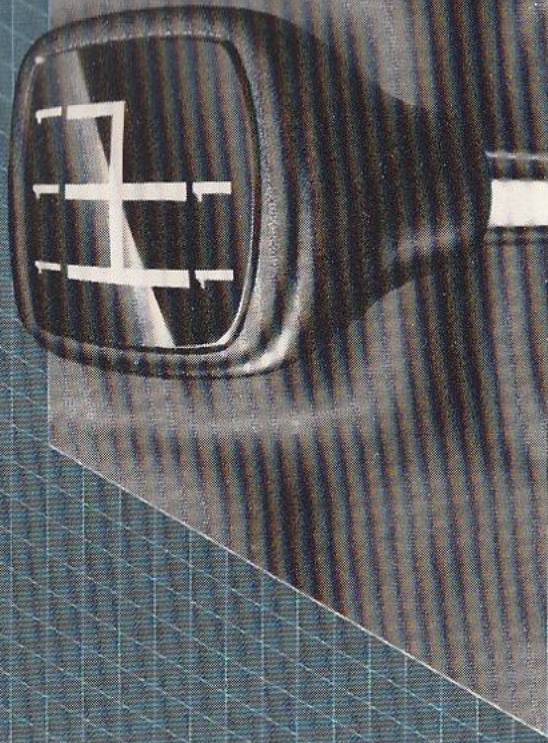


A PCW without Protext is like a car with one gear.



STOP PRESS Pocket Protext now available

Cars are useful. You sit down, drive away and — eventually — arrive at your destination. But some people comfortably speed along, while others don't.

The PCW is useful, too. You sit down, type away and — hopefully — produce a neat, accurate document. But some people crawl along using inferior software — while others use Protext.

Protext releases the power of your PCW. It is faster, easier and more flexible than any of its rivals.

And because Protext has been designed exclusively for the PCW, you don't need optional extras.

When it comes to text handling, Protext streaks ahead of the rest. Word search and replace is four or five times faster than rival packages can manage.

Naturally, you get full mail-merge facilities to produce top-quality personalised letters — with details read, reformatted and printed from separate files. And Protext works with any printer.

No stopping to check for spelling, either. Protext's integrated spell-checker scans your text files to produce consistently accurate, professional documents. It comes with an extensive dictionary — to which you can add thousands of your own words.

When you've seen how Protext moves, we know you'll never use anything else.

Amor's Protext costs an economical \$199.99. So if you have the words, we have the way...

All Amor products are now available from Strategy Software check price list centre pages for details.

Releasing your Amstrad's potential...

*Strategy Software, PO Box 11, Blackmans Bay,
Tasmania 7152*

*"Accept no substitutes —
this is the word processor
for the PCW."*

POPULAR COMPUTING WEEKLY

— PCW —

Contents

4 Feature

Using VIATEL – Telecom connects you to the world – Shane Kelly

7 First Steps

Arrays in Three Dimensions – Pete Bibby continues his introduction to programming

11 Sound Review

The Advanced Music System – reviewed by music editor Gabriel Jacobs

13 Software Review

Cherry Paint – Shane Kelly reviews a graphics program

14 CP/M

Taking Things at Random Part XI of Colin Foster's exploration of CP/M

18 Review

The Oasis Bulletin Board Service – Australia's newest bulletin board is reviewed by Shane Kelly

20 Machine Code Graphics

Moving Coloured Characters Around Your Amstrad's Screen – Roland Waddilove introduces the latest techniques

23 LOGO – New Series

Tame Your Turtle Part I – Ian Sharpe on Logo

27 Amtix

Reviews and Top Tips

43 Business Section

43 Sure Draw

For the Professional – Mike Crowe examines and illustrates the qualities of Microdraft, the latest drafting package from Timatic

48 Desktop Organiser

Your Sort of Companion runs under CP/M

50 Utility

Quarts into Pint Pots Will Go – Ian Sharpe gets more out of discs

52 Game of the Month

Gunpowder Plot an exciting fast game by Dak Long Lau

60 News

Latest Australian and U.K. news

63 TV Tuners

TV Tuners – As promised, reviewed by Roland Waddilove

64 10 Liners

Watch It and The Bouncer

Published monthly by Planet Publishing Pty Ltd under licence from Database Publications Ltd.
Mail: P.O. Box 11, Blackmans Bay, Tasmania 7052.
Telex: AA58134, Attn. HT163 General enquiries, phone (002) 29 4377

Annual subscription (12 issues)
Australia \$ 45
South Pacific (inc NZ) \$A65
Subscriptions – see centre page

Using Viatel

Many years ago, when I was building my first computer (it had 400 bytes of RAM and was programmed in HEX) I had no inkling of what the future held. If anybody had told me that I would be communicating on a regular basis with a remote mainframe I would have sent for the men in white coats to take them away. Now it's nothing for me to contact Western Australia once a week and be talking to such diverse places as Orange and Alice Springs in one day. The miracle that lets me do this is VIATEL, Telecom's implementation of the British Viewdata system known as PRESTEL.

With VIATEL, I am plugged into a wide range of goods and services that are available to me without leaving my computer. I don't know if this is good for society, but it is surely the most convenient way I've found to get what I want without having to drive into a major population centre. I can get just about anything I want with VIATEL, my credit card and Australia Post. For me, VIATEL works, and works well. Now you know my opinion of VIATEL, you may more accurately judge the contents of this article when weighing up if VIATEL will fill your needs.

There are, as I see it, three separate parts to becoming an VIATEL junkie. They are the hardware (and software), the initial connection and what you get once you're online. Since the hardware is necessary before anything else, we'll discuss that first.

Viatel hardware (and software)

Because you're reading this article in an AMSTRAD computer specific magazine I'll talk from an AMSTRAD point of view. CPC's are all machines of the 6128, 664 and 464 type. PCW's are the 8512 and 8256. PC's I'll leave to the PC specialist magazine.

