic. GW-Basic is not the only Basic available and it is not exactly the most powerful Basic, but it is "free" and I have chosen it because of its common usage.

To prevent leaving the beginning programmers completely in the cold, this article is written as an introduction to GW-Basic for beginners. There are many good books on Basic available, therefore it is not written as a fully-fledged Basic course. I will concentrate only on very basic (Sorry) programming.

For those who do not know already, BASIC stands for Beginners All-purpose Symbolic Instruction Code. As you might gather this is a good language for beginners. However, it is considered by purists to be a rather bad language for serious programming, as you can pick up a lot of bad programming habits from using it. But because of its large availability (in most cases you do not have to pay extra for it, unlike other languages) it is used a lot, mostly by amateur programmers.

Basic is easy to use, requires less initial effort to learn and is relatively easy to debug. GW-Basic is what I call a traditional Basic because it is interpreted. Most other languages these days are what we refer to as "compiled". A new breed of Basics are available, like Turbo Basic and Quick Basic. They differ from the "traditional" Basics in that they are compiled, which makes them run a bit faster, and

they are more structured.

GW-Basic has a program editor that is more powerful than just about any other Basic available on all the other micro-computers (especially the BBC model B. Whilst Basic on that can be more structured the program editor is so hopeless that it makes you wonder why they saddled a powerful Basic with it).

A program is a list of instructions to the computer; for example the instructions to start up your computer. On Basic these instructions are given numbers. Actually that should be instruction lines, because each line can hold more than one single instruction. Basic then executes these instructions in the sequential order of the line numbers of each instruction line. You can number the lines in a program 1,2,3,4.... but most people find it more convenient to number them 10,20,30,40..... The reason for this is that it allows you to insert lines between other lines if you need to make any further additions at a later stage.

Most traditional Basics have what are called line editors. That means that you tell the editor which line you want to edit and the editor will obligingly bring up the line for you to alter or correct. GW-Basic does not use a line editor but what is called a full screen editor, which can act on the whole screen rather than on a single line.

Basic can work in one of two ways, called direct and indirect mode. You can use the editor to enter a program then type the command "run" which transfers control to the Basic interpreter which then executes the program - this is indirect mode. With direct mode you type in a line of instruction(s) without a line number. Basic then executes this line of instructions directly.

It is this indirect mode that allows a high degree of interaction in Basic which is unsurpassed by any other language. If you were not sure how an instruction operated you could enter it in direct mode and see what it does. All of the other compiled languages generally use a word processor or text editor to enter

the program instructions. With a text editor or word processor you use key combinations to edit the program.

In Basic, things are a bit different. Like other languages it has a list of commands which do the various things it is capable of. Unlike other languages, most of the more powerful editing functions, such as program listing or line deletion, are actually commands. Almost all of the commands can be used in both direct and indirect modes. This leads to a situation in which you can actually incorporate commands that are meant to help with editing the program into the program itself. Of course, it would be of little use to do so, but it is possible.

When you start up GW-Basic you will be presented with a screen showing the start up message at the top left hand side of the screen and the current definitions of the function keys in a single line at the bottom of the screen. There are several versions of GW-Basic circulating around. The start up message will tell you which version you have. I will be basing this and subsequent articles on version 3.2 which comes with MS-DOS version 3.3. For this article any version above 2.0 should do nicely, as I am only going into the more simple feature details, but future articles will be covering commands that are new and implemented only in version 3.2 or higher.

To start with, try typing the following line into the computer. When you finish entering the line press the enter/return key. If you make a mistake press the backspace key, which is a key that is just above the enter key and is marked by a left hand arrow, (Not to be confused with a small cluster of arrow keys on the keyboard which are called the cursor keys). This will move the cursor to the left by one character and erase the character that was previously there.

```
PRINT"This is one instruction"
```

When you press enter, the instruction will be acted upon by the interpreter. The sentence enclosed in the quotes will be printed onto the screen below the line you just entered. This is just an instruction, not a program. Type in the following lines which go together to make a very simple program.

```
100 ' This is a simple program
110 '
120 CLS
130 FOR A=1 TO 10
140 PRINT"This is line";a
150 NEXT
```

I prefer to start my line numbers from 100 but you do not need to follow my example. Also note that GW-Basic will convert all characters into capitals, except those that are enclosed in quotation marks.

Run this program by typing RUN. The screen will clear and ten lines will be printed, each finishing

with a number. The first command, CLS, clears the screen. The next command, the FOR command, is what is known as a control instruction. To produce the same result as the program did you may have used ten PRINT statements, but that gets very unwieldy. Instead of doing that, you should use the FOR-NEXT command.

This command creates a program loop. Normally instructions within the program are executed sequentially, one after another according to their line number order. This instruction alters the flow of instructions by putting a value of 1 into a. The program then continues happily executing until it encounters a NEXT. Then it goes back to where the FOR instruction was, looping back and forth until the condition is set.

In that particular FOR, the instruction was "A=1 TO 10". That means that an initial value of 1 was put into the variable A. Each time it travels the loop it is automatically incremented until it has a value of 1 higher than the last value given, 10. Then the loop stops and program execution continues sequentially after the NEXT.

A variable is rather like a pronumeral in maths. It is a value that can change throughout the program to help with a variety of tasks. A variable name can have up to forty characters. For ease of clarity, instead of using single letters as I did you should use descriptive names, like "XMOVE" or "DECIDELEFT". The only other restrictions there are on the names you can give variables is that you cannot have spaces in the name (although you can have numbers) and it cannot be exactly the same as a command. For instance, you cannot have the variable PRINT, as Basic would not understand what you wish to achieve. You can however have variable names like PRINTRUN and NOPRINT.

There are actually several types of variables you can have. I will not be going into these here as it gets a bit too complicated. When you call a variable like that A, it is used to represent a number - a floating point number, to be exact. This number can have a decimal part to it, although that is optional.

In that PRINT command I sent not only a text message but the value of a variable to the screen. The amount of input you can print onto the screen is only limited by the maximum line length, which is 255 characters. With the PRINT statement you are able to mix text and variables together in almost any way. All text must be enclosed in quotes. This is the same for any other command in Basic that requires you to pass a parameter that is in text.

For example, the command LOAD, which loads a program into memory must have the filename of the program specified in quotes. The same applies to the SAVE command which saves a program.

The ; character is used to "join" the different parts of the print list. In that case it instructs the PRINT statement to print the contents of the variable A straight after the text. You may be wondering why

there is a space printed after the text, separating it and the variable. This is because Basic prints a space before and after a numeric variable. The reasons for this are a bit too complex to go into at this stage.

The last line, the NEXT, simply signals the end of the loop. For clarity you can add the variable name onto the end of the NEXT. In this case the NEXT would end up being NEXT A. I prefer to leave it out, but you may want to put it in. You may also be wondering what the characters at the beginning of lines 100 and 110 are. These tell the computer that everything else that comes on the line is a remark and should be ignored. The command REM works on the 'I could have used that as well, but....' basis, in a more tidy way. Remarks do not play any part in the function of the program. They are meant to be used by you as little notes to help you while programming so that you do not get lost in a jumble of code.

Type the command LIST, (remembering to press enter after everything you type). This will list the program. You can also list segments of the program. Try typing in LIST 110-, LIST 120-140 and LIST -130. You might also notice that when printing reaches the bottom of the screen it will scroll upwards. Now that you have had your fun type in LIST again.

Using the arrow keys move the cursor to the end of line 140 on the screen. Type in the following at the end of the line so that it joins on.

```
;"of the for-next printing"
```

Now, move the cursor to the end of line 120 and type the following.

```
:PRINT"This is a simple program"  
:PRINT
```

Make sure the cursor is still on line 120 and press the enter key. Move the cursor to line 140, (it does not matter which part of line 140), and press the enter key again. Then move the cursor down to the

bottom of the screen to an empty line. If there are no empty lines then press the key marked "Ctrl" and the key marked "Break" simultaneously. The screen should scroll upwards revealing a blank line. On that line type RUN again.

What you should now have is the line "This is a simple program" followed by one blank line followed by the ten other lines which should also have something added onto the end. If Basic throws something at you like "Syntax error" that means that there is a mistake in the program. This is called a bug in computer parlance. It is also possible to have an error that the computer cannot detect. This is called a logical error. Two examples of logical errors would

be having a spelling mistake in the text in the print statement or typing 20 instead of 10 in the for-next statement.

What I have just shown you is how to edit programs in Basic. With most of the traditional Basics you have listed the program (or you have found an error) to find a line to edit. You have then typed in the command EDIT followed by the line number of the line. The line has then obligingly appeared with the cursor in it.

You can do this in GW-Basic, but there is another better way. What you may do is list the program on the screen and do what I did earlier; that is, correct the lines on screen. Make sure you

press enter on the lines you want to change, otherwise they will not be stored. Anything that is on the line, even if it is on the far right of the screen, is accepted by the editor. That is why you should make sure you have a blank line before typing something in, otherwise everything on that line will be considered an error.

While editing the program you can use a number of editing keys. There are too many of them to explain here, but your GW-Basic manual should have a list of them and what they do.

On line 120, the colons are used to separate different commands. That is how you get more than one command onto one line. The PRINT command with nothing after it just prints a blank line onto the screen.

```
100 ' Simple decision making and variable manipulation  
110 '  
120 INPUT"Do you want to find the volume of a sphere(1  
) , or the volume of a square pyramid(2)? Type a number  
please:",OPT  
130 PRINT"Enter all measurements in centimetres."  
140 PRINT  
150 IF OPT=1 THEN GOSUB 190  
160 IF OPT=2 THEN GOSUB 240  
170 END  
180 ' Calculate volume of sphere  
190 INPUT"What is the radius of the sphere";RADIUS  
200 VOLUME=(4/3)*3.142*(RADIUS^3)  
210 PRINT"The volume is";VOLUME;"square centimetres."  
220 RETURN  
230 ' Calculate volume of square pyramid  
240 INPUT"What is the height of the pyramid";HEIGHT  
250 INPUT"What is the length of one side of the base"  
SIDELENGTH  
260 VOLUME=(SIDELENGTH^2)*HEIGHT/3  
270 PRINT"The volume is";VOLUME;"square centimetre."  
280 RETURN
```

Here's an example program for you to try.

That is quite a simple program. Here is a more complicated program. You can use the AUTO command to automatically provide the line numbers for you. Just type AUTO 100. A series of line numbers starting from 100 and continuing in the default increments of 10 will appear the screen. All you need to worry about now is typing in the program, (Page opposite).

This is a great step ahead of the other program, making use of one important programming idea, the idea of structured programming. To start with we will look at the IF-THEN instructions rather than at the start of the program.

The IF-THEN statement allows you to make decisions within the program based on the condition that it is placed between the IF and the THEN. In this case the conditions are IF OPT=1 and IF OPT=2. If the condition given is true then the program execution goes directly to the statement(s) following the THEN. However, if the condition is not true - that is OPT is not equal to 1 or 2, depending on which statement it is - the statement(s) after the IF are not executed and execution goes to the line following the IF statement.

The statement following the THEN's, the GOSUB, calls a subroutine. A subroutine (in other high level compiled languages they are called procedures) is an important idea of structure programming. A subroutine is like a miniature program that performs some functions.

Subroutines can be used in one of two ways. You can use them to subdivide the program into little modules. If you had a program of over a thousand lines and you did not subdivide it into little modules it would quickly become uncontrollable. After all, there is a limit to how much you can keep track of at any one time.

The other reason is that sometimes one part of a code might be used more than once throughout the program. In that case you put the part of code into a subroutine and whenever it is needed you can GOSUB it. All subroutines must end in a RETURN - otherwise poor old Basic would not know what you were doing.

You can have other things beside = conditions in IF statements. You can have OPT<>3, OPT>2, OPT<8, OPT=>189, OPT=1 OR OPT=4, and OPT>4 AND OPT>9. The < and > are the less than and greater than signs respectively. <= and >= mean less than and equal and greater than and equal. To explain all this would be too lengthy. The best way to find out about these conditions is to experiment for yourself.

The INPUT statements, as you may have discovered by now, are used to receive keyboard input from the user. You are allowed to include a bit of text (such as the question you want to ask the person) in the INPUT statement, as you can probably see. The variable at the end of the command is the variable in which the response of the user is stored. Later on you can use this variable to make the program

decide what it is going to do.

There are two types of divisions you can use to separate the text and the holding variable. The ; character makes a question mark appear after the text. The , character suppresses the printing of the question mark.

There is only one problem with using this statement for normal input; it is user-unfriendly. If you type in something incorrectly it responds with a REDO error message which looks very messy. You are also unable to enter anything that is not in the type variable given. In the case of the INPUT commands in this small program you cannot enter characters. There is a variable type called a string that can store characters, but again this is something too lengthy to cover at this stage.

In line 200 and 260 are variable assignments. In these cases the line contains the formulae to calculate the area of a sphere and of a square pyramid. The data on the right hand side of the equals sign is assigned to the variable on the right of the equals sign. Basic uses the normal BODMAS principles to work out in which order to execute calculations. However, it does not hurt to encase information in brackets just to be on the safe side. (See program).

Representing indices with little numbers would be very hard as you can probably imagine. Instead of representing indices this way Basic uses the carat symbol, ^, to stand for "to the power of". 3^5 would be 3 to the power of 5 and 6^2 would be 6 to the power of 2 or 6 squared. While the subtraction and addition symbols stay the same, division and multiplication are different. Division uses the / symbol and multiplication uses the asterisk, *. There are also other functions and logical operators which are available in Basic, like SIN, COS and INT. To find out about these read your Basic manual.

Many of the commands in here can be "extended" further. They can do other things as well which I have not shown here. Once again though, there is not the space to cover this as yet.

The last command to cover, END, simply finishes the program. This is not needed if your program ends on the last line as Basic automatically ends execution on the last program line. And with that "end" note, this article ends. ■

TO BE CONTINUED....

In next month's issue we give you part one of Gary Koh's instruction on how to tap the potential of GW-Basic's powerful graphics support.

Scanning Horizons



Mike Turner has taken two new hand scanners for a test-drive to give you an "educated" choice.

On review this month are two hand scanners for use with IBM compatible computers. The first is the Genius GS4500 and the other is the A4 Scan hand scanner. Both come with graphics packages and OCR software and retail for about the same price. So how do they stack up against each other and against other scanners such as the DFI HS3000 Plus scanner that I reviewed several months ago?

I'll look at the two newcomers in detail first and then do a quick overall comparison. The Genius and the A4 scanners each come attractively packaged with the scanner unit itself, a half width card to fit into one of your free expansion slots, software to drive them, and of course documentation to help you on your way. That's about where the similarities end. Right from the beginning there was an obvious difference between the way the two scanners went about their business. The documentation, which I will cover in more detail shortly, ranged from very good - (if a little too brief) - in the case of the Genius scanner to quite detailed - (but full of errors) - in the case of the A4 scanner.

INSTALLATION

Installation is a relatively simple matter of plugging in the adapter card, attaching the scanner to it, and loading up the appropriate software - and away you go. The A4 scanner scored here in that its

documentation was far less technical in its presentation and liberally sprinkled with diagrams to assist first time users of such peripherals. Mind you it needed to be, to make up for the rather poor English in the accompanying text. However, the A4 scanner software also allowed the user to change configurations on the run via the software. This should save you a great deal of time with the top off your machine, moving jumper switches around should you find you have compatibility problems. However, it must be said that both scanners took very little effort to set up and most users will be scanning their first images within the first hour.

THE ART PACKAGES

The genius scanner comes with DR Genius artwork software. This is basically a swept up version of DR Halo type software that I have used before. Like its counterpart, extensive use is made of the mouse to drive the package. It is capable of producing some very good results both as a straight artwork package and as an aid to touching up your scanned images. However, it is not the most user friendly of packages I have used and there are certainly much better ones available. So I thought I would look at the Image72 art software that came with the A4 Scanner. This package really blew me away with its capabilities. It is a true VGA capable drawing package, with which you

can produce some amazing results. Some of the sample files supplied on the disc have to be seen to be believed. So far we have a dead heat between the two.

