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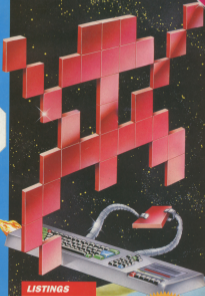
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**Maximise Maxam
and play Cubots**

REVIEWS

**Gunship, Propunter
and Bard's Tale**

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Gallup Software Chart

THIS MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	△ 4	FOOTBALL MANAGER 2 <i>Addictive</i>	9.99
2	△ 6	AIR WOLF <i>Encore</i>	1.99
3	▽ 1	ACE <i>Coscade</i>	2.99
4	△ 7	FRANK BRUNO'S BOXING <i>Encore</i>	1.99
5	•	STUNT BIKE SIMULATOR <i>Firebird</i>	1.99
6	△ 13	ROCKY HORROR SHOW <i>Alternative</i>	1.99
7	▽ 9	BEACH BUGGY SIMULATOR <i>Firebird</i>	1.99
8	▽ 2	STEVE DAVIS SNOOKER <i>Blue Ribbon</i>	2.99
9	△ 10	SUPER STUNTMAN <i>Cooler Masters</i>	1.99
10	▽ 3	YOGI BEAR <i>Alternative</i>	1.99
11	△ 15	EUROPEAN FIVE-A-SIDE <i>Firebird</i>	1.99
12	▽ 8	RALLY DRIVER <i>Alternative</i>	1.99
13	•	BATTLESHIPS <i>Encore</i>	1.99
14	△ 18	GHOSTBUSTERS <i>Mastertronic</i>	1.99
15	•	BMX SIMULATOR <i>Cooler Masters</i>	1.99
16	•	TARGET RENEGADE <i>Imagine</i>	8.95
17	•	TRAP DOOR <i>Alternative</i>	1.99
18	▽ 5	FRUIT MACHINE SIMULATOR <i>Cooler Masters</i>	1.99
19	△ 20	SAMANTHA FOX STRIP POKER <i>React</i>	1.99
20	▽ 17	BRUCE LEE <i>Amstrad</i>	2.99

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1988 - THE YEAR OF THE ROBOT

RESET

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If you wish to be able to STOP any program at any time and COPY it to disk or tape, fully automatically at a touch of a button, then MULTIFACE 2 is the ONLY answer. There are no other comparable hardware devices, and the software copies simply cannot compare.

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There would never have anything more possible for Multiface Robot has your own eye looking. Multifacering is necessary with the program as well as with the user, being a part of the game, including the file structure, CPM data and any part of the system.

You can't expect any thinking the end result of these programs. However, the Robot will not start from the program you copy. However, it does remember a program's name.

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VERSION 1.0, 1988 JANUARY 1988

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Update

Don't nag the bookies, back the CPC to win

The PC is no such thing as a foolproof betting system, as is testified by the absence of bankrupt bookmakers. But with Cascade System's Form Master punters are at least promised a fighting chance.

Form Master, which has been 20 years in development, requires users to input selected information on horses running in a given race - easily gleaned from the racing press. The program analyses form from that data and presents the

user with a list in order of win probability.

Easy to use Form Master has recently thrown up a string of winners, and over the past five years has consistently managed to beat the odds. In monitored tests carried out between 1984 and 1989 it managed 280 winning selections in 441 races - a £10 stake on each would have yielded a pre-tax profit of almost £9,000.

Cascade (0423 526326) is selling Form Master at £99.99 - or bundled with the multi-function Palco Organizer II for £199.99.

► Most bettors can also try their luck at the track without making any further than their computer keyboards, for MicroLink is providing its subscribers with a week's free trial on Britain's first electronic roster service.

Every morning the service, called Turfnet, provides the very latest information about the day's race meetings, and names the best bets in each race.



CPC users will be among those embarking on a nationwide quest to find the secret hiding place of a £5,000 replica of the legendary Holy Grail.

The treasure hunt has been organized by Mandarin Software (0826 878888) to mark the launch of Lancelot, a graphics adventure game based on the legend of King Arthur.

Hand crafted from sterling silver, and gilded inside with 22 carat gold, the 16 high goblet is

It's all go for Grail

enriched with semi-precious stones. It is hidden at a secret location somewhere in the UK.

To find it, entrants will have to get through a two-stage contest based on clues contained in the new three-adventure Lancelot package.

Contest creator and Arthurian expert Pete Austin said: "All people need to do is study the Lancelot game carefully and the clues - plus their answers - will become obvious". Price £14.95.

IT'S EASIER BY BRITISH RAIL

AMERICAN software house Accolade has released a CPC version of The Train: Escape to Normandy, set in wartime France.

The player takes the role of a resistance leader who must seize an armoured train containing Nazi loot and drive it through enemy lines to safety.

You act as engineer on the train, stoking the furnaces, setting switches and keeping correct pressure in the boilers.

Along the way you encounter enemy traps, ambushes and sabotage, and must fight off planes, artillery and gunboats using your machine guns and 50mm cannon.

The Train: Escape to Normandy is available through Electronic Arts (0763 6042) price £14.95 on disc.

SOULFUL SEARCH

TRAPPED in a spooky castle of enormous size and intricacy is a phantom detached from his soul. Your task in the latest arcade game from Infogames (01-384 0123) is to manoeuvre him to freedom through many hazards.

Subtle Ghost is described by Infogames' Clive Weatherley as "a humorous and challenging game which demands a careful balance of manual dexterity and puzzle solving."

"Movement of both the ghost and his bubble soul is incredibly realistic, as are the sounds made as he puffs his way around the castle". Price £9.95 on cassette, £14.95 on disc.

The winners

THE CPC July Telecompsoft Competition winners were: 1st prize - Jeremy Mainbird (released); Bob Davies, Birmingham; 2nd prize - Jeremy Mainbird (released); Craig MacDonald, Moryshire; 3rd prize - Ite Silverbird (released); Guy Verbit, Edinburgh.

Mag winners: Tom Nornall, London; M. Gert, Herts; Glyn White, Dunbartonshire; Ian Curry, Leics; Simon Hindmarsh, Co. Durham; S. Glenn, Northampton; Colin Kestigan, Manchester; Stephen Robinson, Manchester; L. B. Martell, Sussex; Neil Vincent, Covent.

Grail winners: Chris Ferns, Herts; A. J. Roshell, Cheshire; David Bowler, Leicestershire; Gareth Knopson, North Yorks; Tony Wiseman, Essex; T. Blair, Merseyside; J. D. Westoby, Herts; G. J. Boscock, Luton; Darren Hicks, Kent; S. J. Wright, Warks.

Posters and mystery gift winners: B. Strickleton, Leics; Uenna Casery, Hampshire; Kevin Turner, Wilt; William Fox, Derbyshire; Lars Patel, Surrey; D. Wakeford, Calthness; M. Swinburn, Staffs; Graham Bryant, Wiltshire; T. Small, Dorset; Rosalynne Warner, Leics; Andrew Givon, Edinburgh.



"rubble!", he said to Ingrid. "Have you any idea how much damage this steamroller would suffer if I were to just let it roll over you?" Giles called to Ingrid.

"Go home, none at all,"
"I am here!"

More mayhem at Little Moaning

OSM set this month is Ingrid's Back - the sequel to Game Ranger - from Level 8 (0348 487201). The three-part graphical adventure again stars the heroes of Little Moaning who this time face the twin threats of the evil Japper Oatlooback and Ingrid's meddling interference in their lives.

Price £14.95 on disc.

New on rom for CPC

Two important new rom products for the CPC have been released by Graduate Software.

The company's CP/M Plus on rom has been upgraded. A Graduate (0032) 702963 spokesman said: "We have fully retained control of the Amstrad architecture from within the CP/M Plus environment. This allows Com files to be mounted on a new-style of rom. The files can then be loaded at the same speed as roms in Amstrad.

"We have been able to remove the CCP command which restored original CP/M Plus, as this is no longer required. All commands remain resident and can be called at any time from the CP/M prompt".

New commands include Cat,

Date, Show, Fan, Paper and Setdel. There are also new Amstrad and CP/M commands to support the new style roms. The product costs £32.50, with upgrades for existing users priced £9.50.

Graduate has also released an adventure compiler called Aztec, delivered as one 76k rom with a disc of related programs and files.

Although it is compatible with Art Studio and other packages, Aztec incorporates its own graphics editor called Piggan. There is support for windows and all modes and colours - plus user defined character sets, two of which are supplied for calling up as bar commands for non-Aztec applications. Price £29.95.



Wider choice of joysticks

Two new CPC joysticks are to be launched by Konix (0273 581208). Predator will probably sell for just under £13 and Megablaster for about £8, Konix told CPC Computing.

Although similar in appearance, the joysticks will be different internally. Predator is operated by microswitches while Megablaster uses a much more traditional mechanism.

Konix director Sandy Holloway (holding the Predator joystick above) said: "With the hand-held Speed King - which has sold nearly three million units - and the two new desktop joysticks we will have a more diverse range than any of our rivals".



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Yours sincerely,

Alan Sagar
Alan Sagar
Chairman AMSTRAD UK



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CPC 08/87

PROGRAMMER'S SURGERY

I AM continuing with Mr. Season's club membership list this month. You may remember that last time I outlined the program's data structures, and gave you a skeleton program showing how the main database should be laid out.

Now I'll explain how the modules can be added to that skeleton. Note that the program segments appearing here have been renumbered to give increments of 10. I hope last month's news didn't present many problems, because if you aren't yet at a stage where you can understand it this article is probably a little too advanced for you.

Before getting on to the first two modules — adding and deleting names — let's think about how we're going to handle records either not yet filled with a name, or those that have been erased.

Obviously if someone has left the club they no longer need taking into account, and to keep things simple I'll assume that their record is to be erased altogether. If this is convenient I'll leave you to modify the program so that it archives closed records to a separate file.

If during an update session we erase a name, one approach is to close up the gap created by copying all the records above it down one. Doing it this way means that whenever we want to access all records, for instance when checking who has not paid, we can start at the beginning and look through each one in turn up to the limit of the number of filled records in the database. In this way all the records are at the end of the data structure, and we know where they begin.

The disadvantages of this method is that we have to write a routine to do the copying, and if there are a lot of records there will be a noticeable delay while this happens. However, we can use an alternative technique.

IAN SHARPE tackles readers' programming difficulties



Instead of making the first part of the data structure active records and the second part inactive ones, we simply flag empty records by making the element in the array holding the names an empty string, signified by "".

Only records with characters in the name string are considered active and operated upon.

Now to erase a name we only have to do something like this:

```
name[j]=""
```

where *j* is the number of the record we're erasing. If we now decide that we want to use that record

again all we have to do is look down the list of names for an empty element. When we save the records to tape/disk at the end of a session we omit those with an empty string, so when the data is reloaded the gaps in the record will automatically close up and empty records will reappear at the end, not that it matters much.

In light of this, let's look at the section starting at line 270 — add a name. The first thing this subroutine does is look for an empty slot to put the new record. Lines 220 and 230 do this. They set up a loop which goes down the list looking for an empty name element. If the current record is not empty, the loop looks at the next one.

Actually, having written the routine it occurs to me that unless you have made a lot of erases the most likely place to find an empty record is at the end of the array, because that's where empty records tend to pile up during the saving and loading process. Therefore if you are entering a small number of names during a session it would be quicker to start the search at the end and work back towards the beginning. See if you can work out how this would be done.

```
100 END ***** END A NAME *****
110 END (4) (5) (6) (7) (8)
120 IF name(50)="" THEN GOTO
130 IF (name(50)="" OR name(50)="" OR
140 name(50)="" OR name(50)="" OR
150 name(50)="" OR name(50)=""
160 GOTO
```

Line 140 is an error check in case you have tried to add a new record to a full database. An appropriate message is printed, the program executes an empty loop to kill time while you read it, and then aborts. If this happens, the thing to do is save the data, stop the program, increase the value of *number* in last month's line 10,

and reruns. In fact the program could be written in such a way as to avoid this, but again that's left as an exercise. If a vacant record is available, line 350 gets you to input a name, which automatically flags that record as an active one.

Bear in mind that a new member added to the database needs to have his payment record modified in some way to indicate that he wasn't there when he wasn't there, if you see what I mean. I haven't got anything in to deal with this, and you might like to write an extra line or two of program to fit his record with one of the status codes - absent or paid - or a new code for "ignore this week as he/she hasn't joined".

This is especially important if the new record fills a space occupied by one erased during the same session, because although the old name has gone, the payment record remains. This would normally disappear during a save operation, but if you're not careful it'll be tagged on to the new name.

The delete name function starting at 370 operates as I've indicated. You are asked for the name to erase, and the program goes through each record in turn looking for a match. If you type one character differently - even the right letter but the wrong case - no match will be found. In other words Bill Smith, B. Smith, BILL SMITH and BILL Y. Smith are all different as far as the program is concerned.

One way to cut down on problems like this is to convert all input in the program to upper or lower case using UPPER or LOWER, but here I've haven't done that, again to keep things short and clear.

```

370 END ----- Delete name -----
380 INPUT "Name to delete? ";N$
390 FOR I=1 TO 1000000
400 IF NAME(I)=N$ THEN GOTO 410
410 IF NAME(I)=N$ THEN PRINT "Name deleted"
420 GOTO 430
430 PRINT "Name not found"
440 GOTO 450
450 END

```

Line 390 checks to see if the loop counter - I - overran the end of the database indicating that no match was found. Otherwise the appropriate element in NAME\$ is made empty in line 410.