CPC's and PCW's all need a serial interface before you can even contemplate dialing anyone. In the CPC range there are complete packages available consisting of serial interfaces and modems. These will usually include software as well. I know of no complete packages for PCW range available in OZ. If you are a computer user as opposed to a computer enthusiast then this is the easiest way to start communicating as the hardware and software all work together without you doing anything more than plugging them together. It can work out more expensive than the discrete component approach, but it's probably worth it if you are not adept at cobbling together cables and don't know an RS232C interface from a floppy disc. If you're a PCW owner then you have no choice — the discrete component approach or nothing, as far as I know.

Serial interfaces are available from many sources for the CPC range and I have heard no bad reports about any of them. I chose the AMSTRAD serial interface because a) It had VIATEL software built-in b) It had a printed and comprehensive instruction book c) It came

from the makers of my computer and d) because I could return it to any number of dealers. These are just my reasons and I am not trying to influence you one way or the other. The PCW serial interface I have no personal knowledge of, but a gentleman with whom I am acquainted has used it for computer to computer transfers so it appears that it, too, works as stated.

OK, your choice of serial interface is not nearly as important as your choice of modem. Firstly you must decide what features you want in a modem and how much you are willing to pay to get them. You can spend as much on your modem as you did on your computer and still not be happy with it, so I propose to run down some of the features of modems and what they do so you can judge for yourself.

1) SINGLE SPEED MODEMS — as the name implies, they work at one speed only. This is usually 300 baud, but VIATEL compatibles are now appearing that only use the 1200/75 baud rate. These modems have very few features and have only one redeeming feature — they are the cheapest on the market. These are not recommended except where you feel that all you wish to do is access VIATEL and that you would have no use for any other dial-up service in the future.

2) DUAL SPEED MODEMS — usually a combination of 300 baud and 1200/75 baud rates with a few extra features thrown in like an answer or originate switch at 300 baud and sometimes an auto answer mode that is not much use

unless people are in the habit of dialing you up and sending data while you are not at home. This type of modem makes up the bulk of the market and is the type of modem you will probably settle for in the end. Beware though that there are considerable price differences between the bottom of the range and the top of the heap – and just as much variance in the quality.

3) ALL SINGING, ALL DANCING MODEMS – these are the ones that will break your bank. They can be controlled by the computer completely and respond to what is known as the AT command set to do all the fancy things like automatically detecting the speed of the incoming data, automatically answering the phone and disconnecting it when you are through and some even have data encryption built in. These are the type of modem that you will probably be talking to when you access other dial-up services.

4) MODEMS PUBLISHED AS CONSTRUCTION ARTICLES IN HOBBY MAGAZINES – these are some of the cheapest and best. They usually have far more features than an equally priced modem and are usually well supported by the magazine itself. There are only two catches – you have to build them yourself, and they are not TELECOM approved. For the enthusiast this is probably the way to go to get more value for your dollar. For the user it is not a recommended choice.

Remember that this is the public telephone network that you are using and as such ALL equipment attached to it **MUST** be approved by TELECOM. So, choose an approved MODEM and not one advertised as 'meeting TELECOM specs'.

Now, having decided on your hardware configuration, try and track down someone who is using the identical setup and get his/her comments and reactions. If this is not possible, try to get the dealer to agree to take back the modem if you can't get it to work with your computer setup. This is unlikely, but possible as the RS232C standard used by the serial interface and the modem may be incompatible. Daft, isn't it? A standard that in some cases won't be the same! Computer and peripheral makers have a lot to answer for! I feel strongly about this point and I'll tell you why. I am supposed to know something about computers and interfaces etcetera but it took me 12 hours and several STD phone calls to the modem's manufacturer in Melbourne before I had a working configuration. Be warned that the modem manufacturer will blame the serial interface and vice-versa. So if it is at all possible, get the dealers to supply a cable that works. Pay extra for it if you have to, because it will save an awful lot of frustration later.

Hopefully by now you have hardware that works. Try it out by using one of the Public Domain programs available for communicating with remote computers. For PCW owners, the MAIL232 program is adequate for dialing up Bulletin boards (it is NOT usable for VIATEL). For CPC owners, try to get hold of a copy of one of the MO-DEM7 type programs. The local user group will have one. You're not in the local club? Shame on you! They are the greatest source of free information and help you will find.

OK, the hardware works. Now we get around to the software. Remember I bought the AMSTRAD RS232 because it had built-in software. I nearly quit VIATEL because of that software. I was blam-

ing VIATEL for the lousy response and garbage that was appearing on my screen, but in actual fact it was the built-in software that was not up to AMSTRAD's usual standard that was letting me down. So get yourself some decent software for VIATEL. I now use HONEYVIEW on my CPC and it is excellent. For PCW owners the only software I know of that is available in OZ is SAGESOFTS chit-chat combo. This retails here at around four hundred dollars. Alternatively, take your chances on sending some pounds sterling to the UK for some of the other packages that are advertised in the UK magazines. VIATEL software is hard to come by for the CPC's and the PCW's in OZ except when it is supplied as part of a package deal – and you take your chances with that software as well.

You will find it hard to test out your VIATEL software without joining VIATEL unless you have a friend who will let you use his/her account. So how do you actually go about joining VIATEL? That's the simplest part of the whole operation. Just contact your local Telecom Business Office and ask for an application form for VIATEL. If you are considering becoming a person who sells goods through VIATEL (Service Provider as they are known) then you can ask for an information pack at the same time. If your local TBO can't help with the information pack then write to VIATEL direct. Once your application is in then shortly you will receive your starter pack and your mailbox number, a customer I.D. number and a password. The first number (your mailbox number) is for publication. The next two must be kept secure at all times as any unauthorised use of these numbers will result in you being charged for the time and for any goods pur-

chased or services used in your name. Change your password the first time you log on. And regularly thereafter. Treat your VIATEL account as if it was a credit card with a limit of \$50,000—you simply can't afford to lose it, so protect it!

Also in your starter pack are instructions on how to operate it, what special services are available, how to pay for it and what to do if you have service difficulties. You will also receive the latest directory and magazine. This is a list of all the service providers arranged alphabetically and a subject index also arranged alphabetically. The magazine section contains features and articles from TELECOM, service providers and sometimes even users. They are generally informative and give you a greater appreciation of the versatility of this system. To go into detail about service providers would take far more space than I have available here, but just to give you an idea, you can get up-to-date information on to-

days horse races, do some banking, play games, enter competitions, get involved in a discussion on just about anything, and meet people with similar interests from all over OZ.