SCANNING IMAGES

Having played with the graphics packages, it was time to put both of the scanners to the test digitizing some images. I tried a variety of things, from plain high contrast artwork such as cartoons through to old faded family photographs from the 1800's. This where the real differences between the two scanners started to surface. The genius scanner comes with software called ScanEdit II which is used to scan and save images in a variety of formats. It is a brilliant piece of software with no apparent bugs that I could find. The whole thing is driven with a mouse and extensive use is made of Icons to indicate the various functions. Unlike other Icon based programs I have used, this one tended to be intuitive and very easy to use. The quality of the scanned images was excellent even from some fairly poor masters such as the old photos. True, like all scanners you have to do a bit of fiddling to get the contrast and DPI (Dots Per Inch) settings just right, but the time taken to do this is well worth it.

The A4 scanner approaches the same problem in a very different way. The Image72 art package also serves as the platform from which

you scan your images. This is where all my problems with this particular scanner began. I reviewed these scanners using an Amstrad PC2386 with a 14" VGA Colour monitor and had set up the Image 72 software accordingly. Imagine my horror when I went to save my first scanned image and found that what I can only assume to be a bug in the software conveniently scrambled all of my on screen prompts. It is very difficult to even exit from the program once this has happened, as you can't read the text in any of the pop up windows, and so the correct option becomes almost impossible to find. I wasted several hours over the three night period trying to amend this problem. I tried reconfiguring the software, but to no avail. Then I tried changing jumper settings on the adapter card, again with no success. The documentation reared its ugly head once again and was of no assistance whatsoever.

I did finally get it to work, but only after fooling the thing into believing that I had a monochrome monitor. Then my scanned images were able to be saved without the poor program scrambling itself. Most annoying! However, that was not the end of my struggle. Trying to cut out portions of an image to save is a tedious process. It all involves using memory buffers into which the image is placed whilst you fiddle with it and then saving the resulting image to disc in any one of a mind boggling array of formats. Yes it does work, but I found this part of the package particularly hard to use.

To its credit the A4 scanner has a nice feature which allows you to select the width of the scan. There is even a little stick-on ruler which you apply to the scanner itself just below the viewing window to assist you in this process. This means that you do not have to scan any redundant space surrounding a particular image. The Genius scanner didn't have this function, but selectively saving only that portion of the image that you desire is quite simple.

OCR

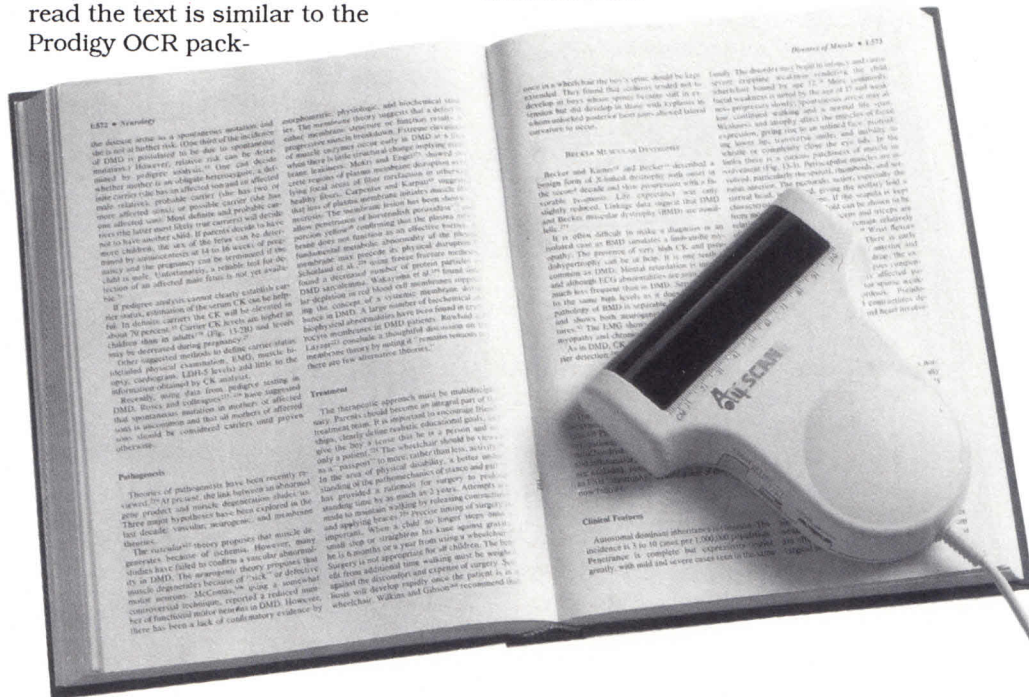
What is OCR (Optical Character Recognition)? In simple terms take a scanner, a page of text and read that text into your favourite word processing package or desktop publisher. Sound simple? Well it's not quite that good. But there have been some dramatic improvements in this area and you can now get quite good results for a fraction of the cost it would have taken previously.

We have been able to import scanned images into documents for some time now. But that is precisely the point. They are nothing more than images and cannot be edited as text. This is where OCR technology really shines. So now comes the time to put the two OCR programs through their paces.

To begin with I looked at the program that came with the A4 scanner. With still a slight bad taste in my mouth from the problems I had encountered with scanning images on this particular scanner I thought I would get it out of the way first. I must admit to being pleasantly surprised. AIOCR is a mouse driven program relying heavily on icons rather than text based commands to get the job done. The system used to read the text is similar to the Prodigy OCR pack-

age that came with the Genius scanner. There are a few basic font styles included in the package to get you going. These happily coincide with most of the text that you are likely to want to scan from magazine articles and the like. However, the lack of in-built fonts is not a problem. AIOCR can be taught new fonts on the run but from what I could see was a pretty slow learner. Like its partner in crime the IMAGE72 software, it relies on a complex system of memory buffers and swapping of information to disc to get the job done. The A4 Scanner also does not respond well to glossy paper or poorer quality photocopied text. Mind you it is not alone in this, but the Genius scanner seemed to have an edge in control over contrast and recognising glitches for what they are rather than mistaking them for letters on the page. Why? I don't know. There should be no real difference as the hardware is almost identical. Still, I felt that the Genius scanner had a slight edge here.

The Prodigy OCR software from the Genius scanner takes an entirely different approach in terms of screen presentation. It is a text based presentation and uses function





keys rather than the mouse to select various options. It may be a bit harder to use for the beginner, but makes up for that in increased speed over its A4 rival. Again it only has a few in-built fonts but can be easily taught new ones. I found the program to be fairly easy to use, helped by good documentation and reasonably fast. Two files are created with each scan. One is a .TIFF format file and the other is the resulting .TXT file made once you have corrected any misread characters. I was able to read the resulting text files into a variety of word processors without any difficulty and happily edit them to my hearts content.

Make no mistake, OCR is not a fast process especially on your first few attempts. For example, if you are a student looking for a way of speeding up input of information into your computer for a thesis OCR can help, but not initially. Both of these programs took some time to teach new fonts. However, once taught they performed admirably given a reasonably good copy to read from. I really don't think that OCR at this level is going to save a lot of time. It may be just as easy to pay a typist if you really need to get a lot of data input in a hurry. This is particularly true if this information is from a variety of sources and all printed out in different fonts that have to be taught to the OCR software. Still, you get what you pay for, and I must admit to being amazed at just how good the recognition process was with each of these scanners. This is particularly true

when you consider that OCR wasn't available to the home user until recently, unless you had a lot of dollars to spend on a flat-bed page scanner and some very expensive software to go with it.

DOCUMENTATION

AIOCR and Image 72 with the A4 scanner have glossy manuals full of diagrams and even show how to install the hardware card that comes with the scanner. It was, therefore, a pity that the whole thing was riddled with typos and incomprehensible sentences. It gives the impression of being hastily translated from a foreign language into English, reminding me of early Japanese vacuum cleaner manuals, which made about as much sense. The package I was given included a second manual for the Image72 Software which appeared to have been rewritten, although still with significant numbers of minor errors. Which manual comes with the sale version I don't know, but hopefully it will be the rewritten version.



By contrast the documentation that accompanies the Genius scanner is a series of small booklets, one for each particular program in the entire package. Each of these was clearly presented in readable English with enough diagrams to assist understanding. In terms of rounding off an already professionally presented package the Genius documentation is to be commended.

MINOR GLITCHES

As with anything to do with computers there are always some annoying little things that you come across in every piece of hardware or software. Both the Genius ScanEdit II software and the AIOCR software seem to be particularly memory hungry. The first couple of times I tried, I couldn't get these programs to work. Even on a 386 machine with 4mb of RAM I kept getting "not enough memory" messages. When will software manufacturers stop persisting in making programs that don't recognise extended or expanded memory? Amstrad PC owners are particularly prone to this sort of problem unless they have done a bit of fiddling with their CONFIG.SYS files. This is because of Amstrad's habit of trying to make everything as simple as possible for new computer owners.

As an example, the CONFIG.SYS file that came supplied on the master discs with my machine loads just about every device driver known to man and a whole heap of other things, each of which takes up just a little bit of your 640k of

base memory. If you find problems running particular pieces of software, try trimming a few lines out of your CONFIG.SYS and AUTOEXEC.BAT files. Make sure you have copies of the originals so that you can restore things if you make an error. The basic rule of thumb is to keep these files as simple as possible and still have them do their job.

COMPARISON

As pieces of hardware go, there is nothing in it when you compare this lot. All are capable of scanning at 100 200 300 & 400 DPI. The A4 Scan and the Genius Scanner both perform quite well in the scanning mode. Similarly the DFI HS300 Scanner reviewed recently does an equally adequate job. The differences between these products lie in the accompanying software. The DFI Scanner in its basic form lacks an OCR capability, although this can be added later bringing the total cost up to around that of the other two. I haven't had the chance to try the Carets By Hand software that goes with the DFI scanner, but from all reports I have read, it appears to be quite good. However, the DFI also comes bundled with PC PaintBrush Plus, which would have to be one of the best artwork packages around. The Genius GS4500 comes with DR Genius artwork software which is probably one of the poorer packages around. The A4 Scanner comes with Image72 art software which is somewhere in the middle. As a straight art package is brilliant. Only when you try to use the

scanner with it are there problems. However, I would have thought that a package of this standard would at least have all the bugs out of it.

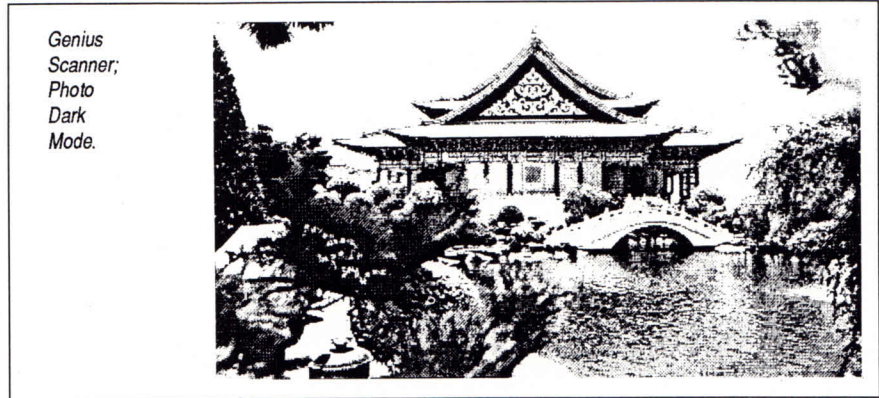
The OCR software is much of a muchness, with each taking its own different approach to the job. I suspect that the Prodigy OCR software with the Genius scanner has a slight edge here. In terms of documentation, both the DFI HS3000 and the Genius scanners come with excellent documentation. The A4 scanner suffers from glossy but poor documentation which really does detract from the overall impression of this product.

So, how would I rate them? Well to tell you the truth, I had intended to purchase the winner of this comparison as a permanent addition to my computer system. However, my money, (what little there is left of it), will be staying in the bank for the time being. I am waiting to try out a LogiTech ScanMan scanner, which may yet prove to be the best of the lot, if you can believe the glossy bro-

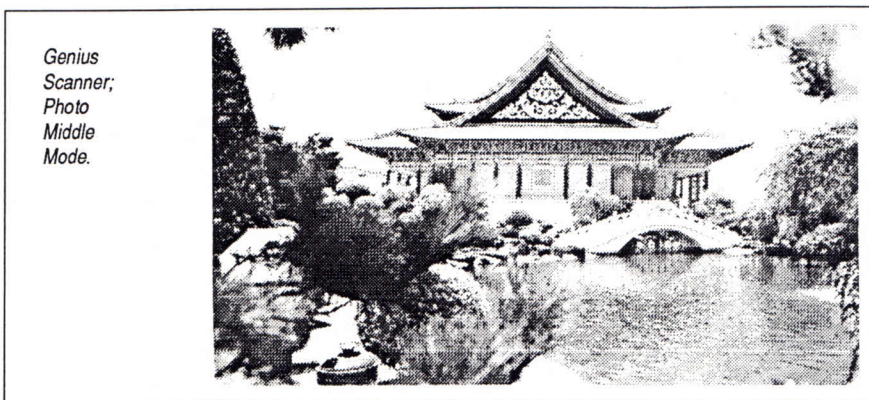
chures. However, out of this lot the clear winner in my book is the Genius Scanner. In terms of ease of use, documentation, good OCR software and an average but acceptable art package. Next would come the DFI HS3000+ assuming the optional OCR software is as good as claimed. The DFI scores for the same reasons as the Genius but has a better art package in PaintBrush. And last I'm afraid is the A4 Scan, which is really quite sad. It has the potential to knock the socks off the other two, were it not for the poor documentation and inconsistencies in its software. Any of these products will set you back about \$490 to \$500, so you can see why it is important to pick the right one for you.

I will eventually purchase a scanner of my own, as I am hooked on the graphics side of things. As for OCR, I'm not sure if I would have all that much use for this at home but can definitely see applications for this in an office or educational institution. Even with the faults listed, any of these products would make a useful addition to a PC system. Just how useful would depend on the products chosen and the uses to which you wish to put them. ■

You'll be pleased to know we have since learnt that the GS-4500 Scanner costs \$399, which includes the OCR software. The unit was supplied by Pactronics, Ph (02) 7484700, And the AS-8000P Scanner by Diamond Technology, Ph (02) 6674068. (NB: The scanners will only work on a 640K machine.)



Genius Scanner; Photo Dark Mode.



Genius Scanner; Photo Middle Mode.

A breath of Sierra - 4



A change of pace; from Sierra Adventures to the "Sierra Card School", with two Hoyle's Games packs.

To date I have given three Sierra adventures a run for their money: Hero's Quest, Conquests of Camelot and Code-name Iceman. Any 'normal' person would have probably had time to play just one of those games during the same three month period. It was fortunate, therefore, that a copy of Hoyle's Book of Games - Volume 2 arrived on my desk in time to save my grey matter from throwing in the towel. As Volume 1 is still quite popular with over 250,000 copies sold world-wide, I thought it would be a good idea to change the pace a little and take a look at both volumes.

Obviously irritated by 'local' and 'house' rules which were applied to card games in the 18th century (and still do - Ed!), Sir Edmund Hoyle compiled and published a basic set of rules and instructions



for all card players to follow. This reference guide for card players



became as popular as the modern day Guinness Book of Records for sorting out arguments.

BOOK OF GAMES - VOLUME ONE

This is a collection of six card games to keep nearly all ages happy, assuming, of course, that they are predisposed to playing cards in the first place! Five of the six games can be played against a cast of 18 characters many of whom have been exported from other Sierra games. The sixth game is solitaire.