The next module is the one to update the payment record. Again I've written the minimum amount of program to give the basic facility, and in practice you'd probably want to make it more sophisticated. It first asks you which week you want to update. Remember, last month I said that in order to avoid processing future weeks we open the database up week by week, the right hand limit being the current week. Line 370 checks to see if an illegal week has been specified, and if not the program starts a loop at

```

340 END ----- Update payments -----
350 INPUT "Name entered week start? ";N$(1)
360 INPUT "Name entered week end? ";N$(2)
370 IF N$(1)=N$(2) THEN GOTO 380
380 FOR I=1 TO 1000000
390 IF NAME(I)=N$(1) THEN GOTO 400
400 IF NAME(I)=N$(2) THEN GOTO 410
410 IF NAME(I)=N$(1) THEN GOTO 420
420 IF NAME(I)=N$(2) THEN GOTO 430
430 IF NAME(I)=N$(1) THEN GOTO 440
440 IF NAME(I)=N$(2) THEN GOTO 450
450 IF NAME(I)=N$(1) THEN GOTO 460
460 IF NAME(I)=N$(2) THEN GOTO 470
470 IF NAME(I)=N$(1) THEN GOTO 480
480 IF NAME(I)=N$(2) THEN GOTO 490
490 IF NAME(I)=N$(1) THEN GOTO 500
500 IF NAME(I)=N$(2) THEN GOTO 510
510 IF NAME(I)=N$(1) THEN GOTO 520
520 IF NAME(I)=N$(2) THEN GOTO 530
530 IF NAME(I)=N$(1) THEN GOTO 540
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570 IF NAME(I)=N$(1) THEN GOTO 580
580 IF NAME(I)=N$(2) THEN GOTO 590
590 IF NAME(I)=N$(1) THEN GOTO 600
600 IF NAME(I)=N$(2) THEN GOTO 610
610 IF NAME(I)=N$(1) THEN GOTO 620
620 IF NAME(I)=N$(2) THEN GOTO 630
630 IF NAME(I)=N$(1) THEN GOTO 640
640 IF NAME(I)=N$(2) THEN GOTO 650
650 IF NAME(I)=N$(1) THEN GOTO 660
660 IF NAME(I)=N$(2) THEN GOTO 670
670 IF NAME(I)=N$(1) THEN GOTO 680
680 IF NAME(I)=N$(2) THEN GOTO 690
690 IF NAME(I)=N$(1) THEN GOTO 700
700 IF NAME(I)=N$(2) THEN GOTO 710
710 IF NAME(I)=N$(1) THEN GOTO 720
720 IF NAME(I)=N$(2) THEN GOTO 730
730 IF NAME(I)=N$(1) THEN GOTO 740
740 IF NAME(I)=N$(2) THEN GOTO 750
750 IF NAME(I)=N$(1) THEN GOTO 760
760 IF NAME(I)=N$(2) THEN GOTO 770
770 IF NAME(I)=N$(1) THEN GOTO 780
780 IF NAME(I)=N$(2) THEN GOTO 790
790 IF NAME(I)=N$(1) THEN GOTO 800
800 IF NAME(I)=N$(2) THEN GOTO 810
810 IF NAME(I)=N$(1) THEN GOTO 820
820 IF NAME(I)=N$(2) THEN GOTO 830
830 IF NAME(I)=N$(1) THEN GOTO 840
840 IF NAME(I)=N$(2) THEN GOTO 850
850 IF NAME(I)=N$(1) THEN GOTO 860
860 IF NAME(I)=N$(2) THEN GOTO 870
870 IF NAME(I)=N$(1) THEN GOTO 880
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920 IF NAME(I)=N$(2) THEN GOTO 930
930 IF NAME(I)=N$(1) THEN GOTO 940
940 IF NAME(I)=N$(2) THEN GOTO 950
950 IF NAME(I)=N$(1) THEN GOTO 960
960 IF NAME(I)=N$(2) THEN GOTO 970
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5510 IF NAME(I)=N$(1) THEN GOTO 5520
5520 IF NAME(I)=N$(2) THEN GOTO 5530
5530 IF NAME(I)=N$(1) THEN GOTO 5540
5540 IF NAME(I)=N$(2) THEN GOTO 5550
5550 IF NAME(I)=N$(1) THEN GOTO 5560
5560 IF NAME(I)=N$(2) THEN GOTO 5570
5570 IF NAME(I)=N$(1) THEN GOTO 5580
5580 IF NAME(I)=N$(2) THEN GOTO 5590
5590 IF NAME(I)=N$(1) THEN GOTO 5600
5600 IF NAME(I)=N$(2) THEN GOTO 5610
5610 IF NAME(I)=N$(1) THEN GOTO 5620
5620 IF NAME(I)=N$(2) THEN GOTO 5630
5630 IF NAME(I)=N$(1) THEN GOTO 5640
5640 IF NAME(I)=N$(2) THEN GOTO 5650
5650 IF NAME(I)=N$(1) THEN GOTO 5660
5660 IF NAME(I)=N$(2) THEN GOTO 5670
5670 IF NAME(I)=N$(1) THEN GOTO 5680
5680 IF NAME(I)=N$(2) THEN GOTO 5690
5690 IF NAME(I)=N$(1) THEN GOTO 5700
5700 IF NAME(I)=N$(2) THEN GOTO 5710
5710 IF NAME(I)=N$(1) THEN GOTO 5720
5720 IF NAME(I)=N$(2) THEN GOTO 5730
5730 IF NAME(I)=N$(1) THEN GOTO 5740
5740 IF NAME(I)=N$(2) THEN GOTO 5750
5750 IF NAME(I)=N$(1) THEN GOTO 5760
5760 IF NAME(I)=N$(2) THEN GOTO 5770
5770 IF NAME(I)=N$(1) THEN GOTO 5780
5780 IF NAME(I)=N$(2) THEN GOTO 5790
5790 IF NAME(I)=N$(1) THEN GOTO 5800
5800 IF NAME(I)=N$(2) THEN GOTO 5810
5810 IF NAME(I)=N$(1) THEN GOTO 5820
5820 IF NAME(I)=N$(2) THEN GOTO 5830
5830 IF NAME(I)=N$(1) THEN GOTO 5840
5840 IF NAME(I)=N$(2) THEN GOTO 5850
5850 IF NAME(I)=N$(1) THEN GOTO 5860
5860 IF NAME(I)=N$(2) THEN GOTO 5870
```


WHEN given this package to review my initial thought was "Oh no, not another personal accounting system". However, my financial track record leaves much to be desired - John DeLorean and Olive Sindler would be proud of me - so if there is a simple way of keeping tabs on my finances, I'll give it a try. Maybe, I thought, I can bring my monthly expenditures under control, and get rid of my thriving overdraft.

The Personal Banking System - PBS - from Hitex Computer Services is intended for the home user, club secretaries, and owners of small businesses to keep track of finances.

It claims a distinct advantage over other packages in that no prior knowledge of accountancy is assumed. This isn't to say that PBS is limited in its capabilities, on the contrary, very

powerful analysis functions are available along with some elementary and double entry book-keeping.

The worst part of starting on any business orientated software is getting to understand how it works. This can often result in a disc full of useless data because you forget to select a vital option at the beginning.

PBS imposes no such constraints, and allows you to go backwards and forwards changing options whenever you wish. If you're still apprehensive about using the system, a demonstration file shows all the major functions.

I recommend that you spend some time with this demo, even if you're already experienced in accountancy and banking practices, as many of the package's facilities are shown to their full potential. It will also be necessary

to refer to the manual at various points, as it tries to clarify how the system functions.

Having said that, unfortunately the manual is a bit of a bore, often pointing to sections a few chapters ahead. The net result is a feeling of confusion, and it's necessary to read it several times. Luckily there are only 23 pages, so that shouldn't take too long.

Everything is accessed through menus, which always contain an option to return to the previous one. With two drives the data is stored on B, and the program disc is kept in A. If only one drive is present, a fair amount of disc swapping is required to keep the system working.

I managed to crash PBS several times by having the wrong disc in the drive. No prompt was given to change discs and very little error trapping has been instituted, so be warned.

Creating a file is done by entering information - which can be altered at any time - including the person's name, the name and address of the bank, account number, which currency the transactions are to be made in, and a bank code. This allows you to identify a particular bank with a two-digit number, making transactions between different branches a great deal easier than it may have been otherwise.

Although different currencies can be held in different accounts, the system doesn't recognise them. For instance, if £100 were moved to an account containing Japanese yen, no conversion between the two monetary units would be made. The Japanese account would think that 100 yen had been deposited, not £100.

Each file can store 288 separate transactions, which will take up about 18k of disc space. This means a maximum of around 10 files can be held on a disc, and with no easy way to erase them your floppies can fill at an alarming rate.

Entering data into a file is simply a matter of following the screen prompts. Most, such as date, amount, credit or debit are obvious, but others are a little more obscure. These include analysis and account codes, which are two-character codes, indicating the reason and type of transaction. Several have already been included, but they can be altered to suit particular needs and others may be added as you progress.

It's quite easy to forget which account is represented by which code, and so a Help function is available by entering 7 when prompted. In fact, all but the more obvious inputs are supported by some form of help, which is quite handy when the system can supposedly handle an unlimited

Me and my overdraft

PHIL LAWSON gives an account of the latest version of the Personal Banking System



PERSONAL BANKING SYSTEM



VERSION 1.01



REPRODUCED BY PERMISSION OF HITEX COMPUTER SERVICES

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Creating a file is done by entering information - which can be altered at any time - including the person's

BACKUP FOR SAFETY

Before diving in and running the program, you are well advised to make a backup of the master disc, which should be stored in a safe place.

The manual tells you how to do this, including the different procedures to be followed for single and dual drive systems. There's no tape version, unfortunately.

An initialisation routine controls various redefinable parameters such as passwords, page length for printers, whether you're using one or two drives, and the pen and paper colours.

number of codes. Actually the maximum is just under 1000, but this should be more than enough for normal use.

It may seem unnecessary to include transaction codes, but they do allow a very powerful search command to be used. Entering a start and end date for the search, along with the criteria to look for, will then report its every occurrence, either on the screen or printer. The criteria can be a code, reference, details or even an amount.

The cost, for example, of running your car can also be found, providing an analysis code has been used to identify it. Once a file has been created and saved, you're given almost instant access to it each time you run the system.

Bank accounts are all about moving cash from one place to another, and any accounting system worth its salt will provide a method of doing this. PBS, it's good to say, is no exception, allowing transfers between clients and bank accounts.

Simply enter a transaction in the normal way - date, amount, codes and so on - and the prompt ACCOUNT/BANK TRANSFER (ABT) will appear. Responding with A and entering an account code will complete the transaction, with both year and the client's account being updated accordingly. The bank transfer - B - operates in a similar way except that PBS has to update two bank account files. It also checks for any standing orders or direct debits, and updates the files if necessary.

Standing orders and direct debits are treated in the same way and only differ in how they're represented in your accounts. Direct debits, such as household bills, tend to be for varying amounts, and are only paid when the

ON BALANCE IT'S FOUND WANTING

After a cursory glance at the documentation and running the system for the first time, my enthusiasm for Personal Banking System for Personal Banking System is quickly evaporated. Following a complete re-read of the manual I was even more confused.

The screen display doesn't give much confidence either, with several of the messages overlapping each other, but sometimes leaving part of the last one behind. This results in barely legible text, especially when entering data.

After using PBS for the last week it's obvious that many powerful

functions and commands are available. Unfortunately the general lack of thought for the user has resulted in a system that's very difficult, and in some cases impossible, to use.

Whether PBS is aimed at the small businessman or the home user, I honestly feel that both could get along much better with their monthly bank statements.

At a price of just under £40 this product is full of inexcusable problems. If Hilton Computer Services ever decides to release an upgraded version, I only hope it picks up the program.

bill is presented. Standing orders, on the other hand, are for fixed amounts which are paid at a regular interval.

PBS recognises four such intervals - monthly, quarterly, weekly and lunar monthly. Additions and changes can be made to these, letting you set up annual, bi-monthly, or any other frequency you require.

I've already mentioned that wrong discs will crash the system, but there are other ways of accomplishing the trick. Entering wrong data can halt the program. For instance, attempting to open a file I was prompted for the file number. Quite correctly the system reported that no such file existed, but it then asked me if everything was all right. Believing that the program would remember the error I replied Yes, and the routine promptly crashed.

Taking the opportunity to examine the Basic listings, it became evident from the number of potential bugs

that very little testing has been done. For this reason I suggest you take great care when entering data and commands, otherwise you may lose the lot.

SECURITY

Personal financial records are, by their nature, private and confidential, and an effective password facility has been included in PBS. This protection may be turned on and off through the initialisation program, which should therefore be stored on a separate master disc.

In some circumstances it may be desirable if one person is given unrestricted access to all files. To accommodate this requirement, the holder of the first account file in the PBS directory has access to all other passwords.

It is therefore possible to create a dummy file through which the authorised user can examine every other file and transaction.

Product: Personal Banking System
 Price: £39.95 (plus post)
 Supplier: Hilton Computer Services, 24
 Holmway Crescent, Ovington, Kent
 ME4 4QF
 Tel: 0689 21666

POINTS FOR

- Very powerful.
- Password security available.
- On line help facility.

AND AGAIN

- Programs easy to crash.
- Very limited documentation.
- Uses unfriendly.
- Overpriced.

DATE	AMT	DETAILS	DEBIT	CREDIT	BALANCE
1989					
01/01					1000.00
02/01	50.00	SALES			1050.00
03/01					1050.00
04/01	20.00	SALES			1070.00
05/01					1070.00
06/01	10.00	SALES			1080.00
07/01					1080.00
08/01	30.00	SALES			1110.00
09/01					1110.00
10/01	15.00	SALES			1125.00
11/01					1125.00
12/01	25.00	SALES			1150.00
1989					1150.00
01/01					1150.00
02/01	10.00	SALES			1160.00
03/01					1160.00
04/01	5.00	SALES			1165.00
05/01					1165.00
06/01	12.00	SALES			1177.00
07/01					1177.00
08/01	8.00	SALES			1185.00
09/01					1185.00
10/01	18.00	SALES			1203.00
11/01					1203.00
12/01	22.00	SALES			1225.00
1990					1225.00
01/01					1225.00
02/01	15.00	SALES			1240.00
03/01					1240.00
04/01	7.00	SALES			1247.00
05/01					1247.00
06/01	14.00	SALES			1261.00
07/01					1261.00
08/01	9.00	SALES			1270.00
09/01					1270.00
10/01	19.00	SALES			1289.00
11/01					1289.00
12/01	24.00	SALES			1313.00
1990					1313.00
01/01					1313.00
02/01	17.00	SALES			1330.00
03/01					1330.00
04/01	11.00	SALES			1341.00
05/01					1341.00
06/01	16.00	SALES			1357.00
07/01					1357.00
08/01	13.00	SALES			1370.00
09/01					1370.00
10/01	21.00	SALES			1391.00
11/01					1391.00
12/01	26.00	SALES			1417.00
1990					1417.00
01/01					1417.00
02/01	19.00	SALES			1436.00
03/01					1436.00
04/01	13.00	SALES			1449.00
05/01					1449.00
06/01	18.00	SALES			1467.00
07/01					1467.00
08/01	15.00	SALES			1482.00
09/01					1482.00
10/01	23.00	SALES			1505.00
11/01					1505.00
12/01	28.00	SALES			1533.00
1990					1533.00
01/01					1533.00
02/01	21.00	SALES			1554.00
03/01					1554.00
04/01	17.00	SALES			1571.00
05/01					1571.00
06/01	22.00	SALES			1593.00
07/01					1593.00
08/01	19.00	SALES			1612.00
09/01					1612.00
10/01	27.00	SALES			1639.00
11/01					1639.00
12/01	32.00	SALES			1671.00
1990					1671.00
01/01					1671.00
02/01	25.00	SALES			1696.00
03/01					1696.00
04/01	21.00	SALES			1717.00
05/01					1717.00
06/01	26.00	SALES			1743.00
07/01					1743.00
08/01	23.00	SALES			1766.00
09/01					1766.00
10/01	31.00	SALES			1797.00
11/01					1797.00
12/01	36.00	SALES			1833.00
1990					1833.00
01/01					1833.00
02/01	29.00	SALES			1862.00
03/01					1862.00
04/01	25.00	SALES			1887.00
05/01					1887.00
06/01	30.00	SALES			1917.00
07/01					1917.00
08/01	27.00	SALES			1944.00
09/01					1944.00
10/01	35.00	SALES			1979.00
11/01					1979.00
12/01	40.00	SALES			2019.00
1990					2019.00
01/01					2019.00
02/01	33.00	SALES			2052.00
03/01					2052.00
04/01	29.00	SALES			2081.00
05/01					2081.00
06/01	34.00	SALES			2115.00
07/01					2115.00
08/01	31.00	SALES			2146.00
09/01					2146.00
10/01	39.00	SALES			2185.00
11/01					2185.00
12/01	44.00	SALES			2229.00
1990					2229.00
01/01					2229.00
02/01	37.00	SALES			2266.00
03/01					2266.00
04/01	33.00	SALES			2300.00
05/01					2300.00
06/01	38.00	SALES			2338.00
07/01					2338.00
08/01	35.00	SALES			2373.00
09/01					2373.00
10/01	43.00	SALES			2416.00
11/01					2416.00
12/01	48.00	SALES			2464.00
1990					2464.00
01/01					2464.00
02/01	41.00	SALES			2505.00
03/01					2505.00
04/01	37.00	SALES			2542.00
05/01					2542.00
06/01	42.00	SALES			2584.00
07/01					2584.00
08/01	39.00	SALES			2623.00
09/01					2623.00
10/01	47.00	SALES			2670.00
11/01					2670.00
12/01	52.00	SALES			2722.00
1990					2722.00
01/01					2722.00
02/01	45.00	SALES			2767.00
03/01					2767.00
04/01	41.00	SALES			2808.00
05/01					2808.00
06/01	46.00	SALES			2854.00
07/01					2854.00
08/01	43.00	SALES			2897.00
09/01					2897.00
10/01	51.00	SALES			2948.00
11/01					2948.00
12/01	56.00	SALES			3004.00
1990					3004.00
01/01					3004.00
02/01	49.00	SALES			3053.00
03/01					3053.00
04/01	45.00	SALES			3100.00
05/01					3100.00
06/01	50.00	SALES			3150.00
07/01					3150.00
08/01	47.00	SALES			3197.00
09/01					3197.00
10/01	55.00	SALES			3252.00
11/01					3252.00
12/01	60.00	SALES			3312.00
1990					3312.00
01/01					3312.00
02/01	53.00	SALES			3365.00
03/01					3365.00
04/01	49.00	SALES			3414.00
05/01					3414.00
06/01	54.00	SALES			3468.00
07/01					3468.00
08/01	51.00	SALES			3519.00
09/01					3519.00
10/01	59.00	SALES			3578.00
11/01					3578.00
12/01	64.00	SALES			3642.00
1990					3642.00
01/01					3642.00
02/01	57.00	SALES			3700.00
03/01					3700.