If you are in business (or thinking of starting one) then your perspective of VIATEL will be quite different. You will want to know who VIATEL reaches; what it costs and is there a cheaper way to do it. Currently there are two options open to you. You may become a fully-fledged service provider or you may become a sub-provider, renting pages from a service provider that also supplies technical information and advice. They will charge for these services, but this may be a cheap way to test the waters if you do not want to make a full commitment until you are sure of the response. There are quite a few so-called 'umbrella organisations' that provide these services. One of the biggest is MICROTEx

666 which has thousands of pages of information for microcomputer users and others. Another largish umbrella organisation is CABLE SHOP who also provide these services.

A further option is to start a CLOSED USER GROUP. This simply means that access to the service provider is restricted to those who have joined this group. This may be a viable alternative for some companies who have data that they wish to be accessible to a restricted few in the organisation, but not available to everyone.

Well, that's an overview of Australia's own teletext system that is growing, if not in leaps and bounds, then at least at a steady rate that augers well for its future. I use it at least once a week, sometimes more often, and I am still finding more services that interest me as I go.

Right, here is what you have all been waiting for — the prices!

a) FOR HOME USERS

\$3.50 PER MONTH SUBSCRIPTION

\$0.09 PER MINUTE CONNECTED BETWEEN 8am and 6pm WEEKDAYS

\$0.06 PER MINUTE AT ALL OTHER TIMES

b) FOR BUSINESS USERS

\$12.50 PER MONTH SUBSCRIPTION

\$0.09 PER MINUTE CONNECTED BETWEEN 8am and 6pm WEEKDAYS

\$0.06 PER MINUTE AT ALL OTHER TIMES

ADD TO THIS \$0.20 PER ACCESS AS A LOCAL TELEPHONE CALL CHARGE

c) SOME SERVICE PROVIDERS CHARGE FOR THEIR INFORMATION. THIS VARIES AMONG SERVICE PROVIDERS BUT YOU ARE WARNED BEFORE ACCESSING THESE PAGES.

d) SERVICE PROVIDER CHARGES

1) MONTHLY SUBSCRIPTION FEES

SERVICE PROVIDERS (50 FRAMES) \$260

SUB SERVICE PROVIDERS

STANDARD USER CHARGES PLUS \$40

CLOSED USER GROUPS (1-5 PER CUG) \$29

CLOSED USER GROUPS (OVER 5) \$23

2) CHARGES FOR ADDITIONAL FRAMES PER MONTH

50 to 1000 PER FRAME \$0.45 (IN LOTS OF 50)

1000 TO 5000 PER FRAME \$0.30

OVER 5000 PER FRAME \$0.20

Programming arrays in three dimensions

By PETE BIBBY

By now you should have a good grasp of arrays. We've seen how an array is made up of an ordered list of elements and is used to structure data in an easily-managed form.

Also we've learnt how to use pointers to pick out a particular element from an array.

Not content with exploring one-dimensional arrays and parallel arrays, last month saw us entering the world of two dimensional ar-

Position Subject	1st	2nd	3rd
English	60	59	45
Computing	45	39	35

Figure 1: The first three positions in two subjects

rays. If you think that logically this means that we'll be dealing with three dimensional arrays this month, you're right.

Program 1 shows a 2D array being used to hold the data from Figure 1.

The data to be processed by the program consists of the first three marks in a class's English and Computing exams. They're obviously better at English.

Don't think I'm obsessed with school. In fact the figures could be the times of the winners of two races or any other data. The point to grasp is that data in tabular form is just made for putting into a two-dimensional array. We saw last

time how it makes it a lot easier to handle.

As it is, I'll stick to the classroom example as I think most people will be able to appreciate it. At the end of this article you'll see another example of using a two-dimensional array.

The actual code of Program 1 should be fairly straightforward by now. Line 20 sets up the two dimensional array *mark()*. This has six elements (2 times 3 is 6) and each element is uniquely located by means of the index, the two subscripts in the following brackets.

The nested FOR...NEXT loops of lines 40 to 80 are there to READ the data into the array. In our example programs this data is tucked away at the end of the program. In practice it would probably be read in from tape or disc or typed in at the keyboard.

Once we've got our data in the array we can then go on to interrogate it, manipulating it to tease out the elements we want. In this program we just want the top mark in each subject, so we set the final

```

10 REM Program 1
20 DIM mark(2,3)
30 REM Structuring the data
40 FOR subject=1 TO 2
50 FOR position=1 TO 3
60 READ mark(subject,position)
70 NEXT position
80 NEXT subject
90 REM Interrogating the data
100 FOR subject=1 TO 2
110 IF subject=1 THEN PRINT "The top
English mark is ";mark(subject,1)
120 IF subject=2 THEN PRINT "The top
Computing mark is "; mark(subject,1)
130 NEXT subject
140 DATA 60,59,45
150 DATA 45,39,35

```

Program 1

FIRST STEPS

You'll learn a lot more about programming by trying it out for yourself than by reading about it

subscript (which deals with the position) to 1 and use a FOR...NEXT loop to ferret out the relevant elements from the array.

Don't just be content with understanding the program, try altering it so that it gives you the second and third marks in the subject of your choice. Or maybe it could tell you the subject and mark of each element under 50. Or, if you make them up, it could even have the names of the top three kids, (parallel two dimensional arrays, no less).

You'll learn a lot more about programming by trying it out for yourself than just by reading about it. And if you find the concept of two dimensional arrays a little strange, don't worry. As you come to need them they'll make more sense.

If you like you can look on two dimensional arrays as just a set of one dimensional arrays. Figure II shows the data of Program I in this form.

DIM address(5,20)

you could look on it as either a table of 100 elements (5 times 20) or as a set of five arrays, each consisting of 20 elements. To find the value of the element *address(3,7)* you can either imagine the micro looking at the element that is found at the intersection of the third row and seventh column of table or the seventh element of the third array.

To sum up, the first subscript moves you along one dimension to select an array, the second subscript takes you to the required element of that array.

Notice, however, that although each element is located by two numbers, each element only contains one item of data.