As with most recent Sierra games, the package comes with both 5.25" and 3.5" disks supplied with the option of installing onto a hard disk if you wish.

It runs in a 512k environment (640k on an IBM PCjr) and supports all screen types plus various music synthesizers. Once up and running, and past the cheerful introductory tune, a choice of nine card back designs are proffered along with the list of six games.



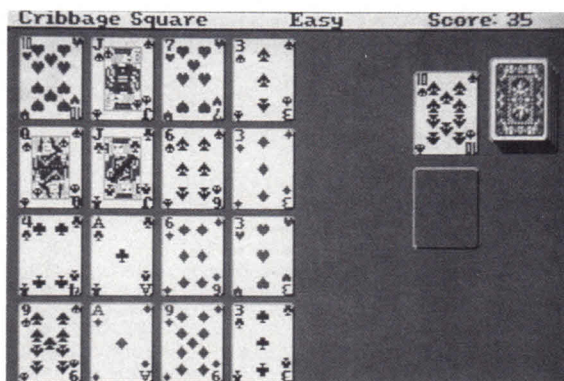
Along the top of the screen is the familiar menu bar providing the opportunity to initiate commands during play or to save a particular set of personalised defaults. These range from altering the deal, play and/or animation speeds to adjusting the sound volume.

HERE'S THE DEAL

If you did not choose to play Klondike (solitaire), the eighteen possible opponents are presented. By moving the cursor to the first selection and hitting Enter (or Fire with a joystick) the player introduces him/herself. Some games require you to select three opponents, so you could find yourself sitting opposite Larry Laffler (of Leisure Suit fame), Roger Wilco (Space Quest) and King Graham or Rosella (of King's Quest). Each character has a predetermined skill level so the selection can be important for the level of game you wish to play. Here is an exceedingly short run-down on the objectives of each game, plus some notes if relevant.

Crazy Eights - the object is to be the first to get rid of all your cards by matching suit or value from top card on the upturned discard pile. If you can't match, you can play an '8' (if you have one) and change the current suit.

Old Maid - a favourite with young children, this game consists of



matching pairs after taking a card from the player next to you and avoid being left with the 'odd' queen or 'Old Maid'.

Gin Rummy - by drawing from the top card from the upturned discard pile or the face down draw pile, 'sets' of three or more cards are created (runs of the same suit, three or four of a kind, etc.).

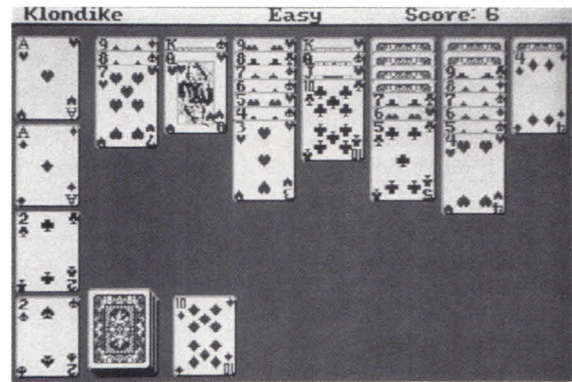
Ideally, all the cards in your hand should eventually be part of a set so that you can 'knock' and end the game with a Gin Rummy.

When a player successfully 'knocks', all cards not in sets are totalled and points allocated. The 'SAVE SETUP' option will record a points limit for future games.

Klondike - a game of Solitaire (ie. for one person), better known to me and others as Patience, where the object is to arrive at four piles of cards, each of the same suit, and running from Ace to King.

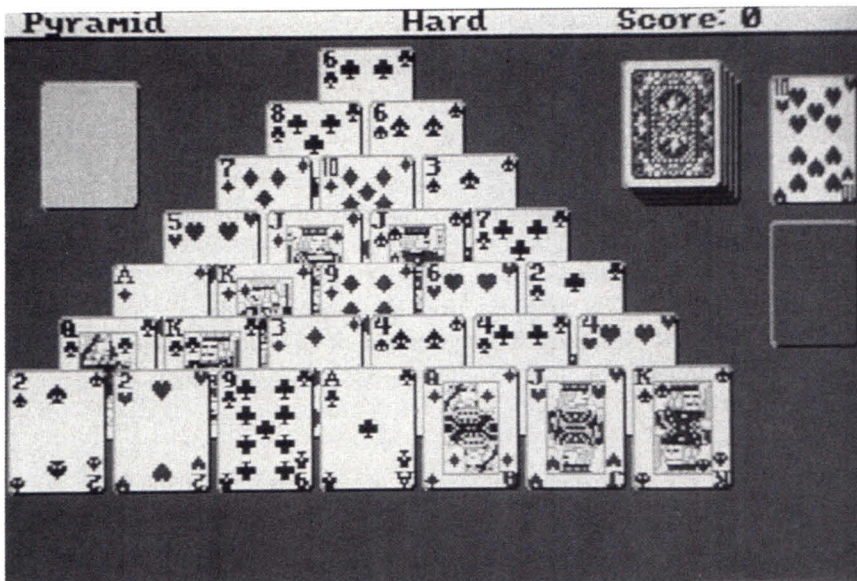
COMING UP TRUMPS

With the exception of Cribbage, my children handled all games at the easy level (the youngest is 10 to give you some idea). The two children over 12 managed to get going with Cribbage and even took a game from



jingles are cheerful enough. Sierra always manage to inject humour into their games and this one is no exception. But how, I hear you ask, can you bring a smile to a face (your face that is) in a computerised card game? Answer: by setting up a conversation between the characters on the screen and the player. Take too long in playing a card and you are bound to get a wise crack from someone! Of course, if you prefer a quiet game, you can switch off the banter.

Although I suppose you could introduce off-screen side-bets, Hoyle's Official Book of Games - Volume One makes no mention of gambling - there's not a cent in sight - which makes it all the more attractive especially if youngsters are playing. Overall, it's good fun, well presented and challenging, if card games are your cup of tea.



Hearts - a variation of Whist without playing any trumps in which players must avoid taking any tricks containing Hearts and the Queen of Spades. Alternatively, the player can attempt to take all Hearts and the Queen of Spades.

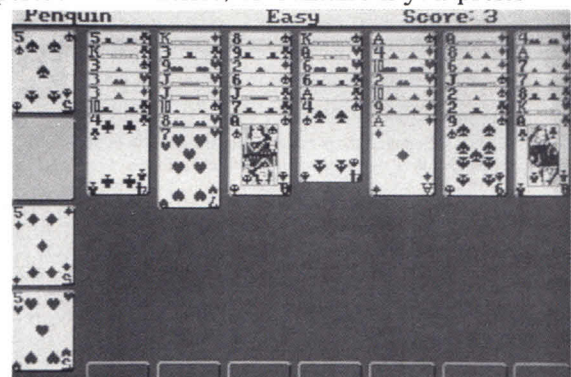
Cribbage - to be the first player to reach the end of the cribbage board. Movement of the pegs along the board is determined by the score achieved during the playing of hands and the counting of hands. To the cognoscenti, Cribbage is, of course, much more complicated than this. However, all the pegging and totting up at the end is automatic and the pegs moved accordingly on the screen.

Larry Laffler, so there's plenty of scope to keep younger minds active. The more mature players, some of whom no doubt fancy their skills at cards, will be in for a pleasant surprise when playing against the line-up of 'experts'. The complex strategies included in the programs provide Colonel Dijon, Lenny, and The Kid with a level of expertise which will give you a great deal to think about.

The graphics are, as usual, excellent. The sound effects are naturally limited although the game

BOOK OF GAMES - VOLUME TWO

This is the latest offering from Sierra, courtesy of Warren Schwader who also programmed Volume One. It contains no less than twenty-eight games of Patience, or Solitaire if you prefer



(see the box for the full list). With such a large number of games (I didn't know there were so many - Ed) you would expect an equally large manual. You won't be disappointed as the one supplied with this pack stretches to over 70 pages, most giving instructions on how to play the games. Unfortunately the contents page does not show the games in alphabetic order so you have to scan the full list to find the right page for your game - OK, a small point, but something Sierra might remember next time they cram so much into one package.

The instructions to two of the games are certainly needed as they are apparently completely new (Slide and Bowling) and written by Warren Schwader himself. I will admit though, that apart from Klondike (standard Patience as I know it), Pyramid and a few others, the rest are quite new to me. Whilst the outcome of a majority of the games will be determined by the 'turn of the cards', games such as Beleaguered Castle and Eliminator provide some exotic exercises in card strategy.

A CROSS SECTION

I doubt you'd be interested in a run-down of all twenty-eight games, so I have selected just a few to give you some idea. As most of us know, the object in games of Patience or Solitaire is to end up with four piles of cards running in ascending value order. The piles, or foundations as they are called, normally start with Aces and finish with a King at the top. Of course, there are variations on this and indeed some of the games on Volume Two break away from this tradition completely. One in particular is Bowling, which presents a screen with spaces set out in a 4-3-2-1 formation and a standard score sheet for one or more players. A frame consists of placing cards in ascending order from the front pin position. With thirteen card values available and only ten to place, four will eventually be consigned

to one of two Waste Piles. If all spaces are filled before the Waste Pile holds three cards, a strike is recorded. Three cards in a Waste Pile constitutes a ball thrown, so if both Waste Piles are full the frame ends and the score is noted.

Beleaguered Castle requires some clever thinking to resolve. The object is simple enough - to build foundations from Ace to King - but in practice even the easy version is difficult. It requires careful forward thinking as cards are moved from column to column, hopefully exposing other cards to move to the foundation piles. I was never able to crack the hard version which calls for

WHAT YOU GET IN VOLUME TWO

Calculation	Eight Off
Strategy	Shamrocks
Eagle Wing	Yukon
Beleaguered Castle	Eliminator
Klondike	Slide
Ganfield	Bowling
Golf	Nestor
Flower Garden	Aces Up
Scorpion	Gaps
Spiderette	Penguin
La Belle Lucie	Pyramid
Fortress	Triplets
Baker's Dozen	Poker Square
Bristol	Cribbage

building up the foundations by suit rather than value.

Gaps is a little unusual too. All the cards are dealt into four rows and the Aces removed. This leaves four gaps into which any of the remaining cards can be moved providing a certain set of rules about the card being moved is applied. Once again, some forward thinking is required to end up with four rows of cards running from 2 to King of the same suit.

There is an enormous range of variations of Patience in this pack, expanded even further if you count both the Easy and Hard versions separately. I counted nearly 50 this way. A hidden bonus began to emerge when my

children played some of the games requiring a little more strategy or forward thinking. Long discussions ensued about the merits or otherwise of a particular set of moves to achieve a particular result. This showed me two things: 1 - Patience can be played by more than one person; 2 - There is clearly an educational element in playing some of the games.

THE LAST SHUFFLE


There's not much to fault the two volumes which provide plenty of scope for all ages. Having said that, Volume Two probably requires an older mind to master some of the games although I remember playing a sensible (without cheating) game of Patience when I was 10. Both games support music synthesizer including an Ad-Lib card, but let's face it, apart from the introductory music, there are not many other sounds that can be included.

The graphics are, as usual, very good, but they are nearly always on a VGA monitor. EGA owners won't have a problem either, but CGA screens tend to lose detail in the corner 'spots'. However, the suits are still readily recognisable and the loss in display quality doesn't spoil things too much. The programs have been written very carefully, and nowhere could I fault the logic during the games. The selected card is always 'dimmed' so, in this respect, there is no chance of moving the wrong one.

Each game has a pretty long list of 'quick keys' (the use of function keys or Control + another key). Moving from Volume One to Two highlighted a few inconsistencies, but none that impact on the games themselves.

I did say at the outset that if you enjoy card games you will find these two volumes fun. Equally, if card games of the gambling type are not your cup of tea, you may also find these Sierra packs great entertainment. At the very least, they certainly save the tedious task of dealing each time! ■

To the Stars and More



Chris Collins looks into Crystal Balls and other Shareware products that have come under his scrutiny this month.

Hello to all readers out there. This is Compatibles Corner, and I am your host for this evening. My name is Chris Collins and I am here to inform you about what is happening in the world of Shareware and Public Domain software. We have a lot to get through this month, so I guess we had better get underway.

This month we have some information regarding the Expressware range of software. All of these are revisions to current releases, and have been upgraded on my master diskettes. I don't know what the updates actually do to the programs, but as they all appear to be only minor, I would think that they are probably bug fixes to them. The updates are as follows:

File Express (Data-base):-
Up from v4.27 to v4.32 (3 disks)
ExpressCalc (Spreadsheet):-
Up from v4.01 to v4.10 (2 disks)
ExpressGraph (Graphics):-
Up from v1.02 to v1.05 (1 disk)
ExpressCheck (Checkbook):-
Up from v3.60 to v4.00 (1 disk)

All of these programs are available at the normal prices, and have been previously reviewed in Compatibles Corner.

McAfee's virus programs have been upgraded again in a major way. With these virus programs, they are constantly being upgraded faster than I can get the information into print, so you

really only hear when I specifically mention it. All five programs are now up to v64. Yes I did say five. McAfee has released a new program called VCOPY which checks for viruses as it copies your files. More about that below.

Well, we had better get on with this month's diskette before I forget what we came here for. This month has a wide collection of topics, ranging from fortune telling to virus tools to music.

CRYSTAL BALL

Crystal Ball is a fortune telling program, as you may have guessed from its name. It is great fun to play with, but should not be taken too seriously. All of the comments and predictions that it makes do not appear to make much sense at first, but as the documentation states, you are required to look beyond the words to the actual meanings.

Crystal Ball is written by RK West Computing of Mission Beach, California. It occupies only one diskette and the requested registration fee is US\$19.00.

When you first boot up the program, it will ask you whether you have a colour monitor or a monochrome monitor. This is the only set-up that is required by the program. From this point, you are placed at the main menu to select your options.

Option 1 is the ability to edit or add to the vocabularies used by the program. This includes the

following lists; Names, Places, Adjectives, Verbs, Adverbs, Nouns, Disasters, and Technical achievements. This will allow you to customise the program more to our area and time, as it is currently biased much towards the Americans.

The second option is where you select whether you wish to make one prediction at a time, or many at the one time. Pretty self explanatory.

Number 3 on the menu is Ask Questions! This is where you type in any question that you need an answer for. It does really come up with some weird replies, so take it with a grain of salt.

Utilities are the fourth option available. This, as is usual with utilities menus, allows you to better set-up the program to suit yourself by printing predictions, deleting them and much more.

X is the last option, and simply stands for eXit. Quite simple really.

ESC in this program is a good example of how ESCAPE should be used in a program. If at any time you press ESC, you will be taken back through the program by one step, usually back to the menu that you started from. And from there back to the main menu. The only thing I didn't try was whether or not ESC will get you out of the program completely.

I had a lot of fun playing with CRYSTAL BALL, but as I am a

sceptic by nature I couldn't believe a word of it. If you are a person who likes the fortune telling style of program, by all means have a look at CRYSTAL BALL. But be careful in what you believe, and READ THE DOCUMENTATION FIRST!

EGA BLACKJACK

This diskette is programmed by Richard Mirus, and is an EGA version of Blackjack. The best thing of all is that it is Public Domain! No charge at all, apart from the normal \$7.50 copying fee. EXCELLENT!!!

Being a lover of blackjack, I always give blackjack programs a very hard work-out, and if there are any faults, I can usually find them. The first fault that I can find in EGA Blackjack is that it will let you split dissimilar cards. What I mean by this is that it will let you split a JACK and a QUEEN. In most places where I have played the game, this isn't allowed. To split, they must be identical cards, such as two JACKS or two QUEENS etc. However, this may be a variation that I am not aware of. I think that this is a pretty small fault to find. The second fault is only one of personal preference in that the program doesn't support a mouse.