CPA

AWARDED



Shipping, Microsoft
14.99 (over \$10.99 list)
Amsoft only

GUNSHIP

GUNSHIP has been available for other users for well over a year, and now it's the CPC's turn. It is not an arcade game, but a flight simulator which puts you in the pilot's seat of an American AH-64 Apache helicopter - and in considerable detail, too.

But there are lots of goodies to shoot, and if it's action you want, action you can have.

Before you get into the air you must read the manuals, or at least part of them, as you will not be able to fly the Apache by the seat of your pants. You'll be up and running in

about half an hour, but I reckon it'll be at least half a day before you are familiar with the controls, even longer to become an expert pilot.

Begin with a flight training exercise to get how the handles. Start a few targets - they can't fire back - and test the weapons system. If you think control is difficult - with a little practice it's really not - you can choose an easy flight option.

As you progress you win promotion and various medals - the highest accolade is the Congressional Medal of Honour. After a couple of practice flights I was promoted to Warrant Officer and

received the National Defense Service Medal.

But be warned - it's not so easy as it seems on real missions. The ability to save and load pilots lets you're a bit reckless, knowing hero (Barb Darnell) is safe on disc, ready to fly another day.

Dig your toes in the water with the First Cavalry on a mission in Southeast Asia. For something a little harder there are missions in Central America and the Middle East.

If you're really cut-throat - and have saved your pilot - you can volunteer for a tour of duty with the T-119



Forward view from the cockpit

Armoured Division in Western Europe - stop the red steamroller. Even the manual warns against this one!

If you volunteer and find yourself on a suicide mission, you can go on job leave - but it goes against you on your service record.

Missions may be at day or night, and you are given primary and secondary objectives. Call up the map, set the altitude on your target and the heading and destination indicators will show you the way to go.

Before starting a mission the computer selects what it considers to be a suitable choice of weapons, but you can choose your own if you wish. The weapons system is superb.

You wear an IRADSS (integrated helmet and display sighting sub-system) helmet so the TADS (target acquisition and designation system) computer knows which way you are looking. It informs you when it spots a target, and pressing the gun's trigger box around it.

The CRT display tells you the range and what the target is. Select a suitable weapon, check the range, and fire! Try not to read your own brains.

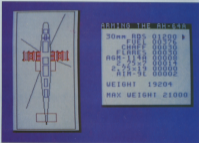
Some weapons automatically lock on target via TADS, although you may have to fly in close to be sure of a hit. A good all-rounder is the 30mm chain gun. If you can get within 2 km of a target, you can't miss.

The Helmsinker is a fire-and-forget air-to-air homing missile, while the Hellfire anti-tank missile are TADS-controlled with a range of 8 km. Just make sure you don't take your eyes off the target.

When you fire a cannon or missile the helicopter banks and recoils upwards. You must act quickly to regain control.

The threat display shows enemy AAA (anti-aircraft artillery) and SAMs (surface-to-air missiles) plus any missiles in flight, giving you a chance to take evasive action. You can turn on IR (infra red) and radar jammers to confuse missiles. If these don't work, you can drop chaff or flares to act as decoys.

In spite of the hi-tech arsenal, you'll need all your wits about you to survive the real missions. One of the worst experiences is finding an enemy Hind on your tail. These USSR helicopters are faster than you and heavily armed, but less manoeuvrable. The manual tells you how to deal with them, but it's not



The gunner's specifications

being to read about it and another to do it.

After a mission you go to debriefing. This reports on your success - or lack of it - and may hand out promotions and medals. There's also a cheat option which gives you the chance to retry the same scenario if you really muck it up, although using this will show on your pilot's record.

The manual is 86 pages long and was written for other pilots - a technical supplement explains where the Ambrul version differs. We've lost a few things, for instance accelerated time and abort mission are not implemented, but gained cheat mode. The screen displays are slightly different, too.

With two beginners guides - how to get up and down again safely and how to avoid being shot while shooting others - the instructions also contain chapters on flying helicopters, military equipment, weapons, tactics and regional deployments, which give some background on the missions. It really is excellent.

Gunship is a superb program. Although it's a simulation rather than an arcade game, it manages to combine flying skill with action in whatever proportions you wish. Its engines are, engage clutch, collective up, and check map bearing 06 06. ETA 3 minutes. You be careful out there!

Ken Strang

Presentation 95%

Excellent. Engage-manuals, quickstart instructions and keyboard overlay. Peace facilities, too.

Graphics 90%

Realistic cockpit and wireframe landscapes.

Sound 80%

No music, but explosions and the whir of your blades.

Playability 95%

Realistic 'real' warfare-type use of the mouse.

Addictiveness 98%

There's always another mission to fly.

Value 90%

There's a lot of game here. Buy it!

OVERALL 90%

Designed to become a classic.



The map



Karate King, Gremlin Graphics
 £5.99 (tape) / £3.99 (disk)
 02952 494 460

REMEMBER the Kang Fu games, when ninjas scored the last ring out with the barest hint of oriental spiritus locked in martial combat? If so, you'll probably enjoy this trip down memory lane with Gremlin Graphics - seven martial arts games in one package!

Avenge tells the tale of a lone ninja in his quest for the sacred scrolls of Kawan. Set in a complex of six colourful Gauntlet-type areas, the masked hero collects keys and treasure while fighting off cunning baddies and beasts.

His meagre supply of shuriken is

soon exhausted, and he is forced to battle on using only fists and feet. Can he triumph? Only you can decide in this well-programmed story of good and evil.

Game number two is the first combat program I ever bought, and I'm pleased to say that it has stood the test of time. Unlike **Avenge**, **The Way of the Exploding Fist** is a karate simulation of the highest quality.

Beginning as a novice, your aim is to achieve the glory heights of 30 dan by using painful combinations of the 18 moves at your disposal. Points are won by scoring two full points, or by being ahead on points when the 30-second time limit expires. Way of the Exploding Fist is still high on my list of karate gems.

The Samurai Trilogy is a compilation in itself, comprising a master program which loads one of three sub-programs as and when required - providing you can find them on the cassette.

You train before a battle, and allocate yourself attributes for attack and defence - all very clever in theory, but painfully boring in practice. The baddies continue as the game begins. Crude graphics and a lack of speed make Samurai Trilogy a real yawn.

Ladders and levels form the basis



Avenge

John Mats

of **Black Lee**. Bruce, a pinky-yellow stick man, races around an unbelievably poor backdrop while fighting off an absurdly slow stream of sprites of ropes and sword-wielders. Upon clearing the first screen of golden lanterns a trap door opens, and you can jump down to the next exciting(?) level of the adventure - I

think I'd prefer to fall to my death.

Karate Kid may be the title of this collection, but it didn't stop Gremlin making a job simulation in with all that locking and punching. **Spiti Mats** makes a refreshing change from the other programs.

Spaceforward movements are complex, and Spiti Mats requires complex eyes and thumbs with the joystick if a throw is to be successful. An intiating graphics flicker is the only flaw in an otherwise excellent game.

Having failed miserably with Samurai Trilogy, Gremlin bravely followed it with **The Way of the Tiger**, a three-part graphical masterpiece. The disciplines involved are unarmed combat, pole fighting,



and sensual sword fighting.

In some one you are cast out into the desert to face snakes, goblins, horned demons, and finally, the biggest troll you've ever seen.

Scenes two lead you paired precariously on a log that spans the banks of a fast-flowing stream. Beneath you, fish leap and splash, and in front is a mean-looking skeleton with a long stick... it's time for a swim!

Scendelay is your fate in game number three. As you slide up all corners the world carries on around you. One delightful routine involves the flight of an owl - it's worth being a life just to marvel at the animation.

I was very impressed when I reviewed this game first time round, and my admiration has not waned.

The final game up in the compilation is yet another favourite of mine - *Kung Fu Master*, which successfully combines the skill of a simulation with the fun of an arcade game.

Stepping from the lift in the temple you prepare to face the evil wizard's henchmen and creations. Kicks and punches easily dispatch the first wave of adversaries, and the only stumbling block on this floor is the stick-wielding big guy guarding the exit.

Level two is a different prospect. In addition to the increased number and variety of enemies, there is a problem with falling vases. These smash to release snakes, dragons and elemental. *Kung Fu Master* is fast, colourful, and great fun to play.

Karate Ace is the perfect compilation for those occasions when you need to relieve pent up aggression - don't let the dog, beat up a game and smash a bottle!

James Ribbold

Presentation 90%

The instruction booklet is first rate.

Graphics 88%

Ways of the Tiger is a masterpiece of computer animation.

Sound 82%

The only area neglected by most of the programmers.

Playability 80%

Very realistic simulations.

Addictiveness 81%

With seven games to choose from you could be in it some very late nights.

Value 80%

Worth buying, even if you already have one or more of the titles.

OVERALL 88%

Another high quality package from Games.

Four's crowded company



Professional BMX Simulator
Customisation Plus
548K tape
January in store

It is fun being a BMXer, but a bit pointless if you haven't anywhere to show off your skill. You can only use the next door neighbour's flower bed as part of your practice run so many times.

With this four-disc package you need worry no more, though you might need to make room round the computer table for your friends. As the blurb boasts, this is the "first simultaneous four-player Amstrad game".

This means that there's just enough space for one joystick and three players using keys. The initial screen also gives you the option of competing against up to three computer fellows, depending on how many video boards want to risk life and limb.

There are two tapes, and for the real fanatics a poster and sticker. Side one contains the first game, which introduces you to a standard circuit with all the problems you might expect. These take the form of sharp bends and a range of obstacles such as hay-bales, trees, and rocks.

Should you fail to negotiate a bend, there's a good deal of prickly shuddery to crash into. This might break your fall, but certainly won't make you want to repeat the experience.

To a large extent - particularly

Professional BMX Simulator

when you are getting used to the keys - manoeuvring your bike can be a problem. Indeed, it takes a long time to master the controls, so initially you seem to spend most of your time on the floor rather than where you should be - performing your stunts.

On to the second circuit, which is really a repeat of the first, though a little more demanding. Here you can choose your tyre width and chainwheel size, factors which real BMXers will know are critical. Collision with other riders will send you spinning to the ground, though this does not happen on the three other circuits.

The other tape has another two circuits - quirky rising and desert riding. The former is very much an uphill/downhill affair with ramps to speed up and also a few ponds to avoid. The last game is hot and arid, guaranteed to make your wheels burn.

On the face of it, Professional BMX Simulator offers excellent

value for money if you can learn to ride the bike without making into something you will undoubtedly enjoy the experience. Whether you will persevere that long is a different matter.

Tony Mangan

Presentation 82%

A game for up to four players. Poster and sticker included.

Graphics 77%

The first need to be more vibrant.

Sound 58%

Unimpressive.

Playability 68%

Get the hang of the keys, and you should find it quite rewarding.

Addictiveness 81%

Not for me, sorry.

Value 88%

A great price considering all that's in the package.

OVERALL 84%

Might get a little monotonous in the long run.

Loada Cobras

Action Force (high)
 \$39.95, \$14.95 (low)
 Available on tape

THIS is a title with Milton Bradley's Action Force. These carefully scripted people, Cobra, have taken over the island of Salsandia. In the operation, classified information stored on computer was left behind. You must get it before Cobras sleep.

First, Lady Jays and Quirk Kite — or Concoctas depending on which side of the lobby you read — man the AHS (all-weather and environment) Striker. Its roof cannon has been removed to make room for the computer equipment necessary to retrieve the data, leaving it defenseless.

You are Snake Eyes — or Wild Bill depending on whether you believe the irony of the screen — in control of a custom-built helicopter. Not only do you have to look out for the Wild Striker, but you must shoot out barricades, mines, electrical discharges and live computers.

If you decide to use the keyboard instead of the cursor keys, with Control as fire, 999999 designed

this can't have human hands, or is this part of the Action Force intrusion test?

You get a sideways view of the action. The helicopter moves left, right, up and down, but the thing won't hover. It stays in the center of the screen and everything scrolls around it, so you don't get much spacing when the facilities wreck up. The program seems about 5471 — some odd-numbered. They never question orders, complain about status or skirt duty. First, do these come in female flavors, I wonder? They also shoot anything that moves. OK, forget it.

The copter responds rather too quickly at times, especially when you're trying to get a line on the personnel. You can't zap off to the end of the screen, however, so you must make sure the AHS Striker gets there too. Its alleged slough seems like a conal. On the same scale, the dropper must be capable of 1000mph!

You only get a single life, then it's back to square-one. This game is not particularly easy, even the first screen, so if you're a challengee you may like to check it out.

Ian Wigham



Presentation 50%
 40 screens total, but no definable acts.

Graphics 80%
 Pretty sharp, and the scrolling is smooth.

Sound 10%
 What sound?

Playability 60%
 Reasonable, but not outstanding.

Addictiveness 60%
 There are other sideways shooters, this is just one of the bunch.

Value 60%
 It would be better in a budget title.

OVERALL 55%
 It's a bit better than you buy.



Having a ball

Wanted from
 \$39.95, \$13.95 (low)
 Available on tape

THIS is a ball game with a difference, one where inexperienced can have legal consequences, and it which humankind, alien and machine can compete for the title of World.

A contest consists of a series of individual rounds, each followed by a bonus game — but only if you

scored sufficient points in the main round.

Similarly, in the main event you may only progress to round two if you scored more than 5000 points in round one and its bonus game. 20000 points is the target during round two, but I am not sure of subsequent targets as my pre-production-copy lacked instructions.

The game is always played between two contestants who may be controlled by humans, the com-

puter, or more usually both. Each character is equipped with a launcher which can be used to either catch or fire a ball.