Another point is that there is more than one way to structure a set of data. Program II deals with exactly the same set of data as Program I but the array is dimensioned differently.

Here the data is still held in a two dimensional array, but now the first subscript refers to the position in class, the second to the subject. The data is the same, it's just structured differently (as you'll see if you look at the data in lines 170 to 190).

The point to grasp is that both methods work and to the micro it makes no difference. You can have the data structured as you want

Position	SUBJECT	
	1	2
1st	English 60	Computing 45
2nd	59	39
3rd	45	35

Figure II: Another way of looking at two dimensional arrays

Here there are two separate arrays, one for the English marks, one for the Computing marks. The first subscript of the two-dimensional array *mark()* can be looked on as deciding which of the two single arrays is to be chosen. The next subscript is just a pointer to the required element of that particular single dimensional array.

So if you had an array dimensioned with:

```

10 REM Program II
20 DIM mark(3,2)
30 REM Structuring the data
40 FOR position=1 TO 3
50 FOR subject=1 TO 2
60 READ mark(position,subject)
70 NEXT subject
80 NEXT position
90 REM Interrogating the data
100 total=0
110 subject=1
120 FOR position=1 TO 3
130 total=total+mark(position,subject)
140 NEXT position
150 meanAverage=total/(position-1)
160 PRINT "The mean of the first three
English marks is "; meanAverage
170 DATA 60,45
180 DATA 59,39
190 DATA 45,35

```

Program II

There's a lot you can do with data once you've structured it in an array

and so long as you treat it consistently you get the right results.

Subject \ Position	Position		
	1st	2nd	3rd
English	70	65	64
Computing	80	75	70

Figure III: A second set of results

Having said that, however, I'd advise you to structure the data in a way that you find natural. The computer may handle it with no problem but it does help if you yourself find it easy to understand. I prefer the way the data is structured in Program I. To me, it's simpler to look on the array as:

mark(subject,position)

where I can use the value of the subscript *subject* to "switch" between the lists of English and Computing marks. In fact that's how I think of the subscripts as a series of switches or choices that provide me with routes into arrays.

I find that idea very helpful when we come to things such as three dimensional arrays, which we now have. Suppose that instead of just having the marks for one class you had the marks for two. How would you handle them? You could, of course have two, parallel, two dimensional arrays such as:

markClassOne(subject,position)
markClassTwo(subject,position)

and switch between the two as needed. Or you can lump them all into one big three dimensional array.

This is what I've done with Program III which takes the data in

```

10 REM Program III
20 DIM mark(2,2,3)
30 REM Structuring the data
40 FOR class=1 TO 2
50 FOR subject=1 TO 2
60 FOR position=1 TO 3
70 READ mark(class, subject, position)
80 NEXT position
90 NEXT subject
100 NEXT class
110 REM Interrogating the data
120 PRINT "Which subject? English-1
Computing-2"
130 INPUT subject
140 PRINT "Which position? 1-3"
150 INPUT position
160 FOR class=1 TO 2
170 PRINT "Class" class "mark" mark
(class,subject, position)
180 NEXT class
190 REM First class
200 DATA 60,59,45
210 DATA 45,39,35
220 REM Second class
230 DATA 70,65,64
240 DATA 80,75,70

```

Program III

Figure III and adds it to the data from Figure I.

We set up the three dimensional array with line 20's;

DIM mark(2,2,3)

The "three" of the three dimensions refers to the fact that each element now has three subscripts used to position it in the array. If you like you can imagine Figure II stuck on top of Figure I forming a block of data made up of 12 elements (2 times 2 times 3). Myself I'd rather look on it as a set of switches.

The first subscript can be 1 or 2 and chooses between the classes. The second chooses between the subjects and the third between the positions. Once all the switches are set the index (the bit in brackets) points to one particular element in the array.

7		0
7		
0		

Figure IV: Noughts and crosses

FIRST STEPS

The extra dimension our new subscript has given us allows us to choose between the two sets of arrays holding the data for each class.

Despite the fact that we're now handling another dimension, the workings of Program III should produce a feeling of déjà vu. The lines reading the data into the array are practically the same except now there's a third FOR...NEXT loop. This deals with the task of handling the data for the two classes.

Now when we interrogate the data the program will give us the marks for the same subject and position in each class. Can you alter the program so that it compares the average of the marks in each subject or gives those subjects where two or more children got over half marks? And can you mugtrap the inputs and make the messages a little clearer? You could even add more data items to make the example more realistic.

As you can see, there's a lot you can do with data once you've structured it in an array. And, as you might guess, you can have more di-

mensions if you wish, though that's rare in practice.

The main point to bear in mind is that while data is easy to handle in arrays, there may be more than one way to handle it.

A little time and trouble thinking things out before you start coding can save you a lot of time and trouble later.

Now let's get away from the classroom and look at another use of arrays. Take a look at Figure IV, which shows one stage in a game of noughts and crosses.

How would you represent this if you were writing a noughts and crosses program? There are nine places to play in, so you could number each one from 1 to 9 and keep track of things that way.

However isn't it just made for a two dimensional array? Program IV shows one way of reproducing Figure IV on the screen.

There's nothing difficult about the program. Line 20 sets up a two dimensional array *grid\$(3,3)*

```
10 REM Program IV
20 DIM grid$(3,3)
30 REM Reading the state of the game
   into the array
40 FOR row=1 TO 3
50 FOR column=1 TO 3
60 READ grid$(row,column)
70 NEXT column
80 NEXT row
90 REM Displaying the game state
100 FOR row=1 TO 3
```

```
110 FOR column=1 TO 3
120 PRINT grid$(row,column);
130 IF column<3 THEN PRINT " ";
140 NEXT column
150 PRINT
160 IF row<3 THEN PRINT "....."
170 NEXT row
180 REM Game state data
190 DATA x,"","o
200 DATA x,""," "
210 DATA o,""," "
```

Program IV

whose nine elements will hold the information for the display.

The following FOR...NEXT loops take the data from lines 190 to 210 and place it in the array. The nested loops beginning at line 100 then print out each element in turn until the whole grid appears.

The IFs and PRINTs of lines 130 and 160 are just there to make the grid look better. You can leave them out if you wish.