There is no documentation supplied with the program, but when into the program, pressing F1 will get you enough information to be able to play the game successfully.

When you first run the program, it will come up with the title screen, and ask you to press a key to play. IF you don't and the cards being displayed on the screen fill it with the spiral pattern, the program will automatically go into DEMO mode. Press any key, and it will go into play mode.

For those of you with floppy disc drives only, I don't think you should purchase this diskette. Unzipped, the program and all its files take up 1.6mb of space. You really need a hard disc drive, as all the files need to be in the same directory.

ASTROSHOW

This is another slide show diskette like UNIVERSE. It is a collection of slides that have been taken with a 30" telescope and computer enhanced. They show views of some objects in our solar system, but most of the slides are of objects outside our solar system.

Unlike UNIVERSE, ASTROSHOW occupies only one diskette, and can be run off that diskette. No registration fee is required as the demonstration is PUBLIC DOMAIN. The only requirement is that your system must have the capability to show EGA graphics.

To make the slide show start, simply type in START at the DOS prompt and press ENTER twice. Then sit back and enjoy the show.

VIRUS TOOLS

This is a new diskette that I have just created, and it will contain always the current releases of the following programs;

McAfee's SCAN (Currently v64)
McAfee's NETSCAN (Currently v64)
McAfee's CLEANP (Currently v64)
McAfee's VSHIELD (Currently v64)
McAfee's VCOPY (Currently v64)
Calmer's NBY (Currently v1.08)
VET (Currently v6.253)
VALIDATE (Currently v64)

All of the first seven programs are to help you find and destroy viruses. The last usually comes bundled with the McAfee utilities, but in this case I have separated it from all 5 utilities, and only included one copy of the program. Otherwise I would not have been able to fit it all onto one diskette.

These programs all have their own registration fees, that you must pay if you continue to use the programs after a reasonable trial period.

VCOPY is a new McAfee utility that I told you a little bit about before. It will virus scan your files as you copy them. The speed difference in the copy appears to be approximately 10% slower than would otherwise occur in most cases.

As these programs are updated, I will update this diskette so that at all times it will contain the most current versions of these most useful programs.

VP UTILITIES

For you lovers of Ventura Publisher out there, (and I am one of them!) I have a diskette of utilities to help you get more from Ventura Publisher. This diskette is a product of Publisher's Shareware, who reside in Rockwall, Texas. The requested registration fee is US\$39.00. On registration, the authors promise a bonus free diskette, as well as the normal incentives.

VP Utilities is made up of the following utilities:

BACKIT:- This program is designed to split large image files onto multiple diskettes, and then easily restore them to any hard disc drive. Unlike DOS BACKUP and RESTORE, this is not machine or DOS version dependant. It does say that it will backup one large file, and this appears to be true. However, although it states that it is for backing up image files, I tried it with a couple of large ZIP files and it had no problem backing them up. Just to make sure, I then restored them, and did a PKUNZIP -t (test) on the result. NO ERRORS! This appears to suggest that the program could be useful with any files that are bigger than a single diskette. The only minus seems to be the fact that it only backs-up to 360k floppies. All in all, a useful little utility.

NEWLINE:- NEWLINE is a simple little utility that puts a HARD RETURN at the end of each line in an ASCII text file. This stops all the lines running together when the file is imported into Ventura Publisher. NEWLINE will create a new ASCII text file with the extension .NLN to let you know which file to import.

PS-PRN:- This little utility is used simply to print a standard ASCII file to a Postscript printer, without having to switch the printer into Diablo mode. Can also

be used to create an .EPS (encapsulated postscript) file from the same ASCII file. Simply run the utility with the /f option enabled.

STRIPSPACE:- Stripspace is used to remove excess spaces from a text file, enabling easier re-formatting after the file is imported into either Ventura Publisher or Pagemaker. The new text file will have the same name, but an .SSP extension.

TAB:- This utility, when used in conjunction with STRIPSP, takes all of the excess spaces out of a 123 .prn file and replaces them with TAB characters. This allows you to load tables that use a lot less frame memory than would be normal for the size.

VP-DEL:- VP-DEL is used to delete all files referenced by a Ventura Publisher chapter. This includes your .CHP file, .TXT file, .VGR file and all the others that may be listed under the same filename. Be very careful when using this utility.

As you can see, this little collection of utilities can make life much easier for the Ventura Publisher user. No documentation is supplied on the programs, but if you type in one of their names without the necessary parameters, a one or two page help screen will be displayed.

The following diskettes are from a lady by the name of Nancy Moran. She comes from Baltimore in Maryland, and has given us three delightful concerts using the Pianoman program. Each diskette contains one title, and is separate from the others. All have a registration fee of US\$7.50.

PIANOMAN DOES BACH

This diskette has 12 tunes from the great Johann Sebastian Bach. It also has an excellent batch file to help you play them in any sequence you wish. The complete concert lasts approximately 28 minutes.

PIANOMAN DOES BEETHOVEN

This diskette is a tribute to Ludwig von Beethoven, and com-

prises 5 pieces of his work. This concert lasts approximately 25 minutes. As with Pianoman Does Bach, an excellent batch file is supplied to assist you in playing the tunes.

PIANOMAN GOES BAROQUE

This diskette contains 10 pieces of work from 4 different composers of the Baroque period. The concert lasts approximately 32 minutes, and the excellent batch file is again supplied.

These three diskettes, and the two Christmas Concerts I and II that I have yet to track down, are all down with Pianoman. It just shows you what is possible. The programs are supposed to play at the correct speed, no matter what processor is fitted to the target machine. However, this is not strictly true. If you have a machine with a memory cache, (as mine has), you will find that they play much too fast. But if it does not, as I found when testing on other machines, (XTs, ATs and non-cache 386's), you should not have a problem. I will keep searching for the two Christmas Concerts.

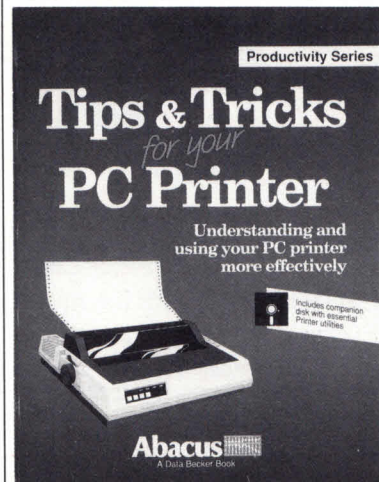
Well, that is eight diskettes that we have covered this month. So, I guess that it may be time to end at this point. Please remember that all diskettes reviewed this month, and any reviewed previously, are always available from me at the normal price listed. The pricing is quite simple; a 360k 5.25" diskette costs \$7.50 including postage. A 3.5" 720K disk costs \$15.00, including postage. Please remember that with the 3.5" diskettes it is up to you to specify the equivalent of two 5.25" disks to fill it.

Please send your orders with cheques or money orders to the following address;

MacroDisk
Unit 2, 47 Vernon Street
South Kingsville Vic 3015

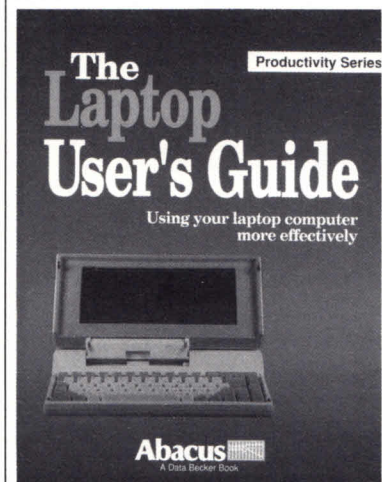
They will be forwarded to you within 7 days of receipt of your letter. Until next month BBFN! ■

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(As reviewed in August TAU)

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We accept unsolicited articles or program contributions from readers with a view to possible publication, but in the case of programs we must insist that the coding is submitted on either tape or disc. We just do not have the time to key them all in. The tape or disc will be returned if originally accompanied with a stamped and return addressed padded bag.

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Write your advertisement here, one word per box. If you want your phone number printed, it must be included in one of the boxes.

Amstrad PCs

The following collection of disks contain compilations of public domain programs suitable for Amstrad PCs (and possibly other IBM clones). With the exception of PC-SOFT #1, all items are available on both 5.25" or 3.5" disk format. PC-SOFT#1 requires Basic2 (supplied with Amstrad 1512 or 1640s), whilst all others require MS-DOS version 2.1 or above. s.

But remember, as Public Domain programs they are supplied on an as-is basis.

PC-SOFT #1

19 Basic2 utilities or games on one 5.25" disk, with:

3DGRID.BAS

Add an extra dimension to your maths formulae. You can enter your own functions or watch the 9 demonstrations plot.

3D-VIEW.BAS

This Basic2 program takes a series of x, y and z co-ordinates and constructs a picture from them. The three dimensional image can then be manipulated for a view at any angle, size and rotation.

ANAGRAM.BAS

Presents a jumbled word from a store of around 600 for you to unscramble as quickly as possible

ANGLES.BAS

This program provides both instruction and testing of the basics of angles. Acute, right, obtuse and reflex angles are drawn and described, then followed by a tests where angles have to be named or where you try to match a given angle by positioning a point with the mouse.

BASIC2.APP

Along with BASIC2.RSC the files provide an upgrade to version 1.23 with three extra commands - Alert, Inkey and Selector. You can use this version only if you have a licence to do so. If you have bought an Amstrad PC1512 or 1640 then you already have the licence, and this copy is supplied on the same terms as the original.

BAS-INIT.BAT

This batch file prepares a single floppy with enough of MS-DOS, GEM and BASIC2 to run the language from one disk.

BRAHMA.BAS

A version of the old favourite 'Towers of Hanoi' in which discs must be transferred from one pole to another without ever placing a disc on top of a smaller one.

BRAHMA2.BAS

The same as BRAHMA.BAS but with a recursive solution and demonstration.

BUSES.BAS

An educational program teaching number recognition and counting to pre-school children.

ENIGMA.BAS

A game which involves moving and interchanging two blocks of shaped tiles, with the object of transposing two blocks from opposite corners of the playing area.

EUROQUIZ.BAS

A graphic, multiple-choice quiz based around the countries of Europe and your knowledge of its major cities.

MANDEL.BAS

Draws extremely attractive multi-coloured Mandelbrot sets of your choice. Be warned - it takes a long time!

MATHS.BAS

This program offers you five types of test, covering addition,

multiplication, subtraction and division and a random mixture of all four.

OXO.BAS

The thinking machine's noughts and crosses, and an example of one of the programs which can be found in Peter MacBride's book "Advanced Basic2 programs on the Amstrad PC".

ROBOPOST.BAS

A compulsive, simple yet frustrating sliding tile game with a difference - you have to create a pathway for a robot postman.

STYLUSER.BAS

Downloads any of three fonts into an Epson-compatible printer, and they may be used with other programs (including non-GEM ones) to add sparkle to your correspondence.

SUNDIAL.BAS

A program for generating sundials on your PC. It takes into consideration your latitude and then calculates the appropriate hour angles and the 'style height'.

TENPIN.BAS

A ten-pin bowling game in which your PC keeps score and resets the pins after each go.

TURTLE.BAS

Based loosely on 'turtle' drawing found in Logo programs, this program allows you to draw and colour squares, circles, pies and ellipses.

PC-SOFT #2

Eight games on one 5.25" or 3.5" disk with:

3DOXO.EXE

A three dimensional version of Noughts and Crosses played on four planes against your computer. Each plane, one above the other, contains a grid of sixteen squares. To win, you must get four of your counters in a row - vertically, horizontally or diagonally. It's not as easy as it sounds and the computer plays a strong game.

BOUNCY.COM

A giant nuclear-power station that orbits the planet Abraxii has gone terminal. You have been raced to the scene, encased in your Ultra-Ball, to stabilise the reactor by colliding with the uranium cooling rods and driving them home one at a time. Your score 10 points for each rod successfully replaced. The only problem with the Ultra-Ball is that it is unsteerable and always travels in a straight line, horizontally or vertically. What you must do is activate the deflector shields that are built into the reactor so that the ball will bounce off them and hit the cooling rods. Within the reactor are anti-matter death stars which will destroy you on contact and inter-spatial gateways which will take you from one side to the other.

DRAGONFLY.EXE

A full colour action arcade game originally designed for the PC1512, but also works on EGA if you don't mind a messy title screen. The games centres on a tract of water patrolled by a

helicopter. Your mission is to blast enemy hydrofoils out of the water before they blast you. The helicopter can be controlled with the numeric keypad (or a nine-pin joystick fitted into the keyboard of a PC1512/1640).

JOIN4.COM

This strategy game is based on the 'board' game Connect4 and involves two players dropping counters alternately onto one of the seven to try and produce a line of four in any direction - but be warned, it plays a mean game! It is self-contained and displays its own instructions. The game can be played against your computer, against another player with the computer keeping score, or the computer can play itself.

MM.EXE

This is the infamous Mastermind game of logic but with some additional features. You can play against a clock and have to keep a watchful eye on an ever dropping thermometer style scale on the right of the display. There's also a digital clock to remind you how long you have been playing. There are four levels - Amateur, Average, Expert or Master and the range of numbers for any sequence can vary from six to ten using any digit between 0 and 9. It also features sound effects and you can alter your guess as many times as you like within a time limit. You get a progress report after every ten moves.

MOLECULE.EXE

A jazzy version of Black Box in which you fire beams into a lattice of squares and determine where the molecules are hidden by analysing the reflections and absorptions. It's a bit like a 3D version of Mastermind but with more information provided. A ray is absorbed by a direct hit and reflects from any of the corners of a molecule. You mark where you think each molecule is and check your guesses at the end of the game. There is a variable time limit to add tension to the game with sound, level of play and number of molecules also optional. There's also a demonstration mode to show you how it all works.

RACE.COM

Race simulates a six-race meeting at any of four courses. Each race is of a different length and you have to study the form to select the horse most likely to win. You start off with £50 (pretend they are dollars) and can bet up to £99 for a win or place to a maximum of four place bets in any meeting. The race is shown in colour (you must at least have CGA) as the horses come to the last fence, and although form plays a major part, your horse can still fall at the last fence.

REVERSI.COM

A very good version of Othello (for CGA graphics screens) with menu options offering instructions, programming details and a high score table. The object of the game is to have more squares covered with counters of your own colour than your opponent's when the board is full. You must place each counter to trap at least one counter of the opposite colour between your new one and another of yours already on the board. All trapped counters are then flipped over to your colour.

PC-SOFT #3

Twenty-four utilities on one 5.25" or 3.5" disk with:

BEEP.COM

If you compile large Cobol programs or simply want to irritate your neighbours, this is just the utility for you. It produces an attention-seeking alarm and tells you to press 'any key to continue'.

CAL.COM

A perpetual calendar which will display any month from the year 1753 to 3000 - instantly.

CALENDAR.COM

Lets you display and print a calendar for any year between 1900 and 2099.

CGA2.COM

Offers something like a 60% success rate in allowing owners of monochrome monitors to run programs that use CGA graphics in different shades of grey.

CHOICE.COM

A short command file providing a handy way of using multiple-

choice menus in your batch files.

CLEANUP.COM

If you use WordStar (not WS1512) or NewWord you may know they do funny things to the last letter in each word making them hard to read or load into another file. Run them through CLEANUP and most of your troubles are over.

CLICK.COM

A simple program to make your PC 'click' every time you press a key on the keyboard.

CLR.COM

Simply clears the screen to a specified colour.

CURSOR.COM

A utility, most useful for PPC owners, which changes the shape of the cursor to a block or turns it off all together.

DELB.BAT

A batch file which deletes all the files in the current directory which don't conform to a series of specified wildcards.