I can't see the word ball, however, as you would be ill advised to catch this particular sphere. Contact with any part of your body results in your instant disintegration.

Pressing the fire button causes your launcher to shoot the ball as it bounces around the arena. You must then swing the launcher around and catch the ball on the end, a trick requiring practice.

Round one is set in a large arena divided by a barrier. A large hole in this allows the ball to pass between the two halves. Suspended high above your head is a breakout-style bird wall.

The aim is to keep the ball in your half of the arena and demoralise as much of the wall as possible. The best tactic is to get the ball behind the wall, then drag it from side to side using your launcher's magnetic properties.

The bonus section takes the form of a giant pinball table. You stand at the bottom and launch the ball high into the bumpers. High scores can be achieved by firing the ball into a small, difficult-to-reach circle.

Pinball is the name of the game in round two. This time the arena is

divided into two separate areas, each with its own ball. Round one was played against a time limit of 80 seconds irrespective of how many lives you lost. The second round can last indefinitely providing you can hold on to your three lives.

Poohbah's just-adequate graphics and sound are more than compensated for by its excellent gameplay. The longer I played, the more difficult it was to stop!

Jon Rivlin

Presentation 80%
 Attractive scoreboard and clever player selection routines.

Graphics 70%
 Graphics are spectacular, but well avoided.

Sound 77%
 A variety of tone plus the standard bouncing and exploding sound effects.

Playability 80%
 A game that rewards the skilled player.

Addictiveness 80%
 Each new round is very different from its predecessor.

Value 80%
 Good value in my book.

OVERALL 80%
 Very enjoyable and challenging.

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PHM PEGASUS

PATROL HYDROFOIL MISSILE CRAFT SIMULATION

PHM Pegasus, Electronic Arts
28.95 (ups) 24.95 (dn)
 joystick and/or keys

MESSING about in boats takes on a new slant when you're in charge of the Patrol Hydrofoil Missilecraft: Speed, agility, deadliness... PHM Pegasus has it all as you tackle terrorists, cable convoys, and spy or smuggling.

You direct the foil by means of an overhead small-scale map of various areas of the world. This shows your position and that of any auxiliary craft, together with a crude steering table range.

Pressing a key changes the viewpoint to your bridge, which is split into three sections. All the bottom are indicators showing the available weapons, speed, cooperation, direction and the radar. Above this is a forward view of the sea showing other vessels and aircraft. When a target is selected this is supplemented with an enlarged view of the vessel, as seen through binoculars.

Control of your craft is simple, with a realistic feel when the horizon tilts as you make sweeping changes of direction. Unfortunately your weapons are not as easy to handle. You have a variety of armaments ranging from shells, through shell rockets which fill the air with

aluminum foil to confuse incoming missiles, to the infamous Doct.

There are eight scenarios, each different and selectable. The hand-book gives general details, plus a few hints such as how important it is to avoid sinking your own country, and which weapons are most suitable for various enemy vessels.

Having chosen a scenario you are given a map of the area, and logging to the bridge view lets you select speed, course, and so on.

Eventually ships are encountered, usually firing salvoes long before they show on the radar. Sorting out targets is very difficult. Pressing a key shows a vessel in the binocular view, and arrows either side show you which way to face in order to aim. Some enemy identification is vital, the displays should give enough detail for that purpose. If doesn't, or you lose off at whatever you see - friend or foe.

The results of a hit are unclear, too. Vessels disappear from the binoculars when destroyed, but that's about all the feedback you get. Simulations are supposed to be realistic, but if this is an accurate portrayal of hydrofoil combat the commander's allies had better watch their backs!

PHM Pegasus is detailed, but the vital factor of gameplay is missing both for the strategist and the shoot-'em-up fan.

Pat Minicantini



Presentation 70%

Detailed manual and complete controls.

Graphics 85%

Large, clear, colorful, uniformity.

Sound 90%

Sound effects don't add anything.

Playability 50%

Hard to identify enemies.

Addictiveness 45%

The gameplay isn't all that fun.

Value 90%

Missing the controls might keep you occupied for a while.

OVERALL 60%

Raising the manual a notch (assuming that playing the game

Super Hero, Cadamasters
24.95 (ups)
 joystick or key

HERO Over Heels was one of the great games of 1987, if not the best 3D arcade adventure ever. The graphics of this budget title are to the same man - Dennis Drummond - and the gameplay is also similar.

What's so good about Super Hero is the game's thing which made Head Over Heels stand out. Among atmosphere, intriguing puzzles and clear objectives. However, many unique features make this a game in its own right.

You take on the role of one of the Immortals, who, having nothing better to do in eternity, employ themselves by setting each other intricate puzzles. Now it's your turn to demonstrate your mental and physical abilities.

You must locate and capture the spirits of the five guardians who preside over a castle-like complex. If you don't complete the test successfully you'll be cast into the mortal world where all good things sooner or later come to an end.

The rooms you explore are suitably intimidating - skeletons on the walls, grotesque masks and so on - and contain a range of obstacles, puzzles and opponents.

Immortality is simply a matter of finding a way to the next level either moving or climbing over the boxes that stand in your way. In others there are moving objects to evade. Some are vicious, and contact with them will cost one of your five-lives.

In certain rooms you will find energy spheres which often move towards you when you least expect it, and your only chance is to jump on top of them.

A good feature is that you can trade with what look like caddy boys. This is done by running into them, but they are elusive creatures, so you have to persevere.

You start off with 2000 gold pieces with which to buy a range of essential objects. These include teleport keys, generators for nullifying your opponents, and extra lives. There is also a gambling option where you can spin a coin in the hope of winning extra cash.

As in most arcade adventures, there are a number of strategically placed objects which can be used to further your objectives. In this case there are power foods for jumping, a hammer for hurling at big enemies, a virtually bottomless bag, and a helmet which will protect unexpected gifts from the gods.

The music and sound effects are excellent, even more so when you



consider that this is only a budget title. The graphics are less impressive, particularly the scrolling which is very jittery, but not unacceptable.

One irritating feature is the way a message - usually fairly long - is displayed each time you lose a life. This slows the action and becomes tedious.

As you might expect, Super Hero falls short of full-price standards, but at £1.99 you can't really complain. If you want a cheap, intriguing and unusual arcade adventure, you're not going to do much better than this.

Tony Ferguson

Presentation 82%

Detailed box, Macintosh and option.

Graphics 87%

Very colorful and nicely detailed. Some early scrolling.

Sound 90%

Excellent for a budget title.

Playability 88%

It isn't like you long to get into it.

Addictiveness 91%

Setting puzzles will hold your interest.

Value 95%

Real value for money.

OVERALL 88%

All in all, an excellent arcade adventure.

MAXAM is one of the best all-around assembly language packages for the CPC, but it lacks some monitor functions found in other programs. Amor has recently produced an upgraded Maxam 1.5, but despite the improvements the all-important option of stepping through machine code a command at a time hasn't been allowed for.

Program 1 adds to Maxam the ability to set breakpoints, single step your code, and assemble directly from Protex. Note that to make use of this facility, you **MUST** already have Protex and Maxam.

Type in the program, save it as ASMBAS, then run it. It is a Basic loader which will locate the machine code close to the top of free memory. The code is then saved as a binary file to disc or tape, and two **ISR** searches are initialised.

Take great care when entering the data as there is no checksum value at

Beef up your assembler with DAVE INSTONE-BREWER's utility

There are two new commands - **!ASM** and **!STEP** - which can be loaded and set up using a small routine such as:

```
10 BORD=10000
20 LOAD=094101,141
30 CALL 0000
```

Although Maxam's editor is good, it is not a patch on Protex. I often used to write code with the word processor in **PROG** mode, save it, then load it into Maxam for assembly. This fiddly process is now finished for good, as **!ASM** will assemble source code in Protex.

!ASM can be used from command

starting at, for example address **&XXXX**, type:

```
[!STEP,&XXXX]
```

The state of the registers and the first machine code command will be displayed, as shown in Figure 1.

If you wish this command to be executed, press any key except Escape, Tab, Del or Enter, which all have specific functions. The instruction will then be run, and the new register contents displayed at the next command.

To carry on single-stepping without executing the current command, press Del. If you want the instruction to be carried out, but you do not want to step through a subroutine - such as the one at **&A140** in the example above - press Enter. You do not need to use Enter for calls to addresses above **&8000** or below **&40**, as these will be carried out automatically.

The Tab key will put you in edit mode, and the display will be similar to Figure 2.

The cursor is now under **AF**, and any of the registers or other details displayed may be changed. If you want to leave a value unchanged, pressing Enter will move the cursor to the next item, and when you've finished editing press Escape. Commands can be altered by typing in a new mnemonic under the old one.

When editing commands, you should ensure that the code doesn't change in length. For instance if we wished to change **CALL &004** to **LD A,1**, we would have to place a NOP instruction in the code as well. This is because the original instruction contained three bytes, whereas the new one only has two. The NOP command, which means No Operation, keeps the code to the same length.

To hit the machine code run without single stepping through every command, set the PC to the next address at which you wish to stop the program. This address must be the first byte of a command, and it must not, of course, be an address which will be by-passed by the program.

The machine code being stepped

Turn to Page 22

MAXIMISE YOUR MAXAM

the end of each line. Instead, a checksum total is used in line 1100, and if an error does occur you'll have to check individual lines with the checksum utility.

Don't discard the Basic loader because it can be used to relocate the code to other addresses by altering line 50.

The paper takes a little while to run, but on subsequent occasions the saved binary program can be used to log in the new commands. This has a name such as **ASM+STEP+BC**, where the filename extension - **&BC** - indicates the address where the program loads, and which therefore has to be called to initialise it. For instance, **&BC** gives an address of **&8000** - the last two digits are always zero.

If you choose to re-poke at an odd address, the loader will round this down to the nearest page boundary.

mode, or even Basic. It works by pretending that the code has been written using Maxam, and then executing the command **!ASSEMBLE**.

Unfortunately, this means it will get confused if you include primer codes, block or position markers. None of these are used by Maxam, and they will be treated like an **END** instruction if they are present. Taking off **END**, your source code must have this pseudo-code at the bottom or an error may be generated on assembly.

!STEP adds the ability to single step through machine code one command at a time, and to view or change the contents of the registers and flags at any point. It is also possible to set a breakpoint further on in the program and let it continue without single stepping. You can even change the code by replacing one instruction with another. To step through a program

```
AF BC DE HL SP 11 17 FC
0000 0000 0000 0000 0000 0000 0000 0000 CALL 0000
```

Figure 1. Register status and next instruction

```
AF BC DE HL SP 11 17 FC      Flags 02-0-000
0000 0000 0000 0000 0000 0000 0000 0000 CALL 0000 00000000
```

Figure 2. Full mode, including flag status

ADVENTURE

To reprint, or not to reprint – Gandalf asks the question

I HATE had a letter from a newcomer to computing in general, and adventures in particular. Mr. Riley – please put your first name when you write in, by the way – has only recently bought his mirror, and has obtained a 50-game cassette on which are two adventures, *Dungeon* and *Exchange*. He says he thought it would be a good idea to try to progress with these before moving on to more complicated games such as *The Passes*. Unfortunately, he is unable to get anywhere and has asked for my help.

Since I have not played either of these two adventures – can anyone furnish further details or even solutions? – I am wondering whether to reprint a series I ran way back in 1988. It was an introduction to adventuring, and culminated in a complete solution to *Interceptor's Perseus at World's End* – an ideal adventure for the beginner. I realize that some readers will already have this series, so to help me decide whether there is sufficient interest to justify the project please write and tell me what you think. The more who say yes, the more likely you are to see it.

James Green has written from Australia to point out that I was wrong to say you should hide from the black riders in *Lord of the Rings*. James says it is pointless to hide. To kill them, leave the ring at Bag End and cleave the skulls of the three riders who ride between Eowyn and Michael Delving.

Then get the ring, take it to Eowyn and leave it anywhere but the towers flanking the black door. Enter the tavern and again kill the black riders. Now leave Eowyn and head to Rivendell. If you are lucky, you should encounter three more riders before crossing the bridge. Kill them, then you are free to collect the ring.

To get to Rivendell without dropping the ring, James writes, enter and explore the forest. Sam finds a pony and you find the white stallion. Climb on to the stallion, tell everyone else to mount, then tell the stallion to go wherever you want.

It is faster than the black riders.

James goes on to ask some questions, some of which I can't answer and can be found in the Help section. However, I can answer the following: How do you solve *Nearis Dome* – a solution begins in the near future. Watch this space. Is *Amrath's Auction* still in production – who? In *Smuggler's Cove*, to go South from Levens Barrier pull the lever at World's End. South from the mermaid's door, wear the cloak, North from Thieves Alley, hit the plate with the sword. West from Earth's Fall, dig the barrier with the spade. South from the palatial room, enter the pentacle, wear the ring, face the mirror then rub the ring. The picture changes into a door leading South. Drop the ring, take the jar of acid and go South.

Finally, my thanks to Chris Wilkins for his solution to *Dungeons, Amethysts, Molemats 'n' Everything*.

H-E-L-P

James Green has asked for help with the following: in *Dracula*, how do you leave the courtyard in Part 4, and how do you catch *Stardust* with the net in Part 8? How do you get the "3" in *A View to a Kill*? And finally, how do you get the last two parts of *The Covenant*? Editor's note: *Neither A View to a Kill* or *The Covenant* are adventures – at best they're arcade adventures. I haven't played *A View to a Kill* – why not, having read the reviews? Some time ago I dedicated an article solely to playing and comparing *The Covenant*. This excellent death-care maze game can be tackled several ways, so it's impossible to say which bits James asks. It helps to make a map, and I can confirm that the game can be completed.

Success in the caves

Colossal Adventure - Part III of a
solution by Glynn White

You will return to the caves near the end of the end game. Beware - magic words will no longer work so don't waste time trying them. You are at the Southwest end of a west hall. Take the dynamite and travel North - quietly. Drop it and return South. Get the rod, lamp and keys, and eat the sandwich if you are hungry.

On the assumption that you examined the dynamite, just type *blast* and it will blow up. Do not dally now as the caves are flooding. Go West to the iron ladder and up to the top. Move on to the east bank of the fissure, wear the rod then drop it and go across the bridge. Travel down to the pentagonal pit, and take the elixir of life and the pentacle (turn your lamp off). Return to the dead end and drop the elixir to

make the skeletons come to life.

Visit the cells north and south of the of the wide east-west passage and unlock the elves. Recross the bridge and lock the door. You now have time to explore. Find the spider and move East. You will notice that the spider stores at the pentacle and follows you. He is in your power, which is handy as he prevents the game from being finished.

Climb up the stairs to the high stone pentacle, and throw the pentacle forcing the spider to leap after it to its death. Return to the web and collect the ant, scorpion and crow. Move to the ledge than up and West to be swept away to the reservoir by the stream.

Then, as fast as possible to avoid being killed by the dwarf, move South three times. East three times, up from the hall of mists then keep going East until you reach the grate. Then up and out to a jubilant reception.

Panic in the pines

Frankenstein - Part I of a serialised
solution by Graham Wheeler

Look around, take the honey, and go West. Do not hang around as the lightning will strike the roof and bring it down on your head.

Go down, examine the stack, get the picture and search the room - you see armchairs. Sit in the chair (you hear a jingle) and wait. Your father comes and gives you a knife then unlocks the front door. Stand up and examine the chair then get the money that has fallen from your pocket. Move East into the garden and search it. Examine the chest that you find, and unscrew the hinge with the keys. You find and get a rope.