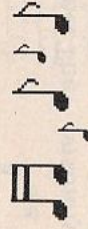
Once you've grasped how Program IV works you're well on the way to writing your own noughts and crosses program. After all, the program used the information in *grid\$()* to display the state of the game for a particular set of information, so why not use the array to keep track of a whole game?

You could start with the array full of spaces and then, as the players give values for *row* and *column*, put the relevant symbol in:

grid\$(row,column)

after each move. That way the array will record the state of the game. Have a go at writing the program. You'll find that it will increase your understanding of arrays enormously. And, if you find it easy, why not have the computer declare the winner or even take you on itself?

It's your decision. And there'll be more on decisions next time.



The Advanced Music System



GABRIEL JACOBS
reports on a
software
music editor

Rainbird's Advanced Music System is an upgrade of their original Music System. It runs on the 464, 664 and 6128 and is quite simply the best software music editor you can buy for these machines.

It basically consists of five inter-linked modules — keyboard, an editor, a synthesiser, a linker and a printer. All are controlled from a main screen divided into graphic representations of devices. You move around these devices on a

circuit, and as each becomes active, it is highlighted by a 3D shadow effect.

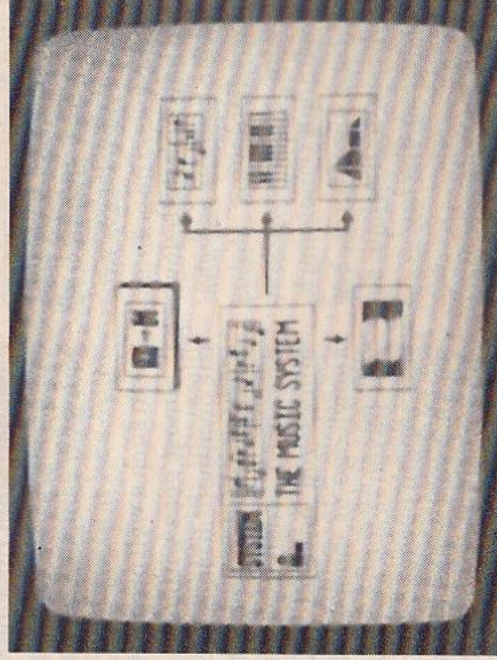
The principal screen area is a window on to two staves (treble and bass) and notes can be entered either directly or via the top two lines of the computer keyboard configured as a piano. Envelope selection, dynamics, accidentals, metronome settings and other parameters are controlled either by icons or pull-down menus. Note information is

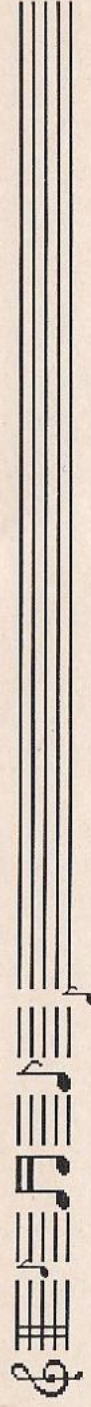
stored in memory, and can later be saved to disc.

The keyboard is a real-time recording device for the three available sound channels (voices), and notes are sounded according to the current settings for envelope and dynamics. The range is just under two octaves, but this can be extended to the full range of the sound chip by using an octave-shift device. You can record only one voice at a time, but you can keep in sync by playing back the tracks already stored while recording. If you make a mistake it is a simple matter to overwrite the whole or part of a voice.

As you play, notes of the correct pitch and duration appear in the note window. Bar-lining is automatic, with ties being inserted where necessary, though the facility can be manually overridden for odd-sized bars.

In Edit mode you can enter music without the pressures of real-time recording, and edit note





information recorded via the keyboard. All three voices can be displayed, and scrolled and sounded from and to any point.

The editor has all the facilities of the keyboard for bar-lining, envelope settings and so on, but works with a combination of pull-down menus and various keystrokes.

There is a wide range of editing features – notes and rests can be inserted or deleted, note stems inverted, dynamic markings and repeat signs added, and much more. There is even a buffer, called a notepad, for holding half-baked ideas which can later be edited and inserted into a composition.

If you're used to using envelopes you'll be impressed with how easily they can be controlled with the synthesiser module. If you haven't used envelopes before you'll be amazed at what you can create, from gentle sustained vibratos with long decays, to wind, strongly attacked pitch slides. With your Amstrad hooked up to a hi-fi system the effects can be stunning.

With the synthesiser the excellent graphics really come into their own. There is total flexibility in using all envelope parameters, but you are shielded from the complexities of envelope creation and modification with, once again, a circuit of devices, and beautifully drawn pitch and amplitude graphs.

These can be used to experiment with sound shapes. The current shape can be sounded at any time without leaving the module, and when you're satisfied with the result the envelope can be incorporated into a tune, or stored for future use.

The main synthesiser screen

can be popped up at any time. The devices it contains are used to switch between the pitch and amplitude graphs, and to set the envelope number, any of 31 noise numbers for percussive effects, step sizes, step numbers and the general shape of the graphs.

Two sets of seven envelopes are available. Only one set can be active but a swapping facility allows you to read envelopes from the inactive set into the active one.

The Linker will handle a sequence of up to 13 separate files, any of which can be repeated at any point in the chain. The chain can have up to 99 links, which effectively means hours of continuous music.

The printer module will drive a dot matrix printer and offers a range of layout options rarely found, if at all, on comparable editors.

To take three examples, two files can be handled simultaneously (making it possible to print six-part music on a single stave), notes can be beamed (grouped with horizontal lines), and lyrics can be added to the score.

In addition to the five principal modules there are a number of other facilities and devices.

A command line with pull-down menus is used for loading and saving operations, displaying status information, and setting various values such as Italian tempi markings, key and time signatures, bar and note emphasis, and colour selection for the screen display.

A record/play-back device sets the volume, envelope and octave range of each voice. A bar meter

visually indicates your position in each of the three voices, and the length of each voice in relation to the others.

There is also a free space indicator – you can have up to 999 notes in memory – a smooth-scrolling metronome icon, and a record/play-back controller and indicator. At play-back the volume of each voice can be increased or decreased independently.