DOSEEDIT.COM

A very handy routine to keep on your MS-DOS work disc. It takes a lot of the pain out of MS-DOS when you are trying to copy a lot of files or work with hierarchical directories on a hard disc. It lets you edit the command line.

DOSMAP.EXE

This program provides complete information about the contents of your PC's memory - which programs are in there, how much of memory they occupy and what interrupts they have taken over.

DRIVE.COM

Mainly for use in batch files, DRIVE checks whether a specified drive is ready for access.

ETIMER.EXE

Can be used to check or measure the time taken to run another program or an MS-DOS command.

FILEDATA.COM

Reads the system clock of your PC and produces a short text file (with the filename DATE) containing the full date in the form 'Monday 25th December'.

FSORT.BAT

This useful batch file takes two ASCII files, adds the second to the end of the first and sorts the result.

FULLDIR.EXE

This displays the directory tree structure of any drive.

GDEL.EXE

A global deletion program (so be careful!). It deletes all specified files or those with wildcards.

HDFLASH.COM

A useful utility for owners of Hard Disk Cards who can't see when the disk is being accessed. It puts a smiley face in the corner of the screen which is solid when the drive is reading and hollow when it's writing.

KD.COM

A dangerous but useful utility which kills a directory simultaneously removing all files within it.

LOSTFILE.EXE

This searches out files you know are somewhere on your disc.

LYNE.EXE

A great utility which lets you type a short letter or document line by line and saves having to go through a word processor. It sends your text to the printer at the end of each line. It also contains built-in codes for all the normal Epson printer effects.

MEDIT.COM

A neat and fast memory editor which can show you bytes of memory in real time.

NVRSAVE.COM

Enables you to save/store the contents of your NVR area to disk before removing and replacing your batteries. Once the new batteries are in place you can use NVRREST.COM to restore the non-volatile RAM (NVR) area of your Amstrad PC.

PC-SOFT #4

Six games on one 5.25" or 3.5" disk with:

CRIB6.EXE

This is a full version of the popular card game for two players complete with cribbage board and score card. You can use the keyboard or the mouse to play the cards by simply pointing at them. For the uninitiated, each player takes a turn in playing a card to score points as they are laid. When all the cards have been played, they are scored individually and added to each player's accumulating score on the pegboard. The first player to 121 is the winner. There is a cheat mode whereby you can use the reveal option to show you your opponents cards.

GALACTIX.COM

Your crippled spacecraft, the USS Galactix, has crash landed on a planet after colliding with a meteorite. You were trying to get back to Earth at the time and unless you find five specific items to repair your ship, you are doomed. Naturally the planet is hostile being patrolled by robots and guards. You can 'get' objects, 'use', 'drop' or 'examine' them by using icons displayed on the right of the screen. Energy will be lost quickly if you come into contact with the inhabitants. Food and drink will replace lost energy. There are many puzzles and they must be completed in order to complete the game.

JASON.EXE

Trapped on an alien planet and surrounded by mutated plants and animals, you have to guide Jason around numerous obstacles to gather up the heart shaped crystals. Part of the screen gives way under his feet if he dawdles, so planning is essential. Four lives are provided and you lose one if you touch a flower or a hollow head.

RIMTRIX.COM

A real brain teaser, RIMTRIX involves a series of slideable tiles each bearing a pattern of tracks. Coloured balls are collected from the left of the screen and directed to their relevant coloured cups on the right of the screen by moving the tiles and creating a path for the ball. If the ball falls into an area without a tile, the ball is lost.

Tiles can only be moved if in a position to be moved (ie. next to a black space) and can be moved left, right, up or down and even rotated. Keys can be redefined if required, but the game defaults are the arrow keys and the space bar to rotate. You cannot rotate a tile with a ball in it.

SNAKE.COM

There are lots of 'Snake-style' games around, but this one is different. The aim is to gobble up all the yellow apples, which are replaced elsewhere on the screen with red apples. Eat the red apples and they are replaced with poisonous mushrooms which must not be touched or you're dead. They can, however, be destroyed by spitting venom at them. Steering is different in that the snake will always turn left or right in relation to the direction in which it is travelling. There are many levels.

WEASEL.COM

A demonstration of the power of natural selection with a given alphabetical phrase. The program takes a completely random set of letters and with each generation uses a pre-set probability to decide whether a given letter will mutate to a random one. If this is the case, and the new letter is in the target phrase, it is deemed to more closely suit its environment.

PC-SOFT #5

Twenty-three utilities on one 5.25" or 3.5" disk with:

PEEK.COM

If you need to search through a file containing readable sections of text, this small utility will do the job for you.

POINTER.ACC

A GEM accessory which displays the pixel co-ordinates of the pointer. It is called from the application name menu by clicking on the 'Pointer-Pos' option.

POPTIME.EXE

A compact (only 1k) resident clock display program which not only pops up but also pops back on its own accord. It is loaded into RAM by typing POPTIME.

PRCODES.COM

This utility allows you to send any code through the serial or parallel port of your PC to your printer. Most of the codes are escape characters (beginning with the ASCII character 27). Other can be found in your printer manual. The codes are sent in decimal (1 to 255) or, for some, using the relevant keyboard character.

PRMODE.COM

A very friendly printer mode selector allowing you to select special effects on your printer (like bold, italic and underline) outside an application program (eg. when you use COPY filename PRN:). It can be used in a batch file or from the A> prompt.

PRINTC.COM

Another utility for getting codes to your printer which can be sent in hexadecimal or as the ASCII character.

PSTASH.COM

A useful utility for redirecting any output sent to the parallel printer ports to a named disk file.

RENDIR.COM

Here's a utility which enables you to easily rename a sub-directory. It's particularly useful if you have just created a sub-directory and copied a heap of files into it then decide you have the wrong name.

SCRDMP.EXE

This is a memory resident screen dump utility. It saves a text screen to a named file using the [PrtSc] key from your choice of application.

SEE.EXE

A utility for spotting ASCII strings in machine code files and then display them on the screen.

SET UTILITIES

Five useful utilities to set up an Epson printer from the A> prompt. They can also be included in your AUTOEXEC. BAT file for an automatic set up.

SET10.COM

- sets PICA type with ten characters per inch

SET12.COM

- sets ELITE type with twelve characters per inch

SET12M12.COM

- sets ELITE type and a 12 character margin

SETNORM.COM

- cancels any SET commands and resets the printer

SETPOUND.COM

- sets pound and hash signs so that they print as displayed on the screen.

SGR.COM

A utility for setting particular screen attributes. You can change colours, bold characters, reverse video etc.

SIZE.EXE

A fast utility which counts the number of characters, words, lines and pages of a named text file or files.

TSTDATE.COM

This utility, when incorporated in a batch file, provides a simple 'on date goto' function and a 'day of the week' function, a useful feature for automatic backups.

TIMEFIX.COM

A bug-fix exclusively for PC1512 owners who have problems when their internal clock gets to midnight. Apparently (in some cases) the clock continues to 31.00 instead of changing to 00.00 then hangs the machine.

TIMEPARK.COM

A utility for nervous hard disk users worried about disk head crashes. It 'parks' the heads after a pre-determined period of disk inactivity. They are 'un-parked' the moment an access is necessary.

TV.COM

A text view program with many features to display text files. You can scroll through a file in either direction at a line a time, move

back or forwards a page or straight to the start or end of a file. Unreadable symbols in Wordstar files can be converted to alphabetic form. Strings can be searched for with moves to the first or subsequent occurrences. TV also comes with an index facility for up to 16 separate text files accessed through an index screen.

WORDS.COM

A useful word counter which will give you a pretty accurate word count for any ASCII text file.

WYH.EXE

This utility looks at the system parameters and reports on the screen. It shows the number of floppy drives, whether or not a games card or maths co-processor are fitted, the number of parallel and serial ports, the size of RAM available and the number of hard disk drives on board.

HOW TO ORDER YOUR DISCS

Before placing your order, please make sure you have selected the correct item for your computer.

All software for PCs or compatibles have a reference PC-SOFT followed by a number.

Software for CPCs (found on this page) have a reference starting with #4 (for CPC464s with a disk drive and CP/M 2.2) or #6 (for CPC6128 running CP/M Plus).

Software for PCWs have a reference starting with #8. These discs can be converted to run on a PCW9512.

You may either order over the phone quoting your credit card, or by post enclosing a cheque, money order or quoting your credit card number and expiry date.

The cost of each disk is as follows:

PC-SOFT 5.25" disks	12.50
PC-SOFT 3.5" disks	15.00
CPC 3" disks	17.50
PCW 3" disks	17.50

(Please add relevant postage as shown on Pages 56 to 64)

THE AMSTRAD USER
641 High Street Road
Mount Waverley, 3149
(03) 803 9661

PCW GRAPHICS (PCW only)

Simple user-designed graphics drawing program. Enables you to create, save, edit and print pictures on your PCW. Plot lines, points, boxes, four fill patterns, easy to use and wholly interactive • *PCW Screen Font designer* with several ready-to-run font sets • *Biomorph* - fascinating, graphic demonstration of natural selection - develop your own bugs! • *Readme* - program to display any ASCII text file in 45 character format on the 90 character screen - makes it easier to read.

PCW Ref: #815

CPC and PCW

The following discs contain compilations of public domain programs which have been tested under CP/M Plus. Unless otherwise stated, programs will run on the PCW, 6128 and 464/664 with extra memory and CP/M Plus. Programs for the 464/664 are on the CP/M 2.2 Collection. The discs are supplied in Data format and contain documentation files to help the user get started and provide instructions on running the programs.

But remember, as Public Domain programs they are supplied on an as-is basis.

CP/M 2.2 COLLECTION

For 464/664 disc drive users with CP/M 2.2. Contains File Manager, Compare, Find, Disc sector editor, Key definer, Bad sector eliminator, Grep, Full Screen text editor, Easy lister, File transfer utility, Unerase erased files, erased files catalogue and many more.

CPC Ref: #430

FULL SCREEN TEXT EDITOR

This machine code editor offers full screen editing, full block operations, windowing, automatic horizontal scroll (line length up to 255 characters), macro functions, word-wrap and formatting, pagination, find/replace, undelete and many user options. The editor, which is less than 10k in size, is fast because it edits a file entirely in memory. It produces ASCII text files and has enough features to be used as a word processor. A comprehensive on-disc manual is included together with keyboard configuration files for the CPC and PCW.

CPC Ref: #601 PCW Ref: #601

DATABASE

A small relational database suitable for storing simple data and producing reports and forms letters from the data. Offers free format query language with macros and commands plus on-line help. The disc also contains an Inventory Database. Whilst these databases provide a useful introduction and you can use them to set up a full operational database system they are not meant to replace commercial packages for professional or business use.

CPC Ref: #602 PCW Ref: #802

COMMUNICATIONS

Programs to allow data transfer between computers (local and remote), access databases and bulletinboards. UKModem7, New Kermit, MEX and various communications utilities. The disc also contains software for Prestel (Viatel) emulation (PCW only).

CPC Ref: #603 PCW Ref: #803

VIDEO CLERK

Keep track of your video collection. With four Sort options and Forms Management system for printing out the data in order of title number, video number, global alphabetic or unique. Includes extensive on-disc documentation.

CPC Ref: #604 PCW Ref: #804

FIXED ASSETS LOG

Allows you to keep a record of all your assets and their value. For example, at home, you may wish to keep a record of how much money you are spending on your computer or the value of a stamp collection etc. In business you can use it to keep a record of how much money you have tied up in land, buildings, office equipment, cars etc. It can also be used as a stock-taking program.

CPC Ref: #605 PCW Ref: #805

COMPLETE UTILITIES

• *Newsweep* - one key erase, copy, rename and print, plus many other features. Ideal for sorting out your disc collection quickly and efficiently • *Superzap* - disc sector editor - edit by track/sector or filename. Fully menu-driven with cursor key SETKEYS file • *DiskitA* - multi-choice disc formatter, offers 178k data format for PCW discs and 5.25" second drive formatting • *Unerase* erased files • *Read/write* PCW discs on a CPC • *CP/M v2.2 emulator* • *Make* - allows you to copy files across user areas • *Cleanup* - useful for speedy file deletion • *Lookat* - speedily lists any file in Hex and ASCII • *Screen Dump* (CPC only) • *Password* • *Easy Lister* • *Password Protection* • *File* • *Scrambler* • *File Splitter* •

Directory check

CPC Ref: #606 PCW Ref: #806

TEXT PROCESSING UTILITIES

• *Sideways* - prints text file sideways on an Epson-compatible printer. Ideal for those wide spreadsheets • *Sortany* ASCII list into alphabetical order • *Word count* - can be used on any ASCII file • *WSClean* - removes higher order bits from a text file and converts it to straight ASCII • *Calendar Generator* - prints out calendar for any year • *Simple Spell Checker* - with starter dictionary and dictionary editor • *Scoring card generator* • *Banner printers* • *Typewriter emulator*

CPC Ref: #607 PCW Ref: #807

DISC ORGANISATION

Catalogue your disc collection and produce a printed index. Useful for speedy location of files and for keeping your discs in order. Library utilities for archiving and saving disc space. File dating system. Squeeze and unsqueeze for saving up to 40% disc space. Menu system - allows menu-driven access to programs on a disc. Completely and easily user-definable.

CPC Ref: #608 PCW Ref: #808

Z80 PROGRAMMER

A complete Z80 Assembler which is capable of converting an ASCII assembler file into a fully executable machine code .COM program. Plus Z80 Disassembler, Z80 Debugger, Z80 Library, 8080 Disassembler, Z80 to 8080 Translator and associated utilities.

CPC Ref: #609 PCW Ref: #809

'C' PROGRAMMER

The Small 'C' Compiler by Mike Bernson. Includes source code and 25k of documentation. Produces executable .COM programs.

CPC Ref: #610 PCW Ref: #810

'C' TOOLBOX

A disc full of 'C' source code examples together with the corresponding executable .COM programs. Useful to those wishing to see some practical examples of 'C'. As a bonus, the programs are quite useful too. The 'C' source was written for a variety of compilers and may need modifying to compile on MIX or Small 'C'.

CPC Ref: #611 PCW Ref: #811

FORTH, STOIC AND 'C' INTERPRETER

For experimenters interested in using these languages. Documentation is included on disc.

CPC Ref: #612 PCW Ref: #812

GAMES COMPENDIUM

A varied selection of the best machine code programs available for CP/M. Includes Pacman, Snake (PCW only), Chess, Othello, Mastermind, Spellit, Awari, Life, Golf, Polish Pong, Maze, Biohythms, Word Search puzzle maker, TicTacTo.

CPC Ref: #613 PCW Ref: #813

ADVENTURES

• *Colossal Cave Adventure* which originated on main frame computers. With game save and re-load • *Bestiary* (written in Mallard Basic for either PCW or 6128 Mallard users. Standard CPC users see *Adventure's Attic March 1989*) - you play the part of a young prince, your greatest love being to read the ancient bestiaries about strange and often legendary animals. Your task is to find a solution to the terrible blight which, one year, destroys both crops and animals in the kingdom. Includes game save and re-load • *Return from Arg* - a short but interesting new adventure written in 'C'.

CPC Ref: #614 PCW Ref: #814

THE AMSTRAD USER

Comprehensive catalogue of Entertainment and Business Software, Books, Add-ons and Consumables for all Amstrad computers.

CPC
464 - 664 - 6128

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Please Note:

1. Add up the total value of the items you are ordering, then add the postage and packing charge from the table shown at the bottom of each page. Don't forget that some hardware items carry a special freight charge.
2. When ordering by mail, if possible, always quote one or two alternatives. Otherwise call us first to check availability.
3. Most orders can be reserved for up to 7 days pending payment after which they will be released for others to buy.
4. This list is prepared over 4 weeks before publication and reflects the stock holding at that time and anticipated releases advised by producers. The latter are often optimistic.