Travel East, North twice, East, North and West (by now you are being chased by a bear). Look around (you see a pine tree), go up and wait until you are told that the bear is four feet away.



Jump on to the ground. The bear falls into the ravine and the tree also falls making a bridge for you to use.

Move North four times. You find yourself in a store and automatically buy some matches and a tin of tampo. Go South twice then East and search the front yard. Take the bucket then

enter the boat and examine it. Open the tin and remove the hemp, then put the matches into the tin and close it to keep them dry. Untie the boat and plug the leak with the hemp. This slows the water but does not stop it altogether. Empty the water out of the boat with the bucket until you are near the shore.

Travel East, then look around to see a stump. Tie the rope to it and go down. Dig to find a large stone. Take the stone then move North three times, East, North, West, North, East and get the kindling wood. Now go West, South, East, South then West twice. You are

above a cave and can see a large wolf below, so drop the stone on it to hit it.

Go East, South then West to arrive outside the cave with the dead wolf and other wolves. Cut the wolf with the knife — the other wolves take the carcass and leave — then enter the cave to the North. Open the tin and remove the matches, drop the wood and light it with the matches. You fall asleep in front of the fire until something wakes you — he is stood before you! Show him the picture (he comes closer) then give it to him. You escape as he looks at it.

Death in a hothouse

Gold of Pharaoh - Part III of a solution
by Graham Wheeler

Take the pick then move down and West to the vein. Hit it with the pick, and get the chips as produced. Drop the pick then travel East, South and up. Go to the junction chamber. Put the chips in the bag, move North East and examine the tall gate. Insert the coin in the slot, go East then South, unlock the door with the ivory key, and open it. Move East and drop the ivory key.

Get the spade and examine the desk. Open and look inside the drawer, and take the magazine and grubby key. Read then drop the magazine. Open the north east door, move through it, unlock the small door with the grubby key and open it, North West, close the small door, open the cage and drop the grubby key.

Get the Mynah bird, put it in the cage and close it. Open the small door and go to the jungle house. Take the snake skin and go to the hothouse. You are asked if you wish to continue — Yes. As you leave an ice snake falls on you. It will die when you enter the hot house but, since time is limited, you must go there as quickly as possible.

Open the jar and drop it. The spider goes to get the fly and is trapped. Shake the palm tree, break the coconut with the spear. Drop the spade. Get the coconuts and succulents, move East twice and feed the coconuts to the majava. It tells you the ingredients which must be



placed in the cauldron.

Go to the junction chamber, move Northwest then Southwest. Reflect the beam on to the wax using the mirror. Drop the mirror, take the gem and rub your feet with the succulents. Your feet go numb. Travel Northeast, Northwest, West, up and Southeast. Get the yellow die then move Southwest then Southwest. Take the green die and go Northeast then Southeast. Take the red die, and head Northwest then Northeast. Get the blue die.

Travel Southwest and rub the hothouse to give yourself luck. Roll the die — the good luck fairy appears and asks you which number you want. Five, five, five, five — you will find the die have changed slightly. Examine the opaque case then the slots. Put the red die in the first slot, the green in the second, the blue in the third, and the yellow in the fourth. The sleep dissolves. Get the plastic die, move Northwest twice, rub your feet with the succulents then drop them. They will be needed





here later in the game.

Go to the junction chamber where you will be asked if you wish to continue - Yes, Northeast, open the safe, put the chips and gems inside, then close it. Open it again and put the brooch inside. Close it again. Travel Southwest, and drop the cage - you will collect it later.

Go to the main bedroom and drop everything. Examine the bed, take the painting - you will see a hole. Grasp the painting and get everything except the painting. Open the cabinet and look

inside. Examine the plaque, then the buttons. Sit on the bed, and press the top button with the coin. You shoot through the hole into a secret laboratory.

Examine the shelf, then take the diary and read it. Drop the diary and coin. Remove the shirt and drop it. Examine the cauldron, take the sachel, then cover the cauldron with the shirt. Put the eye and snakeskin into the cauldron followed by the berries, heart and cube. Open the sachel and put the powder in. You now see an antelope. Look inside the cauldron and take the antelope. Remove the shirt from the cauldron and wear it.

SOUND OFF

John Birch has written in praise of simpler adventures:

When the CPC604 first came out I bought one, and saw *Hunter Attack* and *Forest of Magic's End*. *Hunter Attack* amazed me for a few hours, but *Forest of Magic's End* took me weeks. I was new to adventures and thought them great, and now own all the Interpreter plus most level 2 games. With or without graphics, they all played the same way.

Then I bought a CPC6128, and when computing with the Amstrad CPC offered a bargain *Gold of Thrones* I became a subscriber to this excellent magazine. Initially the game was pleasing, but as the typing needed to make progress riddled. Next I bought *Knights*, and after a few months I can easily leave them in their boxes. I find the *Raid* answers in the so-called conversations with characters very boring. After all, they only have a repertoire of three or four phrases randomly or sequentially repeated.

I long for adventures like the old *Interpreter* ones, or pre-*Waves* or *Paradise Level 9* games. I am particularly annoyed by the *Worms* in *Paradise's* transport system, and will never finish the game because of it. So I will not be buying any more "miracle" games. For instance, you couldn't give me *Alxator*. Am I really the only one turned off by interactive intelligence and stunning graphics? These clever and progressive have gone too far for me.

Also, neither *Waves* nor *Kobayashi* *Naru* seems to fill the void, and I have just returned my third *Rigel's Revenge* tape.

Although Mastertronic may have the right idea, it's not much cop if you can't play part two. I firmly believe multi-load games should be banned. There are few things more frustrating than slaving over one part of a game only to find the second part refuses to play.

I have to agree with a lot of John's comments. I have begun to wonder if the new techniques in adventures are simply a means of reducing the number of problems, and therefore to me, the enjoyment I find in a game.

As for multi-load games, I have been reviewing *Rigel's Revenge* which, on the cassette version, takes up all four sides of two tapes without giving you the facility to transfer the game to disc.

What do you think? Are adventures getting too technical? Should we return to the days of the text-only game where only "vands" were used to create an atmosphere? How many readers actually play a graphics adventure without turning off the pictures?

For the benefit of those of you who wish to return *Rigel's Revenge* but haven't got Mastertronic's address, it is: 24 Versen Yard, Portobello Rd, London W11 2QB.



A tale well worth telling

The Bard's Tale
System: Electronic Arts
1988, 640K, DOS 3.0/3.1

I HAVEN'T never been a fan of role-playing games — the Dungeons and Dragons ones passed over my head — and I expected to be similarly unimpressed with this one. So it came as a pleasant surprise to find that not only does *Bard's Tale* score highly on content, but also on technical complexity.

Mungar the Dark, an evil wizard, has taken over Skara Brae. Under his influence a variety of demonic creatures and perverted humans have entered the town and the caverns (buried) beneath it.

All organized resistance has ended, and Skara Brae is now isolated from the rest of civilization by a spell of eternal winter. Only a handful of unimproved young warriors, junior magic users, out-of-work rogues and a couple of herbs scarcely old enough to drink, remain to threaten Mungar's power.

Your task is to select six of these recruits and form them into a team strong enough to defeat Mungar. Thus retrieving the town from his control.

There are a variety of professions open to your party: Warrior, a fighter; Paladin, a fighter who has

sworn to obtain faith and therefore make himself stronger; Rogue, a thief; Bard — a fair fighter who uses a musical instrument to create magic; Thaum, an assassin; Monk, a martial artist and conjurer; Magician; Sorcerer and Wizard — all magic users with varying degrees of capability.

The seven races inhabiting the town can adopt any of the professions. However, racial characteristics give them a proclivity for particular ones. Much practice is required to successfully match the correct race to a profession.

Some of the professions are only open after mastering a lower one. After every successful encounter with the forces of evil, each member of your party receives points and gold. The more encounters they survive, the higher up their chosen profession they go.

Reaching the highest level enables the members of some professions, notably the magical ones, to present themselves to the review board for further advancement.

Each member starts with a minimum of weaponry, but can increase it by using gold at the local weapon shop. There's a large variety of equipment and armour on offer rising in price from daggers to halberds, and from chain to plate

mail armour. As in real life, in general the more you pay the better the equipment.

A useful option allows the party to pool whatever gold it has, so that a member can buy equipment which would otherwise have been out of his price range.

On encountering an enemy you are first asked if you want to fight or run — the latter option sometimes being withdrawn if the enemy you face is deemed to be better than you. If you elect to fight, you are prompted to select what the members of your party are to do: Attack, defend, hide, cast a spell and so on.

Since only the first three members of the party are given the option to attack, it is a good idea to have your best fighters in the vanguard, leaving — should you have included suitable professions in your team — the three magic users at the rear to cast spells.

Each round of fighting tests two moves for the attack, and one for

your safeguard. At this point you are again prompted to decide whether you wish to fight or run. This option is repeated until the enemy is repositioned or your team is dead — a common occurrence until you have obtained a fair degree of competence.

The documentation is very comprehensive regarding the abilities of the characters you can create, but could be clearer on how to use the game.

Aside from the main program and loader, seven other programs on the two cassette tapes do the housework. Of these, six are unexplained, and one is referred to as either the party merger program or the editor, depending on which lot you read.

It may well be that their use is obvious later in the game, but it would have been helpful to have known in advance.

Overall, a thoroughly excellent program that I cannot help but recommend. A hard disk is available — and I suspect I will need it!

David Bell

The Bard's Tale

Hobbitt
 Wizard
 Dwarf
 Elf
 Gnome
 Dwarf
 Elf
 Gnome
 Dwarf
 Elf
 Gnome

Enter: 2030
 Party:

Press Any Key...

Character Name	HP	Mana	Cond	Sp-Pt	CI
Warrior	100	0	100	0	0
Paladin	100	0	100	0	0
Magician	100	100	100	0	0
Sorcerer	100	100	100	0	0
Wizard	100	100	100	0	0
Thaum	100	100	100	0	0
Monk	100	0	100	0	0
Rogue	100	0	100	0	0
Bard	100	0	100	0	0

BRIN THE FIST
 100 HP
 0 Mana
 100 Cond
 0 Sp-Pt
 0 CI

Presentation 85%

Provides an screen representation of the documentation that I could not find time to understand.

Playability 95%

Definitely the best game of the type I have seen, and one that keeps bringing me back again and again.

Addictiveness 95%

Overplay might make it possible for you to lose it all.

Value 95%

Funness 95%

Overall 85%

A marvellous game for those only slightly by some minor difficulty in really getting to grips with it.

Lancelot



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Screen shots from Level 9's version



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...and at a price

Mini Office II offers the most comprehensive, integrated suite of programs ever written for the Amstrad – making it the most useful productivity tool yet devised.

A team of leading software authors were brought together to devote a total of 24 man-years of programming to the development of Mini Office II. What they have produced is a package that sets new standards in home and business software.

The sample screenshots above illustrate just a few of the very wide range of features, many of which are usually restricted to software costing hundreds of pounds. Most are accessed by using cursor keys to move up and down a list of options and pressing Enter to select.

Is it that easy to use? Several leading reviewers have

already rung its praises on this very point.

Yet possibly the best advertisement for Mini Office II is that it comes from the same stable that produced the original Mini Office package back in 1984.

That was so successful it was shortlisted in two major categories of the British Microcomputing Awards – the Oscars of the industry – and sold in excess of 100,000 units!

It was up to Mini Office II to take over where the first Mini Office left off, with 32 extra features, two additional modules, a program to convert existing Mini Office files to Mini Office II format, and a 60 page, very easy to follow manual.

This is the package thousands of Amstrad owners have been waiting for – and at a price everyone can afford!

MIKE COWLEY
investigates the
background and
form of a program
that seems to
provide the
complete answer to
every punter's
prayers



THE quest for a system to beat the bookmaker is the gambler's equivalent of the wealthy middle-aged man's search for the elixir of youth. A variety of self-styled experts over the years have insisted that they — and they alone — have the answer. And all have eventually disappeared leaving those that believed in them with considerably lighter wallets.

Yet racing columnists still regularly use their reputations in this area, television commentators spew out endless selections, and in every pub in the country there's at least one club-capped pundit who'll gladly tell you about a good thing running that day.

However, all that may be about to change thanks to the Amstrad CPC and a schoolteacher from Ashton-under-Lyne, Lancashire. For Dave Atherton has developed a program which appears to have the potential to turn bookie-baiting into an art form.

Known as Pro-Punter, it has already had some truly amazing results. Over a six month period which ended

recently, a level stake of £10 produced a clear profit of £311.95. Pro-Punter selected 26 winners out of 73 races, a strike-rate of 48 per cent.

All these were "pooled" not only by the Raceform Handicap Book and The Sporting Life, the bilbies of industry, but also by CPC Computing. This voting involved receiving selections five-ranked at the Post Office before start of racing.

Pro-Punter's performance to date then is to gambling what Riposte was to thoroughbred racing itself — seemingly unbeatable. There is not one professional tipster who can legitimately claim this success rate — including household names like Peter O'Sullivan.

Yet Pro-Punter has been written by a man who had never had a bet in his life before he started to develop the program three years ago. In fact, if Dave Atherton hadn't had a former apprentice jockey living next door to

him, the package would never have seen the light of day. "He got me interested and I all vieweded from there", recalls Dave.

But what really promoted him to attempt to develop a beat-the-bookies program was a news item in *The Mirror* User, another magazine from the Database stable. "There was a write up on a rather crude betting program", he recalled, "and the more I thought about it, the more I thought I could do better".

So the English teacher at a school for the physically handicapped underwent a voluntary transformation in his life style. He began to frequent race tracks and betting shops, rubbing shoulders with flamboyant characters to familiarise himself with the



race track terminology.

Farris — the detailed information on past performances by a particular horse and on which its potential is assessed for the next race — became his overriding passion. "I had to learn a whole new language," says Dave Atherton, "words like *helipet* — a heavily backed favourite — and *panzee* — a multiple bet — have to enter your vocabulary."

Once his education was almost complete — "You'll never actually learn everything," he says — he began to translate his new-found knowledge into what was eventually to evolve as Pro-Punter.

"What we've ended up with is an expert system investment adviser geared to provide a profit," says Davis. "What the bookmakers fear most are punters who have a few selective bets and come out on top. If you use Pro-Punter properly, rigidly following the investment advice, this is what you'll be doing."

But how effective is Pro-Punter? Only your average gambler would know for sure. Well that's where I came in...

Ever since I placed half a crown (12.5p) on a grey horse in a point to point at Cartmel, I have sought the key to carving the bookies. It might have been different if it hadn't reposed home at 8 to 1, which provided me with a princely profit of £1. Being only seven years old at the time, to have actually lost a week's pocket money might have put me off the sport of kings for life.

However, the moment that Honest Harry Hints — how could you forget a name with alliteration like that — handed over my winnings to my

father, for even in those days bookies were loath to have kids in short trousers as customers, I was hooked.

Since then the quest for easy money has taken me as far afield as the Carillon Racetrack in Barbados. The only reason I recall this — apart from a natural desire to name drop — is that was the first time I was absolutely convinced I had the bookies on the run.

By virtue of my prime card, I found myself in the paddock as the horses paraded around. I could hardly contain myself when I recognised one of them — the jockey that is, not the horse — from a party the previous evening.