In both keyboard and edit modes, key signature is automatically taken into account. So, for example, in the key of E flat, entering the note A flat will display a plain A in the note window.

Automatic key signature is a feature of a number of music editors, but because of the constraints it imposes some of them cannot cope with the proper transposition of accidentals. However, The Advanced Music System has an intelligent transposition facility, which will insert the correct accidentals – if necessary double sharps and double flats – exactly as they would be in normal notation.

The package comes with 16 pre-set sounds, and a library of demonstration tune, parts of which can of course be incorporated into your own compositions.

In such a well produced program it almost goes without saying that the documentation is excellent. But don't expect to be able to use The Advanced Music System properly unless you have at least a basic knowledge of musical notation. If you haven't, the very existence of this superb package should make it worth your while learning something about it.

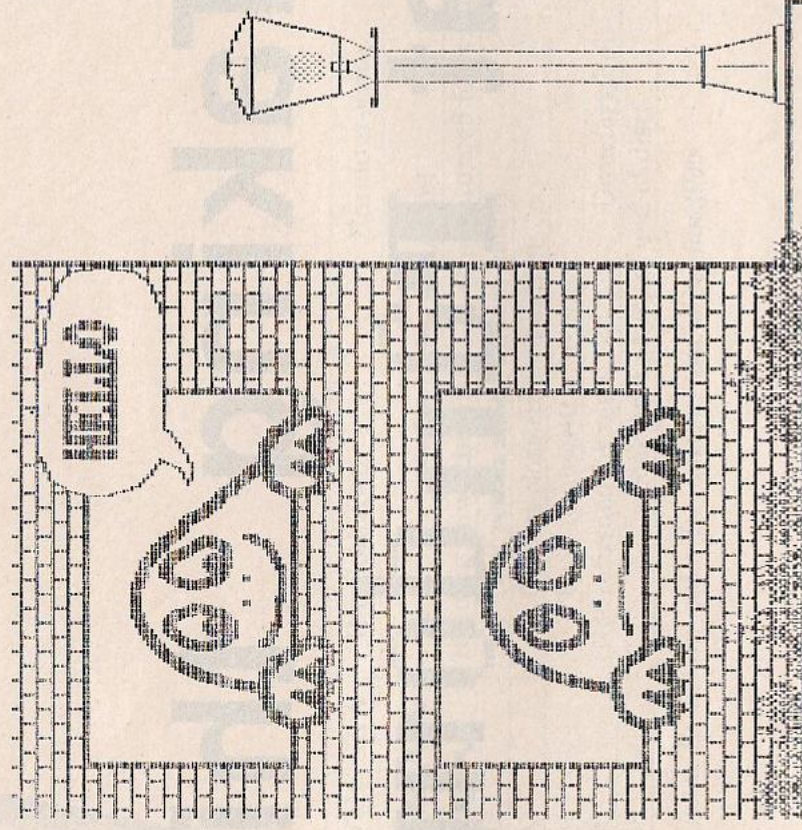
Cherry Paint

reviewed by
Shane Kelly

I have the artistic ability of a rock. Faced with the simple task of drawing a box, I quiver and quake and generally faint. When I was given an art package to review, I nearly said no. But ever the bold adventurer, I inserted disc in drive a: and typed RUN"CHERRY".

After quite some time I found myself faced with a screen full of icons and patterns and things. It looked quite daunting, but on pressing the up arrow the pencil moved. And as it moved up to the top of the screen it became an arrow. Now, having had some small experience with WIMP software I thought *Aha!* there must be an execute key somewhere around here. After quite a while I found it. It was the space bar. So, now I could move the pointer and do something when I got to where I was going. From this point on, the only thing that was going to be nerve-racking was actually drawing something. I'll get to that in a while, but first let's examine our options.

The first menu is the file menu and as you would expect, this covers things like loading and saving, printing, wiping the page, getting the disc directory, and ordinary stuff like that. The next is the edit menu and allows cutting and pasting, copying, inverting and deleting of a window area. Next we have the special menu which will allow us to view the page in miniature, zoom in



on a particular area and alter it at pixel level, and most importantly for us clutzes, an undo function that will wipe out our mistakes. There are times when undo will not work and selecting new page is one of them so be careful, your page is not recoverable after you have 'newed' it.

Now to the heart of the matter—how easy is it to make a masterpiece? Well, for anyone of average drawing ability it will be no problem. For me, manipulating the various options was a breeze. The picture was lousy (or a Picasso, depending on your point of view) but it was created with ease as I switched between the spray can, pencil and brush. I defined windows and inverted them, wiped them out and generally had a ball. I doubt that my artistic skill will improve any if I keep using Cherry Paint, but at least I will enjoy creating a mess.

Seriously now folks this is a solid workmanlike package that can be recommended for anyone who

wants a mode 2 drawing package. I think that it will be absolutely perfect for creating graphics and clip-art for Stop Press/Pagemaker and I actually did reload a screen into Stop Press just to make sure that it would work. Be careful when you do this as Stop Press clips the top 1/5 of the screen off, so design your Cherry Paint screen accordingly.

The one bug I could find in the program was actually in the configuration program which kept giving me an error in 900. This turned out to be a Bad Argument in a BAR command. If the distributor doesn't fix it, just alter it to read :DIR<@A\$ and resave it onto the original disc (*Be Careful !*). Rerun the config program to set the size of your printed picture which can be a full page to a mini-pic to see what it will be like.

If you want a good solid package that works in mode 2 and can produce mono art work to a high standard, choose Cherry Paint. You won't be disappointed.

Taking things at random

We started our tour of CP/M's discfunction calls last month by looking at how to open, read, write and close simple sequential files. Such files, while simple to use, impose the restriction that we can only read or write them from the start, one record after another.

Often we will want to get at a particular record in the middle of the file, or we'll want to add information to the end of an existing file. To do this we must use random record access.

Let's look at reading a file first. As with sequential access, we must

use BDOS function 15 (open file) to tell CP/M which file we are going to be reading. I described how this function was used, and what results it returned, last month.

Now, however, instead of using Function 20 (read sequential) to read data starting from the beginning of the file, we will call Function 33 (read random) and extract a record from the middle.