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PROTEXT - high speed w/p	79.95	-
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PROTEXT FILER - pop-up database for Protext. (Requires Promerge & Protext)	59.95	-
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PROTEXT OFFICE - pop-up add-ons for Protext including mailmerge and invoice generator. (Needs Promerge & Protext)	o/s	-
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PROSPELL - spell checker	69.95	-
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PROMERGE - mail merger	69.95	-
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STOCKMARKET - monitors shares etc.	49.95	-
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STOP PRESS

The ultimate Desktop Publishing package for CPC owners. Combine text and graphics with 'what you see is what you get' facilities. The ideal publishing software solution for home enthusiasts, schools, societies and small businesses. (Stop Press needs 128k)	
Stop Press (disc only)	129.00
With AMX MkII Mouse	259.00
Extra Extra clip art	69.95
Mouse only	169.00

Tasword 464	-	59.95
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Tasword 464/D	69.95	-
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Tasword 6128	69.95	-
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Tas-spell	49.00	-
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Tasprint	39.00	39.00
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Tascopy	39.00	39.00
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Tasdiary	39.00	-
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Tas-sign	69.95	-
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Touch 'n' Go - Typing tutor (6128s only)	69.00	-
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Ultrabase - easy database	69.95	-
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CPC EDUCATIONAL

From SCHOOL SOFTWARE		
Play School (Ages 3-7)	29.95	22.95
Magic Maths (Ages 4-8)	29.95	22.95
Maths Mania (Ages 8-12)	29.95	22.95
Better Maths (Ages 12-16)	29.95	22.95
Maxi Maths (Ages 12-16)	29.95	-
Physics (Ages 12-16)	29.95	22.95
Better Spelling (Ages 9-99)	29.95	22.95
Chemistry (Ages 12-16)	29.95	22.95
Biology (Ages 12-16)	29.95	22.95
Weather/Climate (Ages 12-16)	29.95	22.95

mail order

CPC continued

From Satchel Software (Education Dept. of SA)

For 6128s only		
Absconded Convicts	50.00	-
African Farming Game	50.00	-
Anna	60.00	-
Artworks	50.00	-
Catastrophes	50.00	-
Chart Buster	50.00	-
Convict Ships	50.00	-
Cordial Stall	40.00	-
Cross Whiz	50.00	-
Disasters	50.00	-
Dragon World	60.00	-
Find-a-book	50.00	-
First Fleet	50.00	-
Granny's Garden	50.00	-
Guess the Word	50.00	-
Hammurabi	40.00	-
Jara Tava	60.00	-
Kadimakara - Creatures of the Dreaming	60.00	-
Logo Screen Dump	25.00	-
Mathbooster	50.00	-
Math Games 1	50.00	-
Math Games 2	50.00	-
Math Hopper	50.00	-
Mosaic	40.00	-
News Writer	50.00	-
Omicron	50.00	-
Pathweaver	50.00	-
Picture Book	50.00	-
Picture Book Companion	40.00	-
Point Puer Lads	50.00	-
Print Machine, The	50.00	-
Sailing South	50.00	-
Settlement	50.00	-
Soft Word	50.00	-
Step Inside	40.00	-
Story Paths	40.00	-
Tree of Knowledge	50.00	-
Where's Baby Bear?	50.00	-
Which way Words	40.00	-
Word Hunt	40.00	-
Word Hunt Companions		
Volume 1, 2 or 3 ... each	40.00	-
Word Processing Pack	60.00	-
World Wide	50.00	-

From LCL SOFTWARE

Micro Maths (Grades 9-11)	49.95	-
Mega Maths (Grades 9-11)	49.95	-
Micro English (Grades 9-11)	49.95	-
Primary Maths (Ages 7-11)	69.95	44.95

From FERNLEAF SOFTWARE

<i>(Developing Reasoning, Logic, Estimating and Forward Planning skills).</i>		
1. Treasure/Perfume Hunter (7-10)	49.95	39.95
2. Fletcher's Castle/Raider(8-12)	49.95	39.95
3. Thorn Sea/Ferry Captain (9-13)	49.95	-

From FUN SCHOOL: three discs in the series each containing 10 educational programs.

Vol 1 - ages 2 to 5	29.95	-
Vol 2 - ages 5 to 8	29.95	-
Vol 3 - ages 8 to 12	29.95	-

(All reviewed Issue 48 - Jan '89)

From DATABASE EDUCATIONAL SOFTWARE:

<i>A Fun School 2 series of three discs or tapes each containing 8 educational programs (Rev'd Jul 89).</i>		
Fun School 2 - Under 6	34.95	24.95
Fun School 2 - 6 to 8	34.95	24.95
Fun School 2 - Over 8	34.95	24.95

THE MAGIC SWORD - Full colour reading book and complementary child's adventure 39.95 -

THREE BEARS - graphic adventure to improve logic, deduction and reasoning 34.95 -

CPC PERIPHERALS

AMX MOUSE Mk III - with superior ball technology and high resolution movement this updated mouse from Database

CPC continued

gives total control and flexibility, and compatibility with Stop Press. Comes with an interface for CPC owners 169.00

CPC CENTRONIX PRINTER CABLE (PL1)

Suitable for linking a CPC to most printer with centronix ports, eg. DMP2000, 3000, 3160 etc. (Note: Pin 14 may need removing) 22.95

JOYSTICK SPLITTER

Allows you to use two joysticks at the same time and take advantage of games which have two player options (eg. Gauntlet) 17.50

MOUSE MATS - keeps Mouse clean 19.95

64k MEMORY EXPANSION (464/664)

Converts the 464 into a 6128 (except for the ROMs) and gives 128k of memory. Is supplied with bank switching software in the form of RSXs to use the second 64k RAM as storage for screens, windows, arrays and variables. Allows the use of CP/M Plus as supplied on the 6128. 159.00

256k MEMORY EXPANSION (464/664)

Converts the 464 into a 6128 (except for ROMs) and gives a total memory of 320k. Supplied with bank switching software in the form of RSXs. The 256k can store 16 full 16k screens or four extra banks of 64k. Allows the use of CP/M Plus as supplied on the 6128. 289.00

256k SILICON DISC SYSTEM (464/664)

Provides 256k of RAM disc accessible many times faster than the conventional drive and with a greater disc capacity. It can be logged on as drive B or in a two drive system as drive C. Data can be transferred onto the silicon disc from a normal disc or from RAM, application programs can then work on the data at vastly increased speed. Will accept all normal disc commands such as LOAD, SAVE, CAT etc. 329.00

256k MEMORY EXPANSION (6128) 289.00

256k SILICON DISC SYSTEM (6128) 329.00

JOYSTICKS

CHAMPZON ECP200 - arcade quality joystick with metal shaft, micro-switches, two base fire buttons and two shaft fire buttons and suction cups. Also has optional auto-quick fire to be used with the Megadeath 1 attachment (extra) 39.95

NEW KONIX NAVIGATOR - hand-held joystick with microswitch precision control, steel shaft and autofire feature to be used with the Megadeath 1 attachment (extra) 39.95

STAR CURSOR - very tough, all Australian designed and manufactured joystick with **three year guarantee**. Fully micro-switched, fire buttons on base and handle. Adjustable 4- or 8-way action. 54.95

WINNER 220 - a really robust joystick with built-in precision control. Fully micro-switched with two fire buttons on the base and two on the stem for fast and furious action 34.95

ZIPSTICK SUPERPRO - 90% British made quality moulded high impact plastic with self-centring actuator & eight-way micro switches. 1.4m of cable. Left and right hand fire buttons, steel shaft. 39.95

ZIPSTICK ELITE - a smaller, specially designed hand-held model with similar specifications to the Superpro, but with just one forward centrally located fire button. Has rubber pads on base for flat surface use. 29.95

CPC MISCELLANEOUS

SCREEN FILTER 29.95

DUST COVERS - Australian made vinyl fabric dust covers in light grey colour for:

464 monitor and keyboard	35.00
6128 monitor and keyboard	35.00
DMP2000/2160/3160 Printer	17.00

Unless stated otherwise, please add the following P and P charges to your remittance:

	Australia	Overseas
Order value under \$20	\$1.00	\$2.50
Order value from \$20 to \$50	\$3.50	\$6.00
Order value over \$50	\$5.50	\$10.00

RIBBONS

Black Nylon for DMP 2000/3000/3160	19.95
Black Nylon for DMP4000	19.95

3" DRIVE CLEANING KIT 19.95

CF-2 3" DISCS EACH 7.25

6128 'SEAL 'N' TYPE' KEYBOARD PROTECTOR 29.95
Stops damaging spills etc.

PCW

8256 - 8512 - 9512

(The games marked with a \$ symbol are known to work only on the 8256/8512)

PCW GAMES

Academy (Tau Ceti II) \$	65.95
Bridge Player 2150	69.95
Clock Chess '89 (strong game) - all PCWs	59.95
CP Compilation - with 3-D Clock Chess, Backgammon, 3-D Draughts and Bridge 2000 - all on one disc	59.95
Double T Patience - compilation of six frustrating games including Kuala Lumpur, Poker Patience and Fourways	64.95
Fairlight (graphic arcade adventure)	39.95
Graham Gooch Cricket (Ltd. Overs & Test Match featuring full animation of bowler, batsman and fielders)	49.95
Gnome Ranger	59.95
Heathrow ATC (Air Traffic Control Simulator) Southern Belle (Steam Train Simulator) - both on same disc	57.95
Ingrid's back	59.95
Knight Orc	59.95
Lancelot	39.95
Mindfighter	65.95
Return to Doom (Topologika adventure)	54.95
Scapeghost (Level 9 adventure)	49.95
Steve Davis' Snooker	54.95
Time and Magik Level 9 trilogy:	
Lords of Time, Red Moon & Price of Magik	54.95
Tomahawk: helicopter simulation	49.95
World of Soccer - international Soccer management simulation	59.95
PUBLIC DOMAIN DISCS (see Page 55)	17.50

PCW YEAR DISC

Containing all the PCW type-ins published in *The Amstrad User* for issues shown
Year Disc 1 - Issues 25 to 40 27.50

PCW EDUCATIONAL

Better Maths (12-16 yrs)	29.95
Better Spelling (12-16 yrs)	29.95
Biology (12-16 yrs)	29.95
Chemistry (12-16 yrs)	29.95
Giant Killer - maths adventure 10 to adult	54.95
Magic Maths (4-8 yrs)	29.95
Maths Mania (8-12 yrs)	29.95

PCW PUBLISHING

Desk Top Publisher	59.95
MicroDesign 2 - new superb integrated Page Processor compatible with AMX or Kempston mouse	169.00
Newsdesk International	89.00
Stop Press (program only)	149.00
Stop Press (program + mouse and interface)	299.00

PCW DATABASES

Cardbox Plus	99.00
Condor One	149.00
Masterfile 8000	119.00
TAIT Database and Labeller	29.95

PCW continued

PCW MISCELLANEOUS

BRAINSTORM - tool for structuring raw ideas in a logical manner 79.00
DATSTORE II - menu-driven customised report generator, mailing list and label printer. Can be used with type styler Supertype II. 89.95
FLIPPER 2 - splits your PCW (8256, 8512 or 9512) memory into two environments and lets you flip between them, eg. between CP/M and Loco2. Not suitable for LocoScript 1. 89.95

GRAPHICS, THE UNIVERSE AND EVERYTHING...

This latest version (2.0) provides the means to create professional graphics output and more. Source code included (All PCWs) 75.00
LIGHTNING BASIC PLUS - turbo charge your Mallard Basic (All PCWs) 75.00
MASTER PAINT - deluxe graphics program, for use with either mouse or keys 49.95
MINI OFFICE PROFESSIONAL - the PCW version of the highly successful Mini Office II with Spreadsheet, Wordprocessor, database, graphics and communications 149.00
MONEY MANAGER PLUS - cashbook/personal accounting 99.00
NEWWORD2 - PCW WordStar equivalent 100.00
PCW TOOLKIT - allows you to examine and alter data on any PCW disc as well as copy part or all of a damaged or corrupted disc for repair. Full instructions provided. 69.95
PERSONAL EXCELLENCE PACKAGE - High quality mental performance analyser 109.00

PRINT MASTER PLUS - create your own Banners, Letterheads, Signs, Calendars or Greeting Cards with graphics or borders supplied. (Runs under CP/M Plus only) 59.95
PROTEXT FILER - pop-up database for Protex 59.95
PROTEXT OFFICE - as Protex Filer but with mail-merge and invoice generator module 79.95
PROTEXT PCW 149.00
PROSPELL PCW - spellchecker for most word processors incl. WordStar and LocoScript 79.95
SCRATCHPAD PLUS spreadsheet 99.00
STARTRACK - tracks you through 88 constellations and more than 600 stars 54.95
SYSTEM 3 - an integrated accounting system with Stock Control, Invoicing, and Cashflow controller 129.00
SUPERTYPE II - 8 new different types for use with all CP/M, LocoScript 1/2, LocoMail and Mini Office Professional files 39.95

TAIT ACCOUNTING SYSTEM - small business Debtors, Creditors and Invoicing 99.00
TEMPDISC - a disc full of instant templates exploiting LocoScript to the full. Provides a wide range of heading styles, agendas, invoices, borders and documents:
 Tempdisc 1 (needs Loco1) 59.95
 Tempdisc 2 (needs Loco2) 59.95
 Tempdisc 8.2 (needs Loco2, Locomail and 8512) 67.95
 Tempdisc 9 (for 9512) 67.95

TOUCH 'n' GO - typing tutor 69.00
WORDDISC - a disc full of approximately 35000 synonyms divided among 5930 main words. Used with LocoFile on B drive of 8512 or A drive of 9512 49.95

PCW PERIPHERALS

8256/512 'Seal 'n' Type' KEYBOARD PROTECTOR
 Stops damaging spills etc. 29.95
9512 'Seal 'n' Type' KEYBOARD PROTECTOR
 Stops damaging spills etc. 29.95
CPS8256 SERIAL INTERFACE for PCWs for communications or adding extra printers 145.00
AMX MOUSE plus interface - the most popular and sought after peripherals for your PCW, especially with Stop Press 199.00

KEMPSTON MOUSE plus interface - new style two-button mouse supplied with Jeeves (memory resident desktop accessories) and Daatafax personal organiser program. Mouse can be used with Stop Press, Desktop Publisher or the new MicroDesign 2 package. 199.00

PCW continued

PCW JOYSTICK INTERFACE from Kempston 49.95
SCANNER - Master Pack - a scanning device which attaches to a PCW printer head to copy photos or other art work, Master Scan software and MasterPaint, a powerful graphics package. Compatible with Desktop Publisher, FSE and Newsdesk International (8256 and 8512s only) 279.00

SCA RAMPAC 512k EXPANSION UNIT - simply plugs into the expansion port of any PCW. Adds an extra 512k to the 'M' drive allowing LocoScript2, Locomail, LocoSpell and more to be loaded at the same time. Through-connector allows other peripherals (eg. a mouse interface or serial/parallel interface) to be used at the same time. 299.00

SCREEN FILTER 29.95

PCW DUST COVERS

Australian made vinyl fabric dust covers complete for the following PCWs:
8256/8512 monitor, keyboard and printer 55.00
9512 monitor, keyboard and printer 60.00

PCW TASMAN RANGE

Tasword 8000 69.95
 Tas-spell 8000 49.00
 Tasprint 8000 39.00
 Tas-sign 8000 69.95

PCW CONSUMABLES

PCW 8000s PRINTER RIBBONS
 Black Carbon/Multistrike or Nylon 19.95
 Coloured Nylon - Blue, Red or Green 24.95

PCW 9000s PRINTER RIBBONS
 Black Carbon/Multistrike 15.95
 Black Nylon 19.95

DAISY WHEELS FOR 9000s
 Prestige Pica 10; Prestige Elite 12; Courier 10; Cubic Pica 10; Mini Gothic 15/Micro; Orator 90%/10; Letter Gothic 10/12; Script 12 each 19.95