Joe turned to positiveapture when he leaned towards me, winked and whispered: "Get your money on this" (Well, in racing they say forget about getting it from the horse's mouth, just hear it from the jockey). Literally everything I had went on the nose of Sweet Delight.

It never even passed the winning post. The poor unfortunate animal stuck its foot in a hole, broke its leg and had to be shot. If I could have found the jockey a similar fate would have been in store for him.

Unfortunately — like most gamblers — those salutary lessons are rarely enough to deter me from the next "investment". That's why I welcomed Pro-Punter with all the enthusiasm of a seafarer glimpsing a ship on the distant horizon.

The verdict: After comparing Pro-Punter with my own selections for one month, the package had seven out of ten winners to my two. Bookies beware. Pro-Punter is under starter's orders and Dave Atherton is on to a winner...

Can you beat the bookie?

Pro-Punter, like all expert systems, is a package which deals with a particular problem — in this case how to invest wisely in horse racing.

It asks its knowledge base to answer key specific questions: is there an outstanding horse in a race, and if so, is it worth a bet?

Armed CPC owners who fancy a better bet, Pro-Punter will reward the ability to find their way around the racing press. The Sporting Life, best known of the papers serving the gambling fraternity, will provide a more-than-adequate source of data to input.

And part of the instructional manual which accompanies Pro-Punter covers the complexities of racing jargon for the novice gambler. It takes you step by step through what regular readers of the racing papers take for granted.

You are also led through an interconnected web of programs, answering questions about the race under analysis and entering relevant data.

What Pro-Punter needs to be fed is statistical information — better known in the racing world as form. This can range from details of a horse's last run, through weight and speed ratings to breeding. One of the problems is that inputting such information for each race can take up to half an hour.

The first skill to acquire, then, lies in entering races. Also for once with only a few questions asked there's lots of information available. After the input stage, the program takes a few minutes to make its calculations. It assesses, among other factors, weight carried, whether the horse has the particular course and prevailing weather conditions, class, speed, and even which stall the horse will sleep out of at the start.

The program finally forecasts a finishing order for the race — with 12 in large fields — producing a rating for each horse and a computer-generated starting price which reflects its own view of the horse's chances. It also announces the odds (the price being offered by bookmakers before coming up with investment advice).

In many cases it will recommend

Turn to Page 24



4 From Page 33

that you do not bet on a race even when a horse is shown to have a great chance. That "No Bet" decision is often based on the program considering that the potential return on the outlay is too low.

"Pro-Punter is an extremely cautious investor", says author Miller. "I won't advise you to risk your money unless there's a very good chance of financial gain".

Pro-Punter technically is a first-class package and it is user-friendly. Recognising it may be somewhat of a chore to enter data in five stages, at the end of just four the message "Nearly there..." appears on the screen. The software never lets one 3in disc, tape users not being catered for. The review copy was CPC602/8664 only, but by the time you read this a CPC486-compatible version should be available.

Just how it processes the information is a closely guarded secret. However, judging by the results to date, it is considerably more sophisticated than sticking a pin in the record.

Mike Cowley

New punter?

Miller's experience rates mainly to the BBC Micro version of Pro-Punter. The CPC edition is virtually identical in the method it uses to make predictions, the only real differences being in the presentation.

Unlike some magazines, it doesn't offer money to cover programs for other micro and publish the result as a review of what you can buy for your CPC. Therefore, leaving for your CPC. Therefore, leaving for your CPC. Therefore, leaving for your CPC. Therefore, leaving for your CPC.

The question is my related with how easy is it for the new novice aimed with his first copy of The Sporting Life to get going? After some time with the program I came to the conclusion that yes, it can be done, but it isn't totally straightforward.

The main problem is that during the extensive data input stage - which took me much longer than Mike - Pro-Punter asks questions which don't have obvious answers when looking at the page relating to that race. The information is there somewhere, but you need to learn how to interpret Sporting

Life's arcane coding system.

Your first input session could be difficult, and an experienced friend would be a great asset. Failing that, DCH is on the end of a phone, and cultivating a fellow punter at the bookies might help. Once you've been through a couple of input sessions the process becomes faster and easier. I do feel that although there is some explanation in The Sporting Life manual in the instructions, it needs expanding to form a comprehensive guide.

At nearly £60 Pro-Punter is a big outlay. Judging by its record, it is capable of paying for itself, but you must be prepared to invest some time and effort.

Ian Sharpe

Product: Pro-Punter
Price: £60.00
Supplier: SGA Software, PO Box 16,
Jodden-under-Lyne, DL7 6AR
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- Results significantly better than chance.
- Could pay for itself.

AND AGAINST

- Big outlay.
- Needs patience, especially for the inexperienced.

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WHAT TO DO

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4 SILVER PRIZES

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Y J S C H D X K Y U E U G A P G G I Z L
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A B E P C C R S G Y H Z N D T J D N I C

ENTRY FORM

Find 10 words concerning the Olympic Games, highlight them, and send your entry to the address below.

NAME

ADDRESS

POSTCODE

AGE

Send to: Gold Silver Bronze Competition, CPC Computing, Europe House, Aclington Park, Aclington, Mansfield N10 4NP.

THIS series of articles is in response to a bundle of letters that has come in over the last year or so concerning sprites - the little beauties which populate video games. It seems that a good number of you are eager to try your hand at writing games, but are puzzled as to how large numbers of multi-coloured characters can be made to rush around the screen simultaneously, preferably controlled from Basic.

People no longer, far over the next two issues I will give you all you need to get started. We ran a series on this subject in 1985, and many readers will have the original issues, so I'm going to take a different approach.

This time I'm going to cover the very simplest sprites - Mode 0 only, one character cell in size, and moving a character cell at a time. This will give you enough to write the likes of *Space Wars* and *Centipede*, plus an idea of what is required for more sophisticated effects.

I'm aiming to provide three things:

- An example assembly listing with explanation for the benefits of machine code programmers.
- A ready-made routine for those who can program in Basic but can't handle machine code.
- A simple sprite designer which writes the shape data to tape or disc for subsequent reusing with your own Basic.

If you're at a stage where you are thinking of using sprites, I think I'm safe in assuming that you know your

way round Basic, and when I refer to it I will do so without detailed explanations of how individual commands work.

This month's episode will mainly be of interest to machine coders, so Basic programmers don't need to worry if they don't understand much of it. Next time I'll be giving them a prepackaged version of the machine code ready to run from Basic.

Why do it?

First let's look at why special measures are needed to move colourful characters, and consider the ideas behind the technique we'll be using.

It's possible to write games purely in Basic with user-defined characters and the associated commands - LOCATE, PEN, PAPER, and PRINT. By using the CPC in transparent mode - PRINT CHR\$(255CHR\$(1)) - you can build up a multi-coloured character by printing, say, a green byte followed by a red byte at the same point on the screen. These would be two separately defined characters, and the pen colour would be changed between print statements.

Anybody who's tried this approach will have found that this is OK for the odd character or two, but any more than that and the process slows down to such an extent that the game becomes unplayable.

The problem is that Basic's print

command is slow. It is a general purpose routine designed to print characters in the current screen mode, however much the memory map has been modified by scrolling, in transparent or overwrite mode, and with variable pen and paper colours.

In order to get a letter, number or graphic on the screen, therefore, PRINT has to do a lot of homework finding out exactly what it's supposed to be doing. The problem is compounded when you start printing several characters in one place to build up a range of colours.

After it has completed its job, what has PRINT actually done? The answer is that it has placed a few numbers in the correct place in the screen memory. The video chip then interprets these numbers to generate the physical display.

The secret of fast graphics is to forget all about PRINT, and bung the correct numbers into the screen memory with our own routine. This will be written in machine code - callable from Basic - and be far faster than the in-built equivalent. Furthermore, as we're dealing directly



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```



with the screen memory we can organize things so that the various colours in the character are already built into the data, so the write operation is once only rather than an overlaying of several elements.

How is it that a simple bit of machine code like this outstrips one written by the all-knowing entities at Logomotive Systems? I said that PRINT is a general purpose routine, and this makes it slow. By deciding beforehand that the screen will be in Mode 0 and unscrolled, by not catering for transparent/overwrite options, and doing away with error checking, we can avoid a lot of time-consuming calculations.

Another point is that the character data used to form the Amstrad's character set is compressed, and has to be expanded into a suitable format for the current screen mode before it can be used. Knowing what screen mode we're working in, we can make our sprite shape data an exact duplicate of how it appears in the screen memory. Then the process of writing it to the appropriate place is a simple copying operation which is very fast.

The machine code

So let's dig out the truth assembler and write the basic routine. Listing 1 is what I came up with, and the rest of this session is devoted to explaining how it works.

The machine code is nice and short, and when assembled it needs initialising. This means that before it can do anything you need to CALL &8000 to get it to set up a table it uses. More on that later. HMEM should have been set to &7FFF.

Having done that, the call you have at your disposal can be used in two ways:

```
CALL &8000,x,y,z,order
CALL &8000,x,y,z,order,sh,ty,tx,txsize
```

So, you can see that it needs either three or six parameters. Think about what you want to do with a sprite. You have to put it on the screen in the first place, then you want to move it about, and possibly erase it when it gets killed.

The first and last options are taken care of by the three-parameter call: *x* and *y* specify the position to print the sprite, and are the same as Mode 0 text coordinates - *x* may be between 1-25, and *y* can be in the range 1-25. Be warned, the only error checking is that you've passed the correct number of parameters. The values themselves are not checked, so if you use illegal areas off-screen, you will probably

A word in your ear

Whenever we print an assembly listing there follows a trickle of letters from people who have typed it in confusion and can't get it to assemble. The problem is that not all assemblers are equal. I use Amstrad Maxam, for no other reason than I like it, and for me having it on tape is very convenient. I know many of you will not be using Maxam, and some may even be working with Raw - the assembler we published in 1985 and currently on our utilities tape site.

Now if Raw could do everything Maxam does, we wouldn't be selling it for next to nothing on a compilation. It is slower and less flexible than Maxam, so it won't accept things like:

```
PRINT
(1,1,1)
```

Instead you need to play things

by the book and do it like this:

```
PRINT
(1,1,1)
```

Maxam has pseudo opcodes like BYTE and WORD which in other assemblers might be DBFF and DFFW. If things don't assemble properly, you should refer to your assembler's manual to find out what format the source code needs to be in. Please don't write and ask, because although these things are rarely difficult to sort out, not being familiar with the assembler in question or having the manual I have even less idea than you.

If anybody is really struggling with Raw on the compilation, so the original article is out of print, send me a decal-size S&S plus an extra five class stamp to cover costs, and I'll send you a photocopy.

experience a catastrophic crash.

The value of number can be any whole number from zero upwards. It simply refers to the number of the sprite you want to print. If you want to erase a sprite, designate it with a blank block. I'll say more about where the sprite data comes from and the form in which it must be held after I've explained the six-parameter form of the call.

In order to move a character, you erase it and reprint it in the next character cell. We could achieve this effect using the three-parameter form of the command in two operations:

```
CALL &8000,0,0,0
CALL &8000,0,0,0
```

That would move sprite 12 from 1/5 to 3/6 assuming sprite 0 had been defined as a blank block. However, it's quicker to do the whole thing in one go, so *er* and *or* are the old *x* and *y* coordinates, *nr* and *ny* are the new ones. You may not want to blank the old character with the background colour, for instance if you were writing a Pac Man-type game you might want to replace it with bricks on the floor of the maze.

For this reason you must specify the sprite number you want printed at the old position with *olnum*. Of course, *newnum* is the sprite number to print at the new position. By changing this value "in flight" you can get the character to change shape as it moves, and so produce simple animation as well as movement. That

should be fairly clear, and we'll be seeing examples as we progress.

However, the biggest question in your minds at the moment is probably how you define the shapes of sprites, and how are they added to the machine code?

I said earlier that the sprite shape data is held in the same form as it appears in the screen memory. What we need, therefore, is a program that allows us to draw sprites on the screen using a cursor in a grid. After using it to design a character, we then need a way of saving it to tape or disc in a format Basic can load. The memory location it is loaded to will be one that the machine code knows is the start of the sprite data.

Look at the end of Listing 1. There's an address defined as *sprite*data. Whether the sprite data is added to the source code at this point, or whether it is poked into this position in the object code at a later date matters not. What does matter is that before you use CALL &8000 it has been installed, and it is in a standard format.

Next month I'll be giving you a sprite designer which allows you to do this very easily, but for now I'll tell you what the format is and explain how the machine code works.

A Mode 0 character cell is four bytes wide and eight lines deep. One byte contains the information for two pixels. The mathematicians among you will see that this is a total of 32 bytes per character cell. Imagine a

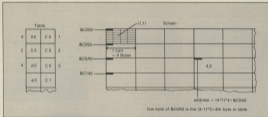


Figure 1: How the address relates to the coordinates

colourful little sprite sitting in such a cell. Imagine also writing down the values of the four bytes in his top row. Add to the list the four bytes in the second row making a string of eight bytes. Do the same with the other rows, and you have a list of 32 values.

Now, let's suppose that our game uses three sprites, so we produce three lists. If we want to refer to these sprites as numbers one, two, and three, we join the lists together in that order, making one large list of 96 values. If we want to erase sprites with a blank, we need a block of 32 zeros to define it. Add this to the list, and we have four lots of data in the correct format. All we have to do is slot it into place at the end of the machine code.

It is probably best to refer to the blank block as number zero, so the 32 zeros will be at the start - remember that sprite numbers range from zero onwards. If we wanted to move sprite 12 as shown above, the command would be:

```
LDI B800,1,2,1,1,1
```

Those of you confused by this should hang on till next month when the sprite designer will do the hard work for you and make things clearer. I'll round off with an account of the assembler listing.

The business end is the routine which prints a sprite on the screen - *printscr* - so I'll deal with that first. It expects the address of the byte in the top left hand corner in the character cell in the DE register pair, and the address of the start of the sprite data in HL. We'll see how they get there later, and for now we'll stick to the print routine.

There are eight screen lines in a cell, so the first thing to happen is that the B register is loaded with eight to act as a loop counter. The data will be copied into the screen memory in this loop,

each loop cycle dealing with a screen line. Next comes a label - *uploop* - which defines the top of the loop.

We're going to be transferring the data to the screen memory with the LDI instruction which has a side effect - it alters the value of BC. This register pair must be preserved because half of it - B - is the loop counter which counts the screen lines. Therefore BC is pushed on to the stack before we do anything else.

Whenever we step down from one screen line to the next, the calculation is based on the start of the screen line in the sprite. As the screen address in DE will be altered as we move along a line, a copy of it is also saved on the stack.

Next follow four LDIs. These have the effect of taking the byte pointed to by HL, like shape data, copying it into the address pointed to by DE (the screen), and incrementing both DE and HL to point to the next data and screen bytes. BC is decremented, but we aren't using that feature. In this way four consecutive bytes from the data are copied into four consecutive bytes in a screen line.

The next thing to do is calculate the address of the start of the next line. The saved address of the start of this screen line is popped off the stack ready for the calculation. This involves adding \$800 to it.

Now \$800 has a high byte of \$00 and a low byte of \$80. As the low byte is zero, adding \$800 to anything is the same as adding \$80 to its high byte, which is quicker than a 16 bit addition. For this reason the next few lines add \$80 to the high byte of the address in DE giving the start of the next screen line. Finally, the loop counter is popped and decremented to see if the routine has finished. If not, the process repeats.