This would obviously be a much more useful method than reading records sequentially if we were writing a database program, for example.

As with write sequential, we pass to the BDOS the address of an FCB in memory. This time, though, we put the record number we want to read into the Random Record field of the FCB (bytes 33 and 34, referred to as r0 and r1 respectively).

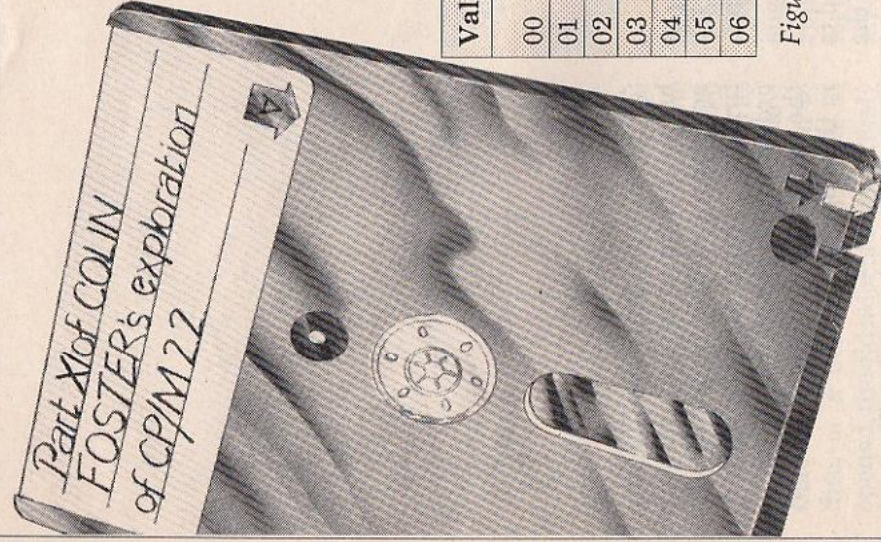
This is a 16 bit number, stored in the usual Z80 order of less signifi-

```

MFCB:  defb    02
        defb    'OURFILE'
        defb    'DAT'
        defb    00
        defw    00
        defb    00
        defb    00,00,00,00
        defb    00,00,00,00
        defb    00,00,00,00
        defb    00,00,00,00
        defb    00
        defb    43,00,00
; Drive code - 0 = current default,
;
; 1 = A:
; 2 = B:
; Filename and type in upper case
; Ascii
; Extent number
; Reserved
; Record count
; Data allocation blocks d0 . . d15
; Current record byte
; Random record number

```

Figure 1: MFCB for random access of record 67 & 43



cant byte first (r0) and more significant byte second (r1). Byte 35 (r2) must be zeroed, as a non-zero value here indicates an overflow beyond the end of file.

So, for example, if we wished to read record number 67 (&43) from a large file B:OURFILE.DAT (counting from the start of the file, with the first record as number 00), we would layout our Memory FCB as shown in Figure 1.

Function 33 (read random) will then read the record from disc into our specified DMA buffer (or into the default buffer at &80 if we have not specified one previously using Function 26). On return, Register A will contain a code indicating whether the operation was successful; the values this can take and their meaning are listed in Figure II.

We use Function 34 (write random) in a similar way. Again, we set up a Memory FCB complete with r0, r1 record number in bytes 33 and 34. Calling the function writes

the data in our DMA buffer to the specified record position in the file, overwriting exactly the data which was there previously. The Return codes from this function and their meanings are also shown in Figure II.

If we wish to create a new file, then as before we must use Function 22 (make file) rather than open file. Using random record access, however, we can write data to it in any order, rather than one record after another from the beginning as we had to with sequential access.

So, for example, we could write data to record numbers 2, 45, 23 and 14 only, and in that order. Our file would then have record number 45 (the highest number written) as the last one, and all the records we didn't put data in will be present but blank.

If we want to add new information to the end of an existing file, we can use Function 35 (compute file size) to help us.

Figure II: Return codes for random read/write functions

Value in A	Random read	Random write
00	Operation successful	
01	Reading unwritten data	(Not returned for write)
02	(Not returned in random mode)	
03	Cannot close current extent	
04	Seek to unwritten extent	
05	(Not returned for read)	Directory Full
06	Seek past physical end of disc	

If we supply this function with the address of our MFCB as before, the BDOS will fill in the r0, r1 and r2 bytes for us with the number of records in the file (which is the same as the number of the record immediately following the end of the file as their numbering starts with 00).

Note that if r2 returned non-zero, then the file already contains 65,536 records, which is CPM's maximum file size so we cannot add any more to it. This is rather unlikely to occur on an Amstrad, as our 171k discs would have trouble holding a file 8 megabytes in size!

If we now call write random, we can write our data straight into a new record which will be attached to the end of the file. We are now free to add as much data as we want so long as we increase the value of r0, r1 by one each time after we write a record, thus "faking" sequential access.

It is not necessary to call Function 16 (close file) if we have only

been writing to existing record positions within a file.

If, however, we have either created a new file or added data on to the end of an existing one, we must call close file once we are finished or the information in the file's directory entry will be incomplete.

The above is unfortunately only a very brief examination of random record access. Some of the more subtle aspects, such as combining sequential and random access, are left as exercises for the reader.

Random access is an extremely powerful feature of CP/M but also holds many pitfalls for the unwary. The best way to learn more – as with anything – is to try doing it yourself. Don't give up when your first efforts fail!

A good Z80 debugger such as Rick Surwilo's Z8E.COM is invaluable for this sort of work. Z8E, for example, allows you to open a window on the screen to display the contents of an area of memory while you are tracing the execution of your program. This lets you watch the contents of your FCBs and DMA buffer change as you call the BDOS functions. There are several such products (including Z8E itself) available in the public domain for a nominal charge through the various user groups – make the most of

them.

The last main topic within the BDOS disc functions is that of directory searching.

Obviously, we will often need to know whether a file exists on the disc for example, if we have been asked to read it or to make sure we don't create a new file with the same name as an old one by mistake. To do this, we use BDOS Functions 17 and 18 (search for first and search for next, respectively).

for any other extents the file may have. This function is used in exactly the same way as search for first and returns the directory record containing the next extent and the appropriate directory code in A in the same way.