3" DISC DRIVE CLEANING KIT 19.95

CF2 3" DISCS each 7.25

PCW LOCOMOTIVE PRODUCTS

LOCOSCRIPT 2 (latest) with manual 87.00
LOCOSCRIPT2 (latest) Disk only 49.95
LOCOSCRIPT 2 + LOCOSPELL2 pack 130.00
LOCOMAIL2 105.00
LOCOSPELL2 75.00

The following are for PCW 8000s using LocoScript 2.12 and above (Please state 8000s):

24 PIN PRINTER DRIVER - suitable for most 24 pin printhead printers attached to 8000s 64.95

PRINTER CHARACTER SET DISC for defining new character sets 59.95

EXTRA PRINTER DRIVERS DISC containing a Printer File for every LocoScript2 compatible printer 59.95

KEYBOARDS DISC to configure LocoScript2 to use American, Canadian, Danish, English, French, German, Italian, Norwegian, Spanish or Swedish keyboard layouts with any nationality of LocoScript2. 59.95

LOCOFILE/8000 - the resident 'pop-up' database for LocoScript2 110.00

LOCOFILE/LOCOMAIL 8000 - the 'pop-up' database with mailmerging program in one pack 185.00

LOCOFONT SET 1 nine extra fonts for your printer 75.00

Unless stated otherwise, please add the following P and P charges to your remittance:		
	Australia	Overseas
Order value under \$20	\$1.00	\$2.50
Order value from \$20 to \$50	\$3.50	\$6.00
Order value over \$50	\$5.50	\$10.00

PCW continued

LOCOFONT SET 2 further five fonts for your printer 65.00
LOCOKEY to customise your keyboard 59.95
LOCOMAIL SORTING PROGRAM 39.95
LOCOMAIL2 EXAMPLES DISC 17.50
LOCOMAIL2 NEW USER GUIDE 54.95

The following are for PCW 9512s (Please state 9512 when ordering):
24 PIN PRINTER DRIVER - suitable for most 24 pin printhead printers attached to the 9512 64.95
PRINTWHEELS DISC allows the correct printing of the characters from any printwheel supplied for the built-in printer. 59.95

LOCOFILE/9000 - the resident 'pop-up' database for LocoScript2 on the 9512 110.00

LOCOFONT 24 - Text Set for 24-pin printers 64.95

KEYBOARDS DISC to configure LocoScript2 to use American, Canadian, Danish, English, French, German, Italian, Norwegian, Spanish or Swedish keyboard layouts with any nationality of LocoScript2. 59.95

PRINTER DRIVER AND CHARACTER SETS supports a wide range of printers and printwheels used as an alternative to the built-in printer 59.95

LOCOMAIL SORTING PROGRAM 39.95

LOCOMAIL2 EXAMPLES DISC 17.50

PC

PC20 - PC1/2000 series PC1512/1640 - PPCs and compatibles

Items marked with a "†" symbol are also available in 3.5" disc format
 Items marked with a "*" symbol are supplied with both 5.25" and 3.5" discs.
 Items marked with a "Δ" symbol are not suitable for a PC20.

COMPILATION GAMES PACKS

Adventure 12 Series: 12 adventures + hint book 59.95
Arcade Bonanza Pack - 18 games † 29.95
Cinemaware Bundle: with SDI, King of Chicago, and Defender of the Crown 59.95
Classic Arcades 2: with Pengo, Arnold & Grand Prix 59.95
Cosmi Top: with Super Huey, Def Con 5, Nav Com 6, Doodle Corporate Raider, Inside Trader, Munch, R-R-Ribit, Sanction, and Invaders † 49.95
Epyx on PC Vol 1: with Winter Games, Pitstop 2 and Summer Games 2 49.95
Epyx on PC Vol 2: with World Games, Street Sports Basketball and Impossible Mission 2 49.95
Thrill of Winning: with John Madden Football, Zany Golf, Budokan, and Ferrari Formula One 64.95
Ultima Trilogy: with Ultima 1, 2 and 3 + hint book 69.95
Wide World of Sports: with California Games, Winter edition Games, and Summer edition Games 49.95
Zork Trilogy: with Zork 1, 2 and 3 # 69.95

PC & COMPATIBLES GAMES

2000 leagues under the sea 39.95
 3-D Helicopter Simulator # 52.95
 688 Sub Attack # 49.95
 A-10 Tank Killer (flight sim.) Δ 69.95
 Abrams Battle Tank 49.95
 ACE 2 33.50
 Action Service 54.95
 AD&D series - Champions of Krynn † 49.95
 AD&D series - Curse of the Azure Bonds # 49.95
 AD&D series - Dragons of Flame # 59.95
 AD&D series - Dungeon Master's Assistant Vol 1 49.95
 AD&D series - Dungeon Master's Assistant Vol 2 49.95
 AD&D series - Heroes of the Lance # 49.95
 AD&D series - Hillstar # 59.95

mail order

PC continued

AD&D series - Pools of Radiance #	49.95
AD&D series - Secret of the Silver Blades #	49.95
African Raiders	49.95
Afterburner (VGA compatible) #	61.95
After the War	54.95
Airball (now supports EGA and VGA)	59.95
Airborne Ranger †	59.95
Ancient Art of War #	74.95
Alf	39.95
Alien Syndrome	59.95
All Point Bulletin	59.95
Amazon	32.95
Annals of Rome #	64.95
Armada	49.95
Attack Chopper †	69.95
Austerlitz (War Game) #	69.95
Auto Duel	59.95
Backgammon	24.95
Bad Blood (640k required)	59.95
Balance of Power 1990 † Δ	69.95
Ballistix	69.95
Barbarian 2	59.95
Bard's Tale Vol 1 #	49.95
Bar Games †	59.95
Batman, The Caped Crusader †	59.95
Battle Chess (needs 640k) # Δ	61.95
Battle Hawks 1942 #	61.95
Battle Tech #	61.95
Battles of Napoleon	49.95
Beyond the Black Hole #	69.95
Beverly Hills Cop	49.95
Black Cauldron #	49.95
Blockbuster	48.50
Blockout #	49.95
Blood money	59.95
Blue angels (flight sim.)	59.95
Blue Angels '69	49.95
Bomber	69.95
Bombuzal	59.95
Borodino	49.95
Bruce Lee Lives	59.95
Budokan #	59.95
Buffalo Bill's Rodeo Games	49.95
California Challenge (Test Drive 2 add-on) †	39.95
California Raisins	49.95
Capone	69.95
Captain Blood †	69.95
Captain Power	29.95
Carrier Command †	59.95
Cartooners	59.95
Castle Master #	69.95
Caveman UGH-lympics †	39.95
Centurion - Defender of Rome	59.95
Chase HQ	o/s
Chessmaster 2100 #	69.95
Chuck Yeager's Advanced Flight Trainer †	54.95
Chuck Yeager's Adv. Flight Trainer + audio tape	59.95
Circuit's Edge	59.95
Classic Quest Adventure Series:	
Forestland	39.95
Witch Hunt	39.95
Catacombs	39.95
Cornucopia	39.95
Classic Invaders	29.95
Cloud Kingdoms #	59.95
Club Casino - 4 gambling programs	19.95
Codename Iceman (Sierra) #	69.95
Computer Yahtzee #	29.95
Colonel's Bequest (Sierra) #	61.95
Colorado †	69.95
Concentration	49.95
Conflict in Europe #	69.95
Conqueror †	59.95
Conquest of Camelot (Sierra) #	61.95
Convoy - road and transport games	19.95
Crazy Cars 2 † Δ	59.95
Crime Wave (with RealSound) needs 640k + h/disk †	69.95
Crossbow #	59.95
Crossbow - the Legend of Tell	59.95
Crossword Magic (for XT's only)	69.95

PC continued

Cycles, The †	64.95
Dark Century #	59.95
Dark Side	54.95
David Wolf Secret Agent Δ	69.96
Day of the Viper †	59.95
Death Trak #	69.95
Def Con 5 (American 'Star Wars' defence)	59.95
Defender of the Crown #	69.95
Destroyer †	49.95
Die Hard #	59.95
Doctor Doom's Revenge †	59.95
Doctor Ruth's Game of Good Sex (AO)	35.95
Don't go Alone †	64.95
Double Dragon 2 #	59.95
Dragon Wars #	59.95
Dragon's Lair (13 x 5.25" disks)	99.95
Dragonstrike †	59.95
Dragonworld	32.95
Drakkhen #	79.95
Dream Warrior	29.95
Driller	59.95
Earl Weaver's Baseball #	49.95
Earthrise (graphic adventure)	59.95
Emmanuelle (AO)	39.95
E-Motion	59.95
Escape from Hell †	49.95
European Challenge (Test Drive 2 add-on) †	39.95
Eye of Horus #	69.95
F-15 †	59.95
F-15 Strike Eagle II †	69.95
F-16 Falcon #	49.95
F-16 Combat Pilot †	49.95
F-19 Stealth Fighter †	109.95
Face Off (Ice Hockey) #	59.95
Faery Tale Adventure #	49.95
Fahrenheit 451	32.95
Falcon AT #	69.95
Fallen Angel #	54.95
Family Feud	49.95
Fantasy Pak - arcade, war and mazes	19.95
Ferrari Formula One #	49.95
Fiendish Freddie †	59.95
Final Frontier, The	59.95
Fire and Forget	59.95
Fire Brigade †	49.95
Flight Simulator (MicroSoft new version 4) †	95.00
Flippit	39.95
Friday Night Poker †	39.95
Full Metal Planet #	59.95
Games, The - Summer Edition † Δ	49.95
Garfield Trivia Game †	39.95
Ghostbusters II	59.95
Ghosts and Goblins †	59.95
Gnome Ranger	59.95
Gold Rush †	49.95
Grand Prix Circuit #	49.95
Greg Norman Ultimate Golf #	59.95
Gunboat	59.95
Gunship †	69.95
Hardball 2 (Baseball) †	59.95
Hard Drivin' †	59.95
Harley Davidson Δ	59.95
Harpoon † Δ	69.95
Heat Wave (Poweboat racing) †	59.95
Heros Quest (Sierra) #	69.95
Hidden Angels	99.95
Hitch Hiker's Guide to the Galaxy	59.95
Horse Racing - strategy game	69.96
Hoyle's Book of Card Games - Vol 1 #	52.95
Hunt for Red October #	49.95
If it moves - Shoot it †	59.95
Indiana Jones and the Temple of Doom	69.95

PC continued

Indiana Jones - Last Crusade (arcade) #	49.95
Indiana Jones - Last Crusade (graphic adv.) #	79.95
Indianapolis 500 †	59.95
Ingrid's back	59.95
International Team Sports - five Olympic events - coach	59.95
<i>and select the team then play the Games</i>	59.95
Into the Eagle's Nest	48.50
Italy 1990	59.95
Jack Nicklaus Golf	52.95
Jack Nicklaus Courses Vol 1	39.95
Jack Nicklaus Courses Vol 2 †	59.95
Jaws (from the movie)	59.95
Jet Fighter	69.95
Karateka †	19.95
Keep the Thief #	49.95
Keys to Maramon (adv) †	69.95
King Arthur - Quest for Excalibur #	59.95
Kings Quest 1 #	49.95
Kings Quest 2 #	49.95
Kings Quest 3 #	49.95
Kings Quest 4 (9x5.25" and 4x3.5") #	69.95
Knight Force †	59.95
Kristal, The	69.95
LA Crackdown †	39.95
Lancelot	59.95
Laptop Computer Chess 3.5" only	52.95
Last Ninja 2	59.95
Leisure Suit Larry (AO) #	49.95
Leisure Suit Larry II (AO) #	49.95
Leisure Suit Larry III (AO) #	59.95
Licence to Kill †	59.95
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M1 Tank Platoon # Δ	89.95
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<i>256 colours, superb graphics & digitised sound † Δ</i>	79.95
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Pipe Mania †	59.95
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Powerdrome #	49.95
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PC continued

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Rotox	59.95
Safari Guns †	49.95
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Ski or Die †	49.95
Skweek †	59.95
Skyfox 2 #	49.95
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Snow Strike †	39.95
Slots and Cards - casino simulator	59.95
Sorcerian # (ATs only)	69.95
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Space Harrier	59.95
Space Max	69.95
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Space Quest 2 #	49.95
Space Quest 3 #	59.95
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Sports Spectacular: golf, gridiron, archery	19.95
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Star Command	79.95
Star Flight 2 #	49.95
Star Glider 2 †	49.95
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Star Trek 5: The final frontier †	69.95
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Station Fall	44.95
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Street Sports Baseball †	39.95
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Stunt Car Racer #	69.95
Super Cars (Test Drive 2 add-on) †	39.95
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Tank #	69.95
Teenage Mutant Ninja Turtles †	69.95
Teenage Queen (Strip Poker) AO	59.95
Temple of Apshai Trilogy	39.95
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Test Drive 2 †	59.95
Test Drive 2 (add-on) Muscle Cars	39.95
Terrarium	61.95
Tetris #	59.95
Their finest hour (Battle of Britain sim.) †	69.95
Thexder #	49.95
Third Courier, The †	64.95
Thud Ridge	49.95
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Times of Lore	59.95

PC continued

Tin Tin on the Moon †	59.95
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Ultima VI (640k required)	84.95
UMS (War game simulator)	59.95
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USS Stinger - submarine simulator	29.95
Usurper, The	59.95
Vegas Gambler #	49.95
'Vette (Corvette simulator) # Δ	69.95
Voyager	61.95
Wall Street	59.95
War in Middle Earth	57.95
Wargame Construction Kit #	49.95
Waterloo	69.95
Wayne Gretzky Ice Hockey	69.95
Welltris # (Tetris style puzzle)	69.95
West Phaser (Wild West game +Light Gun)	89.95
Wheel of Fortune	44.95
Where in Europe is Carmen Sandiego †	84.95
Where in Time is Carmen Sandiego †	84.95
Where in the World is Carmen Sandiego †	84.95
Where in USA is Carmen Sandiego †	84.95
Where time stood still	61.95
Wibarm - puzzle solving arcade action #	69.95
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Windwalker	59.95
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World Class Leaderboard Golf value pack	49.95
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World Tour Golf †	49.95
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Xenon 2 #	69.95
Zac McCracken & alien mindbrs (Hi-res) #	59.95
Zombie	59.95
Zork Trilogy (Zork 1, 2 and 3) #	69.95
Zork Zero #	69.95

PC HINT BOOKS

Champions of Krynn	29.95
Codename Iceman	13.95
Gold Rush	13.95
Heroes Quest	13.95
Kings Quest 1	13.95
Kings Quest 2	13.95
Kings Quest 3	13.95
Kings Quest 4	13.95
Leisure Suit Larry 1	13.95
Leisure Suit Larry 2	13.95
Leisure Suit Larry 3	13.95
Manhunter - New York	13.95
Maniac Mansion	14.95
Neuromancer	13.95
Police Quest 1	13.95
Police Quest 2	13.95
Secret of the Silver Blades	29.95
Space Quest 1	13.95
Space Quest 2	13.95
Space Quest 3	13.95
Zac McCracken & the alien mindbenders	14.95
Zork Trilogy (Zork 1,2 and 3)	24.95

PC BUDGET GAMES

Arcade 1: Pitfall, Artillery, Goob and X-Wing †	15.95
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PC continued