A point to note here is that this business of adding \$800 to an address to

find the address of the byte immediately below it only applies within a character cell. If you want to cross character cell boundaries you have to check if the addition of \$08 generated a carry, in other words it stopped past \$FFFF - the top of the screen memory. If it did, you add a further \$C000 to the address.

Having explained that, there is a useful tactic here which will assist our programmers would have done as I did pushing and popping BC on the stack. In fact with a bit of lateral thinking the PUSH and POP can be eliminated, thus saving time.

The instruction LDI is executed 32 times, and each time it decrements BC. We're trying to preserve B, but if C starts out with a value of 32 or more it is never decremented past zero. B is only affected in a 16-bit decrement when C carries past zero, so by making C 32:

```
LDI B,C,32
```

we can omit the PUSH and POP of BC. This saves 118 T states in the loop at a cost of three outside it - not saving 113 T states.

Now we'll see how the screen and data block addresses are worked out in the first place. As you pass parameters to machine code from Basic they are pushed on to the stack. When your machine code routine starts up the IX register automatically points to the section of stack containing your parameters, and these occupy two bytes each. The A register contains the number of parameters, and although it's uncommitted DE holds the address you have called.

The routine decodes it responsible for extracting the information you pass to the machine code and turning

Turn to Page 40 B

10 LINERS

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Directory Checker

By Ronnie Heywood

If you tend to keep files in different user groups you'll know the problem of having to search through every group on quite a few discs.

While doing it there's the nagging suspicion that the file has been erased. What you need is a directory checker to perform the searching for you.

This top-line routine doesn't recover erased files, but it will show you which ones are in which user groups. Use the up and down cursor keys to set the group number to examine, and press the spacebar for a directory of that group. The E key will show any erased files.

A little-known fact about discs is that the current user group is stored as memory location BA0F1. Making this with a number between 0 and 16 will set the group to that number. Another interesting fact is that files aren't physically removed from the disc when you erase them; instead they're given the user number ZB, which is ignored by the operating system.

A flowchart follows that to recover an accidentally erased file, providing it hasn't been overwritten with a newer file, we simply have to perform the following steps:

```

00 04010001 124
01 04011000 124
02 04011000 124
03 04011000 124
    
```

You might like to use this information to add an unusual function to the program.

Screen mode converter

By Jeremy Dutton



If you own an art package such as Cherry Point which only works in Mode 2, and want to load a screen created outside the program, you have a problem if the picture isn't also in Mode 2: it is possible to load pictures in different modes, but this always results in a mess.

Jeremy had this difficulty, but rather than admit defeat decided to do something about it. His program takes a lot of machine code which will make a fair machine code which will make a fair attempt at converting a Mode 1 screen into its Mode 2 equivalent.

To use the program simply change the filenames in lines 30 and 70. When run, the picture file will be loaded, and pressing the spacebar will change the screen to Mode 2. Pressing it again will save the new file to tape or disc.

Although not designed to, as an added bonus this routine will also change a Mode 0 screen into Mode 1, although the effect isn't quite as brilliant. To do this alter the MODE 1 in line 10 to MODE 5, and the 2 in line 50 to 1.



```

10 MODE 0:00000000 0000 0000 0000
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95 0000 0000 0000 0000
96 0000 0000 0000 0000
97 0000 0000 0000 0000
98 0000 0000 0000 0000
99 0000 0000 0000 0000
100 0000 0000 0000 0000
    
```

LINE	GROUP	LINE	GROUP
10	= 01110	60	= 01000
20	= 01010	70	= 01010
30	= 01011	80	= 01011
40	= 01012	90	= 01012
50	= 01013	100	= 01013



```

00 04010001 124
01 04011000 124
02 04011000 124
03 04011000 124
04 04011000 124
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97 04011000 124
98 04011000 124
99 04011000 124
100 04011000 124
    
```

LINE	GROUP	LINE	GROUP
10	= 01110	60	= 01000
20	= 01010	70	= 01010
30	= 01011	80	= 01011
40	= 01012	90	= 01012



3D Donut

By Ian Brown



HEXED is a simple - but clever - graphics routine which draws a 3D donut. It's quite easy to amend some of the values to produce different sizes and textures.

```

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100 04011000 124
    
```

LINE	GROUP	LINE	GROUP
10	= 01010	60	= 01010
20	= 01011	70	= 01011
30	= 01012	80	= 01012



Promerge aid goes to top of the class

DAVE DORN gives pretty good marks to a disc-based tutorial

USERS of Amnor's Protact who also have Promerge or Promerge Plus, or who use the CP/M version of Protact, will be well aware of the power of the programs when it comes to mail merging and database management.

Well aware maybe, but not necessarily fully conversant with the ins and outs of the Promerge part of the package. Like me, many people know that it is possible to maintain a list of names and addresses with all kinds of other information, and to use the database to produce the kind of personalised letters Reader's Digest is famous for.

Pushing to the aid of those who haven't really got to grips with the ideas of conditional merging comes Thompson Computers, with its Promerge Tutorial. And how well it is put together. I should tell you that reviewing this package is right up my street, being a teacher and all that, so I put on my professional cap and gave and set to work.

To start with you are asked to read the first of the four extended lessons on the disc. There is no manual, so the information is held in the file readable which must be loaded into Protact.

Reference is made to various example files, the first of which is the list of letters we all write as one-offs - you know, the address at the top left (what did that change? Used to be top right when I was a fool), followed by Dear Mr. Blogger and so on.

If you have Promerge Plus, the two file editing facilities gives you the advantage of being able to hold the tutorial text and examples in memory simultaneously. You are encouraged to print out the tutorial text files, thus saving Thompson Computers the cost of a manual. And why not? Shareware

authors do the same thing. Printing the files out is probably a good idea so that you can read them in an easy spare moment.

We are told that the word processor user who laboriously re-types all the names and addresses into a string of letters/addresses is making heavy work for himself. Gently, very gently, author Doug Thompson leads us along the path of righteous mailmerging, covering all the salient points on route.

He has a very readable style and, should you work through all the exercises with the Promerge manual by

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Orders and enquiries to: **DATA SOFTWARE**,
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Tel: 061-336 0384. Please Specify Machine



Psycho Pigs UXB

A fully playable demonstration of UK Gold's latest and wilkiest arcade game. This is one way pigs can fly, the trouble is it's usually a result of being bombed!



Hotshot

There'll be level one of Pelem's recent Silver Award winner. You've read the review, now play the game for free!



Fourtris

A game of lightning reflexes, luck, and logic. This previously unpublished program would undoubtedly have been the magazine listing of the year had we printed it, but now you'll be able to enjoy it without the typing.



Propunter

Can you beat the bookies? We'll be giving you a demonstration of the Propunter betting system, plus an opportunity to win the complete package!

Amstroids

Remember the smash hit arcade machine Asteroids? Here's a colourful CPC version with solid graphics and red hot gameplay.



Watch out!

With the November issue of CPC Computing you'll be able to obtain a very special free gift - a cassette packed with games, utilities and demonstrations of commercial software.

And these without a tape deck needn't feel left out because they'll be able to order a disc version for less than the price of a blank disc!

And these without a tape deck needn't feel left out because they'll be able to order a disc version for less than the price of a blank disc!

We'll print full details next month, so look out for us at the newspapers. Or better still, place an order because with an offer like this we'll eat out fast! To whet your appetites here's a sample of what's in store.

Protex

Amstrad's word processor is regarded by many as the ultimate for the CPC, and you'll be able to judge for yourselves with this demo. All that'll be missing will be the save and print functions.

PLUS!

Some of the best type-in programs from the pages of CPC Computing. There'll also be unbeatable special offers and over £1,000 in prizes in two great competitions!

An issue not to be missed, we're sure you'll agree!



QUEEN OF CHEATS

I'M a bit short on space this month, so I'll just deal with a couple of letters. The first one is from Jesse Wright who, along with 18 of his friends, wants me to print a tip or puke for the game *Jack*.

Well, after Jesse and all his mates signed a petition, I've got to print something, so rooting through my mound of contributions I dug out a puke from Tak P. Cheung. With a bit of luck it'll have made it on to the page. In fact, it has!

Somebody who didn't sign their letter can't get August's Stallia puke to work. Reading between the lines, it sounds as if he/she/it has only entered the data.

It needs adding on to the end of Casey's Cracker, which I've published quite a few times recently, and

together they make the full puke.

Quite a few of you are asking me to write back with pukes for games. Some people, but there's only little old part-time me running this column, and thousands of thousands of thousands of readers.

I can't give personal help. I'm afraid, there aren't enough hours in a day. Special requests are always treated sympathetically, but replies have to be on these hallowed pages.

You wouldn't believe some of the letters I get. In answer to the gentleman who said he'd be so happy if I wrote to him, he'd get his head through it well. See how kind I am?

Right, no more waffling, so with the above *IT'S*

Dragon's Lair

(JMW 4 Pack vol 3)

Here are infinite lives to help Dirk the Daring in his quest to come to the rescue of a damsel in distress. Oh, and you can start on any level by altering the variable system in line 18. Richard Walters from Maidenhead is the man to bring back Dirk from the dead.

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Combat Zone

(Alternative)

Alexander Mason of Cognition has found the fault in Combat Zone. Apologies to Giles Corby and others, but Corby beat you to it.

Go into pause mode first (the Cir key) and use the following key combinations (hold them down simultaneously).

Press Tab, Caps Lock and Shift with:

0 - 255 lives

1 - Game points of fuel

2, N, or X - Infinite ammunition

0 - Toggles between slow and grass

Jack the Nipper II

(Wireline)

Disgusting little creep - Jack that is, not Mark Rider who sent the puke in. It's an infinite lives job, just run it with your Nipper tape in the deck and away ya go.

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20 TOP GAMES

... for less than the price of one!

That's right, there are 20 of the best games ever released for the CPC in this program-packed double cassette compilation! Each and every one hit the top of the charts, and if you missed out on any of them, here they are for the giveaway price of just £7.99 – less than 40p per program!

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Formula 1 Simulator



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Educational Robots

As well as being great fun, these two robots are the ideal way for you and your children to learn about programming. Commands such as, "move forward", "turn" and "dance" are entered in sequence - just as you would write a program - and when you press the GO key, off the robot goes. But you don't need to program them, you can play with them interactively by selecting one action at a time - Compurobot II has a remote controller, so you can steer him all round the room from your armchair.

At a saving of £5 for Friendly Robot and £14 for Compurobot II, these educational toys make an ideal, inexpensive gift which will give kids of ages 5 to 96 endless hours of fun.



FRIENDLY ROBOT

Friendly Robot can move forwards and backwards, turn, dance, run round in circles, flash his eye and play music. Up to 18 of these actions can be selected by pressing one of seven buttons, and pressing the eighth sets him in action.

He has moveable arms and a swivelling head - which you press down to turn him on and off - and a power-on light - which lets you know when he's ready to accept your commands.

Friendly Robot also has a bumper switch, so that should he run into any objects, he'll just turn around and go off in another direction.

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OUR PRICE
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 YOU SAVE £5



COMPUROBOT II

Friendly Robot's big brother, Compurobot II, can dance, play music and games, draw and write, teach basic programming skills and remember up to 64 commands.

He is controlled using an infra-red remote control and comes with headlights, silver bars, a voice box, eyes, a custom name plate, a crayon holder, strong mechanical arms and a function light which flashes after each key entry.

He has a dance mode too. If you select this, he will show you all the tricks he can do and, if you give him a crayon, he will even write for you!

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 YOU SAVE £14

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BLOC-TRONIC

Now you don't have to be a genius to create your own electronic devices. Using Bloc-Tronic you can build projects such as radios, amplifiers and burglar alarms within minutes!

Bloc-Tronic is a major breakthrough in the educational toy and hobby market. It consists of a number of see-through plastic bricks, each containing an electronic component.

The blocks have no sharp edges and can be connected to each other in a multitude of ways using a patent connection system, consisting of two dove-tail and two slot connectors.

With the kit you get a battery power supply, an amplifier, a tuner and a loudspeaker - along with a number of leads, connectors, lights and so on.

Although Bloc-Tronic is an excellent way to learn about electronics, the whole kit can be arranged, without any knowledge, into 160 different circuits just by following the instructions. And once you get to understand how it works, the number of circuits you can create is limited only by your imagination.

Because Bloc-Tronic runs off a 9 volt battery, it is completely harmless, so even children of six years old can be left safely to follow their imagination, and through actual application they can discover the reasoning and logic behind the laws and theories governing electronics.

A comprehensive, fully illustrated instruction manual comes with the kit, showing and documenting circuit diagrams, taking you from the simplest light bulb/battery circuits up to light-activated radios.

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and at
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Hopping Mad, Ten of the Best or Utilities Galore for only...

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SAVE
UP TO
£14



HOPPING MAD

Hopping Mad your task is to guide your car of bouncing balls through a series of obstacles, avoiding the wrong answers, hitting buttons and building up points.

The game has some of the best graphics you'll see on the CPC - with plenty of detail, fast responsive action and lots of sound effects and music.

"This is one of the most addictive games I've come across recently. If you want something to keep you out of mischief for months to come, you'll not go far wrong with Hopping Mad" - Steve Lucas, CPC Computing September 1988.

Any one of the products shown on this page can be yours for just 99p when you take out a subscription to CPC Computing. They are also for sale at the price shown, using the main form.

* or value of existing subscription

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Volume 1

Wheel Spin - Show the city streets, avoiding killer cars, to collect the 10 flags.

Emulated Frog - Design the marks, collect the legs, grab the eggs, it all sounds so easy - but it isn't!

Suspended Flat - Place gumpowder in the garden of the House of the Pharaoh!

Recess - All the tricks of the wicked girl - and you can't stop play in the sea!

Relaxed - Guide balls through the complex maze and drop them into boxes.

Rating - Lead your line and keep a keen eye on the road to catch the fish.

Eggplant - Beat the seven covers of the egg mine by digging through soil.

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Diamond Digger - Investigate the druids through the mines, avoiding falling rocks.

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Includes 10 software titles for CPC computers and 100 pages of software information.

PLUS
100 pages of software information.

TEN OF THE BEST

Volume 2

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PLUS
100 pages of software information.

Ten of the Best

Volume 4

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Adventure - An interesting variation on John Conway's famous game of Life.

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6 Thing! This simple idea makes typing in listings so much easy. The Thing! attaches to the top of your monitor using velcro strong enough to support this magazine.

ARP £5.50

Offer price £5.95

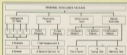
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Treble chance

IAN SHARPE evaluates two rom boards and a wrapper for the CPC



Microgenetic rom board



KDS rom board



Seal 'n' Type

Microgenetic rom board

THIS board is capable of holding eight roms, numbered 0-7 or 8-15 depending on the position of a link. It stands up behind the back of your CPC, much like the old Micropower card, if you remember it.

There are some nice features. The quality of construction looks first class. There is a bank of eight DIP switches which enable or disable roms - you would want to do this if there was a clash with software you wanted to run. The switches are easy to get at and clearly numbered.

There is a master switch if you want to switch the entire board out. Again clearly labelled and easy to get at. There is even an LED to tell you if the board is enabled or disabled.

On the top left is a big red button which resets the CPC in the same way as Control+Shift+Escape except that it always works, not just when a program chooses to be able to be exercised in this way.

Two boards can be used to give 16 rom capability, and Microgenetic is developing a rom blower which fits rigidly to the rom card.

I like the attention to detail that's gone into this board. There is a through connector, and it even comes supplied with two stick-on feet so that CPC404 owners can rest the disc drive interface on the table rather than have it wiggling about in the air.

Product: Rom Board
Price: £74.99

Supplier: Microgenetic Systems, PO Box 41, Wash-on-Clearing, Farnborough, South Yorks SO2 7YD
Tel: 0459 722295

KDS rom board

KDS's rom board is aimed at those with slightly less sophisticated needs than Microgenetic's offering, and it's a bit cheaper. It has six slots, numbered one to six, has DIP switches to disable any rom, and is cased. As a board it functions perfectly, but I wasn't too keen on the case. It has four stiff cross-hatched screws making it difficult to get at the DIPs with the board in situ.

While on test I left the case off, and was quite happy with the arrange-

ment. Besides, to the uninitiated a bare board full of roms really makes it look as if you know what you're doing.

Other than that there isn't much to see. I've had this one on the back of my CPC at home since the summer Amstrad show, and it's been fine. There is the customary through connector, and the card offers good value, particularly for disc drive owners where a rom 7 socket is redundant.

Product: Rom Board

Price: £74.99

Supplier: KDS Electronics, PO Box 1076, Harrogate, North Yorkshire YO10 3BB
Tel: 04593 7070

Seal 'n' Type

THE effusions of the coffee machine are subject to some disapproval here at Database Machines. Despite a reassuring notice to the effect that all drinks have been passed by management, there is a distinct lack of enthusiasm for its wares.

To keep body, soul and my six brain cells together, I have a bottle of orange juice secreted in the filing cabinet. I'm not saying what it's filed under, otherwise it'll be hijacked as soon as the cones leak from the printers.

Recently I topped an entire mug of said juice over a five CPC608 keyboard, reducing it to an omnivoluminous heap of non-functioning electronics. A rinse under the tap - I just not - followed by a couple of days drying out, and it gassed back into life, shaken but not stirred.

As it happened, the first Kadar covers for the CPC had just come off the production line, and one duly flopped on to my desk. I eagerly rolled it on to my keyboard, the dimply bits moulding themselves round the keys - assisted by the hand dryer in the pants. To stop it coming off in action, the Seal 'n' Type is stuck down with some double-sided tape which comes off easily if needs be.

After a week I became quite used to the Seal 'n' Type and now I hardly notice it. A turbo-fingered touch typist may think differently, but I'm comfortable with it, and initial fears of over-ventilation proved unfounded. It will keep dust, fog ash, paper fibres and liquid out, and if it's worth £9.95 to you for some peace of mind, I'll splash out.

Product: Seal 'n' Type

Price: £9.95

Supplier: Kadar, Unit 4, Parkway Industrial Estate, Abbeystead, Wid. Clattergate C45 9LP
Tel: (0447) 746291

Letterhead designer

I'VE received quite a few letters about this one. Apart from the error pointed out in August, the listing is correct.

If you are being told that there is a type mismatch in line 718, the line of data it is trying to process will contain a typing mistake. To find which line, type:

```
PRINT 10
```

A common mistake is entering a 0 instead of a, or 1 instead of .

A few people are getting extra blank lines on the final printout. This is because your printer is not set up correctly. In your manual is a list of the functions of various DEF switches. The one

marked auto line feed should be OFF.

If you can't find the right switch, put a thin strip of sticky tape over the track corresponding to pin 14 on the printer port.

No hard disc drive

MY neighbour has an Amstrad PC164266 with a hard disc and from 450 peripherals. After seeing it in action, I would love to add one to my CPC626. I seem to remember reading some time ago that a company had one under development for the CPC, but can't remember who. Do you know if anything came of it, and if so where can I get it

from? — Stuart Campbell, Thurso.

■ The company was Silicon Systems, but the project was never completed. As far as I know there isn't a hard disc unit for the CPC, and if there were it could well be in the £200-£300 bracket.

It might be possible to adapt a hard disc unit intended for another computer, but it will be a difficult task involving both hardware and software. If anybody has achieved the feat, I'd be very interested to hear from them.

Penpals?

I AM 19 years old and would like penpals of any age to swap Amis and Basic pro-

When things start getting out of

I HAVE a problem with the following characters: 0-31, 127, 134-135, 206-252. I have been experimenting with assigning the various characters to the keys using the KEY command, such as:

```
KEY 128,00001200
```

However, this does NOT work with the above character numbers (except 128). Normally characters can be printed using:

```
PRINT 00011
```

where 1 is a number

between 32 and 255, or:

```
PRINT 0001(00011)
```

where 1 is between 0 and 31.

This does not seem to work with the KEY or KEY DEF commands. I know characters 0-31 are control codes, but these other problem characters seem to act in a control way and appear to be unusable. How do I program them into the KEY and KEY DEF statements?

I have discovered that all sorts of parameters are accepted by the KEY command for the numeric

keypad, for instance:

```
KEY 8,01
```

just character 85 - A - on the zero key, as does:

```
KEY 0,01
```

They seem to default to the zero key unless a number between zero and nine is specified. Any explanation?

As the control characters seem quite complicated and only receive a surface scratch in the manual, is it possible to have an article or two on how they work and how to use them in programs? — P. Harrison, Nelson.

■ Let's get the easy bit out of the way first. When you specify KEY a your CPC looks at a and says: "That isn't a key number, so it must be a variable". If you haven't previously assigned a value to a, it defaults to zero, so the zero key is the one that takes the subsequent character values.

If you specify a key number greater than nine the character is assigned to the expansion token 128+key number. So KEY 11,"a" would get the character on expansion token 128+11=139. This expan-

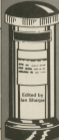
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grams. I am interested in all types of game. — John Muller, 52 Lansdale St., Worlington, Gwent SA1 2YD

Silicon disc?

I AM considering buying the all-Thronix 280 silicon disc due to the inconvenience of the single drive CPC6128 set-up. In particular I would want to erase Protot (CPC61 Plus version), the Professional Adventure Maker and AMS's Star in the silicon disc.

What knowledge of computer languages is required to use the disc, and would there be any problems storing the above pro-

grams? — Fraser Hamilton, Annan.

Reading between the lines of your letter it seems there would be a lot of problems with what you want to do.

As I see it you are expecting to be able to store, say Protot, in the silicon disc expecting to find it there when you next turn on the machine.

This is not the case, I'm afraid. The silicon disc is basically a box of memory chips which are made to look to your CPC as a disc drive. In common with all memory chips, when the power is switched off whatever is in there is lost.

It's a great pity that all-Thronix didn't incorporate a battery backup, as this would have increased

the device's appeal considerably.

Unfortunately the silicon disc only acts as temporary storage while the computer is switched on. This has its uses, but it doesn't work with all programs, and in my opinion it isn't nearly as useful as a genuine second drive.

I would strongly recommend, therefore, that you either buy a second drive or construct your own by following the project in the April and May issues of Computing with the Amstrad CPC.

As for the programs you want to use with the silicon disc, sure I hope so I can't test them for you. As a guess I'd say that Protot would, but the other two are doubtful.

How many people out

there would prefer a silicon disc to a real drive it, and how useful and compatible with various software do you find it?

Mistaken identity?

I WAS alerted to read your review of *Slide Away* in the July issue. I object to being described as a merciless tyrant. In fact, I am generally regarded as a placid individual.

As for your suggestion that I sound like a cross between Genghis Khan and Binur, I would like to point out that to my knowledge I have no canine attributes, and since you have published no less

Turn to Page 60

at of control

sion taken is not assigned to a key by default, so to see it in action you have to put it on one using the KEY DEF command:

```
KEY DEF 41,151
```

This would assign expansion takes 120 — currently "a" — to key 41 — the speaker.

Now to your problem with assigning certain characters to keys. Whatever character number you specify in the KEY command does get put on the key. The problem lies not with it not being there, but how the CPC interprets it.

To prove that the key is as you defined it, set up your keys and run the following program. It will print out the Ascii values generated by keys as they are pressed.

```
10 GOTO 1
20 IF (KEYIN) THEN GOTO 100
30 PRINT ASCII
40 GOTO 1
```

In chapter 7, page 21 of the CPC6128 manual, and in appendix B, page 14 of the CPC6128 manual is a diagram showing the default values for the keys. The numbers shown are in hexadecimal (base 16) which can be converted to decimal by typing

something along the lines of:

```
PRINT 151
```

which is the Ascii value generated by the spacebar — 32, the space character. If you look at the other keys, with a few exceptions they generate unique character values. By the way, where you see more than one value shown on a key, these are for normal, with Shift, and with Control.

The interesting thing — and part of the answer to your query — is that keys which you wouldn't expect to generate a character do so. Have a look at the left arrow key. Unshifted it produces character &D — 242. If you look that up in the character tables it is a left arrow which can be printed with.

```
PRINT 242&D
```

However, the CPC knows that when it receives that character from the keyboard it must move the cursor backwards. Hence, if you assign character 242 to the zero key on the numeric pad:

```
KEY DEF 0,242
```

wherever you press that key the editor thinks you have pressed the left cursor key and moves the blob back accordingly. The point is that the Amstrad is looking at the character value it gets from the keyboard manager rather than which number of key was pressed.

You can perform similar tricks by assigning CHR&801 — 204 — to a key making it imitate the Copy key, or &D1 — 121 — making it look like Del. Now if you examine the key values generated by the default keyboard and choose one that isn't there, such as &D0, you will find that it prints normally when you assign it to a key.

When the keyboard generates this character the CPC says to itself: "This character value isn't in my table of special characters to be acted on, so I'll print it on the screen as usual".

This leaves two things unexplained. Firstly, ControlTab generates character &E1. It doesn't appear on the screen — fair enough — but doesn't have any visible effect either. Secondly, the same values aren't in the diagram but still don't print, CHR&82P1 — 208 — being an example.

I hadn't realised this until

your letter came in, so can only guess at the reasons. Possibly the pointless character on the Tab key is simply there to fill an available space in the table of values the CPC refers to. This allows the programmer to do something useful with the key, but it just doesn't happen to do anything in Basic.

The values which neither appear on the keyboard diagram or do anything when you put them there are different. If you experiment you will see characters 239 and 252 are unaccounted for.

Character 252 is the Escape key. Presumably it isn't shown because you can't use it in a Basic program for obvious reasons. Character 239 is a mystery, not appearing to have any function at all. Possibly this is a bug, unless somebody can come up with a plausible explanation.

As far as I know there is no way to get these characters which have been earmarked for special use to print as a visible shape when they are generated by a key.

An article on control codes is a good idea, so if I haven't managed to fit it in this month it'll appear soon.



MSB this also work with the command CALL 0? Thank you, and keep up the good work. — Stephen Thompson, Chester-le-Street.

■ You can stop the hard reset by putting the following instruction in your program:

```
FOR I=1 TO 100
```

This will not stop the CALL 0 resetting the machine, but you can achieve that with:

```
FOR I=1 TO
```

4 From Page 55

than three of my programs, I can't be entirely blameless. — David Harris, Melbourn.

■ Never say I don't offer the right to reply!

Stopping that reset

PLEASE could you tell me how to prevent the CPC from being reset by pressing Control+Shift+Escape?



Prize letter

If your reply to C.A. Wate in the May issue you stated that the only way to prevent RND from repeating itself is to store the numbers in an array as they are generated and check new RND values with all the previous ones, discarding them if they are the same.

That method is very slow, especially if a couple of thousand numbers are involved. A far quicker method is to put all the numbers into boxes — an array — first. Then as each box is chosen, change the number in that box to zero.

When a box number is selected by RND the program has to look at only one box to see whether the number has been chosen

already by looking for the zero. There's an example below.

Another subject... I saved three strings of 255 characters from my CPC8128 to disc using CHR\$(13) and as an.

When I tried to retrieve them I found twice as many returned, with every second one being CHR\$(13).

The spurious strings can be bypassed with an IF... THEN condition if you are aware of the bug. The problem does not occur with strings less than 255 characters long, and your books do not mention the

explain it more fully and a Software guide. Could you recommend a good simple explanation with easy-to-follow examples, and a good value firmware guide? I would also be interested in helping any other readers with problems with Basic. Thanks for the great mag! — Richard Brown, The Admiral Owen pub, 8 High St., Sandwich, Kent CT13 9EB.

■ A kind offer, and it might be an idea to send an eaz if you write to Richard. The Maxem manual is just intended to document the system rather than teach machine code, but it's true that it can be confusing for a complete beginner.PELL seven — it does get easier.

There are only two firmwares guides, both produced by Amstrad — Soft 158 and Soft 968. One is essential if you are going to get anywhere. Soft 158 is the original firmware guide for the CPC464. Soft 968 is a bit more expensive but covers all models including the disc drive routines. If you can afford it, I recommend you

Soft 158 is the original firmware guide for the CPC464. Soft 968 is a bit more expensive but covers all models including the disc drive routines. If you can afford it, I recommend you

Got it wrong

APPC-DOS8 fails, but in last month's **Get it Right!** listing a line went missing. To prevent a crash when you load a program and try to print the checkmarks, you need to add the following:

```
GO NEXT DATA
```

In line 65 of the Fancy Feet listing, the variable n should be 750, not 160.

get this later edition.

As for further reading, apart from an awful lot of practice I learnt machine code principally from one book — Amstrad Machine Language for the Absolute Beginner, by Joe Pritchard. It is published by Melbourn House, ISBN 0 85971 103 4.

It does contain a couple of mistakes, and it would be fair to say that some people don't like it, but it's a reasonable place to start.

If you look through previous issues you should find further recommendations.

Truly random RND

Out. — Arthur Pournant, Norlane, Australia.

■ Your method of preventing repetition is a clever bit of lateral thinking, and as such I missed it when writing the original reply.

The "bug" does in fact have a logical explanation. When you print a string to file the CPC automatically follows it with a CHR\$(13) just as it would on the screen to move the cursor to a new line.

When reading the strings back in, the CPC has to know where the ends of strings are, and it does this by looking for quotes, commas if the string isn't quoted and carriage returns — CHR\$(13).

This is fine until you write a string of 255 characters or more. 255 is the maximum length Basic can handle, so when it is reading the characters back into a string it gets to the last one,

realises the string is full and returns to execution of your program. If you write a string of, say, 300 characters by printing to file a character at a time suppressing carriage returns with a semi colon, when you read it back the CPC returns a string of 255 characters the first time — the maximum it can accommodate — and the remaining 45 characters the next time.

This is a reasonable way of handling long strings given Basic's length restriction. In the case of a string exactly 255 characters long the CPC reads them and terminates the string when it gets to the end, it doesn't read the following CHR\$(13) put in when the file was written because it has already found a reason to terminate the string — it reached maximum length.

Therefore the next read of the file sets the single CHR\$(13) which in itself is taken as an end-of-string marker and shows as an empty string.

```

10 FOR I=1 TO 1000:PRINT I:GOTO 10
20 FOR I=1 TO 1000:PRINT I:GOTO 20
30 FOR I=1 TO 1000:PRINT I:GOTO 30
40 FOR I=1 TO 1000:PRINT I:GOTO 40
50 FOR I=1 TO 1000:PRINT I:GOTO 50

```

```

60 RANDOMIZE TIMER
70 FOR I=1 TO 1000:PRINT I:GOTO 70
80 FOR I=1 TO 1000:PRINT I:GOTO 80
90 FOR I=1 TO 1000:PRINT I:GOTO 90
100 FOR I=1 TO 1000:PRINT I:GOTO 100

```

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