Arcade 2: Munchman, Bowling and Depth charge †	15.95
Arcade Bonanza: Frog, Pac-em, Tank & Red Alert †	15.95
Board Games	15.95
California Golf	19.95
Enterprise	19.95
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Ikari Warriors - 3.5" only	19.95
Knight Games	19.95
Master Blaster: Paratrooper, Round 42 & Rockets †	15.95
Mind Challenge: Concentration, Magie, Hide-away and Mindsan	15.95
Motobike Madness	19.95
Pub Pool	19.95
Sink the Bismark: Battleships & Naval Trivia †	15.95
Solomon's Key	19.95
Space Battles: Space War, Meteor Shower, Moon Lander and Space Zombies †	15.95
Space Games	15.95
Strategy Games: Ruler, Killer Bees, Engineer, Sabotage and Vampire †	15.95
Strike Force: airborne action with Striker, Flightmare, The Red Barn and Kamikaze	19.95
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Better Maths (12-16 yrs)	39.95
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Birds 'n' Bees	39.95
Bugasaurus (6-9yr) - reading/vocab. development †	19.95
Build a Book	39.95
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COMPUTEREASy EDUCATION SERIES:	
Maths Climbers	19.95
Mr. DOS	19.95
Read Easy	19.95
Spell Castle	19.95
Type and Learn	19.95
Create with Garfield - design posters, cartoons or labels with 200 pieces of Garfield and friends art †	69.95
Delta Drawing	52.95
Dinosaur Days (6-12yr) - graphic writing program	59.95
Dinosaur Discovery #	49.95
Fraction Action	69.95
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Under 6	49.95
6 to 8	49.95
Over 8	49.95
The above FUN SCHOOL 2 items are also available in 3.5" format if requested. The cost of each unit is	53.95
Grammar Examiner	59.95
In search of the most amazing things	59.95
Joshua's Reading Machine: for ages 4 to 7 with parent participation - also includes three adventures in Joshua's Tinker Tales	79.95
Kid's Collection: three educational games - Bambinoors, Memorise, and Associated	59.95
Kid's Time: for 3 to 8 year olds with Dot-to-Dot, Kid's Notes (music), AB Key (letter recognition)	69.95
Lex, Wizard of Words (Ages 10 to 99) #	39.95
Magic Maths (4-12 yr) CGA	39.95
Math Blaster Plus (6-12 yr) - 750 math problems	69.95
Maths Mania (8-12 yr) CGA	39.95
Manhole, The (6 x 5.25" disks) primary level	89.95
Maxi Maths (12-16 yrs)	39.95
Micro Maths - advanced for Years 9-11 students	59.95
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Volume 1	79.95
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PC Globe 3.0 - more than a computerised atlas †	125.00

mail order

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Reading and Me - suitable for ages 4 to 7 containing three modules: Letters and Phonics, Words and Sentences, and Reading Readiness	59.95
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Ernie's Big Splash (4-6 yrs)	39.95
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Grover's Animal Ad (4-6 yrs)	39.95
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Typing Tutor 4 #	62.95
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Where in Europe is Carmen Sandiego †	84.95
Where in Time is Carmen Sandiego †	84.95
Where in the World is Carmen Sandiego †	84.95
Where in USA is Carmen Sandiego †	89.95

PC BUSINESS

Ability Plus †	299.00
Upgrade to Ability Plus for existing Ability users (Original disks and manual required for proof)	224.00
Ability †	149.00
AutoSketch (CAD system) †	249.00
Bankmate - manages personal finances and reconciles your bank account. Includes pop-up calculator. #	59.95
Bookkeeping (to Trial Balance)	199.00
Brainstorm †	99.00
Business Dynamics - primer	39.95
Capital Budgetting †	199.00
Cardbox Plus Standard †	895.00
Chartman - business graphics	99.00
Condor 1 Jnr †	149.00
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Corporate Finance †	199.00
Desktop Accountant †	399.00
DGCalc - 512 rows x 52 column spreadsheet performing essential functions and more	89.95
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Home Accounts - 60 expenditure categories and 10 income accounts with budgetting & bank/cash reconciliation †	89.95
Home Office Plus - word processor, database, desktop publisher, drawing, diary, mailing list, rolbase and dictionary all in one package †	129.00
Home Office Publisher - complete desktop publishing with WYSIWYG display † (requires dual drives)	129.00
In-house accountant †	299.00
Masterfile PC version 3 standard - the most popular database for Amstrad PCs & compatibles #	199.00
Masterfile PC version 3 full - the standard version with an integrated word processing module included #	269.00
Mini Office Personal - integrated database, wordprocessor, Spreadsheet and label printer	99.95
Money Manager PC - cash book including graphics	79.00
MoneyMate - a well organised personal finance management package handling up to 10 bank accounts and 25 credit cards, 200 income/expense categories, budgetting, cash flow etc. (can use mouse) #	119.00

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Protect Filer PC	59.95
Protect Office	79.95
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Bookkeeper	299.00
Accountant	449.00
Accountant (network version)	900.00
Accountant Plus	749.00
Accountant Plus (network version)	1200.00
Financial Controller	1149.00
Financial Controller (network version)	2500.00
Payroll (up to 999 employees)	599.00
Sales Force Management †	199.00
Stockmarket - watch your shares	79.95
Swiftcalc - Spreadsheet + sideways printing †	69.95
System 3 - Invoicing, stock control and cashflow †	129.00
Tait Accounting - small business accounting with Debtors, Creditors and Invoicing	129.00
TBM (formerly ABC Business Pack) - an Australian supported integrated accounting and stock control package with many extras	499.00
TRIO - Word Processor, Database and Spreadsheet	99.95
Top Copy - word processing with spell checker and mail merge	69.00
Twin Advanced - integrated spreadsheet (like Lotus), graphics and database	159.00

PC UTILITIES

3-D GAME MAKER	49.95
AWARD WARE - certificates, banners, cards Designer	49.95
BACK-UP PRO #	89.95
BANK STREET WRITER PLUS - famous Word Processor including 60,000 spell checker & Thesaurus #	124.95
BANNER MANIA # (for colour printers too)	69.95
CERTIFICATE MAKER - over 200 to choose from	49.95
CREDIT CARD ACCOUNTING SYSTEM	29.95
CROSSWORD MANIA †	34.95
DELUXE PAINT ANIMATION - for superb animation on VGA screens with 256 colours (640k and above only) #	169.95
DISCO HARD DISK MENU SYSTEM - creates personalised menus, runs common DOS commands with one keypress.	99.00
DOS-RX - disk management utilities and tools	64.95
EXPERT SERIES:	
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Filer	39.95
Money Power	39.95
PC Protection	39.95
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Personal Finance	39.95
Personal Forms	39.95
Personal Publisher	39.95
Personal Skills	39.95
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FILE RESCUE PLUS	69.95
GO! SERIES (all contain Computer ToolBox utility)	
GO! START - four function calculator, letter writer and	

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PC continued

typewriter, computer toolbox, address filer, notepad, maze game, print function for printing envelopes and address lists	29.95
GO! WRITE - prompts for business letters, memos, reports, invitations, calendars, banners and address forms	29.95
GO! FILE - fully functional database, just fill in the blanks in ready made file forms	29.95
GO! PLAN - fully functional spreadsheet, just fill in the ready made forms for planning retirement, savings, car expense, loans, etc.	29.95
HOME ORGANISER - with Inventory, Shopping list, Librarian and Planner †	15.95
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IANKEY TYPING TUTOR - for 2 finger typists #	59.95
LOTTERY WHEEL †	34.95
LOTTERY TREND - analysis †	34.95
MAIL SHOT PLUS - with graphical layout	99.00
MASTERING YOUR PC - a DOS & Typing tutorial	39.95
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PAINT SHOP - graphics with label feature †	39.95
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PERSONAL WEDDING PLANNER †	69.95
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Sampler disk - graphics covering holidays, birthdays, School, Sports and more †	59.95
Party disk - graphics for Weddings, Welcome Home, BBQs, Parties, Valentine's Day etc. plus borders †	59.95
School & Business Edtn - over 100 eye-catching pictures for the office or student environment †	59.95
ADD-ONS FOR OLD PRINTSHOP	
PrintShop Companion - adds a calendar to old Print Shop (monthly and weekly formats) plus facility to edit existing old Print Shop graphics †	89.95
Disk 2 - symbols for hobbies, occupations, travel, music and health †	54.95
Holiday Edtn - 70 graphics for Christmas, Hanukkah, New Year, 10 new typefaces, 14 borders & 12 full panel designs †	54.95
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PRINT POWER - multi fonts & borders	69.95
PUBLISH-IT - a fully integrated, full featured desktop publisher with page layout, word processing, typesetting and graphics all in one package. Accepts imports from Word, WordPerfect, Lotus 1-2-3 graphic files. Over 1200 possible typestyle to choose from. #	299.95
PUBLISH-IT LITE - a simpler version of Publish-It having all the main features for those wanting to do straightforward publishing for practical purposes. (3.5" swap facility)	99.95
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SRINGBOARD PUBLISHER - a desk top publishing program with full featured word processor and high quality graphics program all running under MicroSoft Windows †	249.95
Tasword PC - word processor †	99.00
Tas-spell PC - spell checker †	95.00
Tas-print PC - style writer †	95.00
Tas-sign PC - sign maker †	95.00

PC continued

Tascopy PC - graphics editor †	95.00
WORKS OF ART - Clip Art to be used with Springboard Publisher and most other DTP packages.	
Educational Series - over 500 images	79.95
Holiday Series - as above	79.95
Laser Art Business - 125 professionally drawn pics	79.95

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PC-SOFT #1 - 19 Basic2 utilities and games-	5.25"	12.50
PC-SOFT #2 - 8 games for all Amstrad PCs -	5.25"	12.50
	3.5"	15.00
PC-SOFT #3 - 24 utilities for all Amstrad PCs -	5.25"	12.50
	3.5"	15.00
PC-SOFT #4 - 6 games for all Amstrad PCs -	5.25"	12.50
	3.5"	15.00
PC-SOFT #5 - 23 utilities for all Amstrad PCs -	5.25"	12.50
	3.5"	15.00

PC JOYSTICKS

ANKO PRECISION JOYSTICK: top of the range - with free floating or auto centring operation modes, dual axis trim controls for accurate control of cursor/aiming/movement, two fire buttons on base and one on stem and rubber feet for surface grip 49.95

ANKO STANDARD JOYSTICK: mid-range priced joystick with fire button on base and one on the stem, dual axis trim controls for accurate movement, and rubber feet for surface grip 39.95

JUNBO JOYSTICK: the smallest in the range but just as accurate, with auto return centring and fine tuning to adjust movement control, long life variable resistor control, two fire buttons, suitable for hand held control 29.95

KONIX SPEED KING - hand-held (in the left hand) for a natural grip and total control. Microswitched twin fire buttons positioned under trigger fingers. Free or self centring solid steel shaft. Autofire feature. 49.95

Please note that with the exception of the Amstrad PC20 all other Amstrad PCs require a joystick card to be fitted

MISCELLANEOUS

DISKS	
Verbatim "Valulife" 3.5" (packs of five) per pack...	17.50
KAO "Amstrad User" 5.25" (packs of ten) per pack...	22.50
KAO "Amstrad User" 5.25" (packs of two) per pack...	4.50

DISK DRIVE HEAD CLEANERS	
3.5" for PPC, PC20 or PC2000s	17.95
5.25" for PC1512/1640	17.95

IBM PARALLEL PRINTER CABLE 29.95

JOYSTICK GAMES CARD: Easily fitted - allows the use of an IBM style joystick on your Amstrad PC. 49.95

PC1512/1640 'SEAL 'N' TYPE KEYBOARD PROTECTOR Stops damaging spills and dust 34.95

MODEM - Amstrad's MC2400 (V21, V22, V22 bis and V23 2400 bps). Works with any IBM compatible and comes with communications software. 399.00

SCANNERS

GS4500 Geniscan includes 400 dpi scanner and controller, Scanedit 2 software, Prodigy OCR software and Dr. Genius software. Features auto merge function for large size images and direct scanning (not suitable for 512k computers) **NEW LOW PRICE >>>** 399.00

MOUSE(S)

GENIUS GM-F303 Serial Mouse - comes with mouse holder, mouse pad, CasCAD, Dr Genius and Menu Maker software and PS/2 cable 149.95

PC continued

GENIUS GM-F302 Serial mouse (same as F303 but not provided with CasCAD software or cable) 129.95

GENIUS GM6X Serial mouse with Dr Halo software 79.95

QTRONIX X-30MD Serial mouse with Dr Halo Plus software, mouse pad, mouse holder and cabling as requested 119.95

QTRONIX MBC-30 BUS CARD to accept the X-30MD and leave the serial port free 46.95

Please note: while the above mouse(s) are designed for use on XT's, AT's and PS/2's, they will not work on the following Amstrad XT's: the PC1512, 1640 and PC2086. They can be used on the Amstrad AT's, namely the PC2286 and 2386.

DUST COVERS

Australian made vinyl fabric dust covers in light grey for the following equipment: (please state your printer)

PC1512 or PC1640 monitor and keyboard	36.00
PC20 system/keyboard	18.00
PC2086 monitor/system and keyboard	39.00
PC2286/2386 mon/system and keyboard	39.00
DMP3160 or LQ3500	17.00
DMP4000 or LQ5000	30.00
Star NX-1000, NX 24-10, NB 24-10	17.00
Star NX15, NB 24-15	30.00
Epson LQ500, LX-800	17.00

PRINTER RIBBONS

Epson: MX/FX/RX 100, 100+, 105, 105+	10.95
Epson: LX80, 86, 90	8.95
Epson: LQ500, 800, 850	15.95
Epson: FX800, LX800, 850	10.95
Star: NX1000, LC10	10.95
Star: LC24/10, NX 24/10	15.95

DISK DRIVES/CARDS

FOR PC1512 or PC1640
(The PHDs also suit PC2086s without hard disks)

20mb Portable Hard Drive on a card *	849.00
30mb Portable Hard Drive on a card *	929.00
20mb Internal Hard Disc *	725.00
30mb Internal Hard Disc *	789.00
* Add \$15 for certified post and insurance (\$25 overseas)	
720k 3.5" int. disc drive **	289.00
720k 3.5" Ext. disc drive **	385.00
360k 5.25" Disc drive kit **	375.00

FOR PC20 and PC2086

360k 5.25" External disc drive **	339.00
720k 3.5" External disc drive **	339.00

FOR PC2286 and 2386

1.2 mb 5.25" External disc drive **	395.00
1.44mb 3.5" External disc drive **	395.00

** Add \$10 for certified post and insurance (\$20 overseas)

MATH CO-PROCESSORS

8087-2	XT - 8MHz	369.00
80287-8	AT - 8MHz	595.00
80287-10	AT - 10MHz	689.00
80387-16	16MHz	1145.00

MICROSOFT RANGE

Chart †	550.00
Excel for Windows #	849.00

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Order value over \$50	\$5.50	\$10.00

PC continued

Learning DOS †	95.00
Multiplan #	345.00
Project #	695.00
QuickBasic Compiler †	185.00
QuickC †	185.00
Windows 286 †	195.00
Windows 386 #	345.00
Word †	675.00
Works #	299.00
Word Exchange †	119.00

— BOOKS —

CPC TITLES

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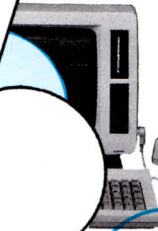
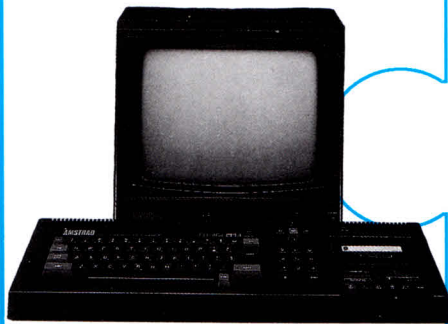
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Next page ENTER
Find key F
Go to record number G
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Print single record P
Erase record E
Insert new record I
Show re-sequenced R
Rotate format R
Go to search S
Exit to main menu X

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