Both these functions will accept wildcards in the filename, allowing us to use ambiguous filenames. We can use a question mark '?' in place of any or all of the letters in the filename in our MFCB; this will force CP/M to ignore those letters when it matches filenames.

If we supply an MFCB containing the name of the file we want to look for, search for first will search the disc directory until it finds a match. It will then return the directory record containing the first entry which matches in our DMA buffer, and a value from 0 to 3 in Register A.

This directory code tells us which of the four directory FCBs in the directory record contains the first extent of the file we are looking for. If CP/M could not find the name we specified in the directory, then the function will return with a value of 255, & FF in Register A.

Once we have found the first extent in the directory which matches our filename we can use search for next repeatedly to search

Thus, for example, searching for OURFILE???? will return matches with OURFILE.DAT, OURFILE1.DAT and OURFILE3.BAK if these are on the disc.

If the drive entry in the MFCB (byte 00) is a question mark, then a supersearch is made on the current default drive for matches with files in all user areas. Normally only the current user area on the specified drive is searched.

Associated function calls are Functions 19 and 23, DELETE FILE and RENAME FILE respectively. The first of these, as its name suggests, will make the drive bytes in all the extents of the file we specify in our MFCB into & E5, CP/M's deleted extent marker.

The file will no longer be returned in a directory search and the directory and data space occupied by it on the disc will be reclaimed as unused by the BDOS. This means that when data is next written to disc, or a new extent of a file is opened, the old information is likely to be overwritten.

Therefore, if you ever delete a file by mistake, it is vital that you undelete it by changing the drive & E5 bytes in all of its extents back to a valid user number (0..15) before you allow any write operation to take place to that disc. Disc repair/sector edit type programs will allow you to do this. Alternatively, a program such as UNERASE.COM will do it for you with rather less safety.

Function 23 (rename file) requires us to supply an MFCB which is different to the normal type. The first 16 bytes contain the drive and filename of an existing file, as usual, but the second 16 bytes must also contain a drive and filename, laid out in exactly the same way as the entry in the first 16 bytes.

The file specified by the first filename, on the drive specified by byte 00, will then be renamed to the second name. Although a drive value must be present in byte 16, it is not used – obviously, the new file is on the same drive as the old one.

One vitally important function is Function 13 (reset disc system). This requires no parameters and returns no results. As its name suggests it resets the BDOS to a state in which no drives have been logged in, and sets RW status for all drives.

This means that the first time that we access a disc or drive after a call to Function 13, the BDOS will automatically log it in to allow us to write to it. We must reset the disc system in this way whenever we think a disc may have been changed in one or both of the drives.

If we change discs without telling the BDOS that we have done so then CP/M will abort with the infamous "Bdos Err on x: R/O" message the first time that we attempt to write data to the new disc.

We can find out which disc drive is currently selected as the default by calling Function 25 (return current drive). This requires no parameters and returns the number of the current default drive in Register A, 0 for Drive A or 1 for Drive B.

Alternatively, we can just look at the byte at address & 0004, which is where CP/M stores the default drive number. The default drive is the one used in disc operations where we put a 00 in the drive

entry of our FCB (byte 00) rather than specifying either A or B explicitly.

We can then use the related Function 14 (SELECT DRIVE) to change the current default from A to B or vice versa at any time to switch the I/O from our routines to either disc.

There are several other assorted BDOS disc functions which are mainly concerned with file attributes and system data. We have, however, looked in detail at all of the more complex functions which you are likely to need in normal programming. Functions such as `get_addr(DPB)` and `get_addr(ALLOC)` are really only of interest to system programmers who need to delve deeper into the workings of CP/M.

• Next month, in the last article in this series, I'll be looking in more detail at what our BIOS does and how it works, as well as investigating some of the features which make our Amstrads unique. Then in the New Year I'll be starting another series describing the more powerful CP/M Plus system supplied with CPC6128s and the PCW8256/8512.

THE OASIS BULLETIN BOARD SERVICE

The Oasis BBS is wholly owned and operated by Computer Oasis, 324 Stirling Highway, Claremont 6010, Western Australia.

This service provides for the storage and retrieval of information such as:

Messages

Advertisements,

Public domain software

— the BBS supports a wide range of computers including Amstrad, Atari 8 bit, Atari ST series, IBM and compatibles, Commodore 64, Commodore Amiga, and C/PM based machines.

The Oasis BBS operates from an "Atari ST" computer, has 20 megabytes of storage, and at present contains over 400 programs.

For the range of computers it supports the Oasis BBS is first with important computer news as we receive regular download from boards in the United States and around the world.

Our members can be assured of continuing support.

Subscription to this BBS is charge on a six-monthly basis and costs \$10.00 per six months.

This payment entitles the member to full access and the freedom to up/download any of the software which is on-line. It also allows full use of the vast message base of the BBS.

Make new friends and be assured of continuing support for your machine by regular contact with other users.

More details available when you first log on to the Oasis BBS, phone (09) 383 1480.

Please log on at either 300/300 or 1200/1200 baud full duplex.

The Oasis BBS has the following features:

16 Sigs, or Special Interest Groups. Each Sig can have its own upload and download area, or any number of Sigs may share the same

areas. Each user can be limited to any number of Sigs. In other words, you can have public and private Sigs, and permit access as desired.

The message base can hold up to 900 letters. It can be read by Sig or in whole from any Sig, access permitting. Messages are up to 14 lines long at present, and can be edited after entering. Messages can also be private from user to user, but the SysOp can read all mail. The message base and downloads are limited ONLY by the size of available disk. With the 20 megabyte hard disk our storage space is very large indeed. We may specify how many active messages may remain on the board.

Uploads are not enabled until the Sysop has reviewed and moved them to the download area.

The BBS supports Xmodem (checksum) and DFT (Direct File Transfer) protocols for error free file transfer. ASCII (no error checking) transfer is also supported.

The Sysop has a private message area which allows users to leave a private message to the sysop before logging off. The sysop also has full, easy control over all user records. He can set new member validation to very little access permission, or auto validation as a full registered user. The sysop may also permit "Professional Programmer" access for limited, remote sysopping, or even full Sysop access.

The sysop also has full control over the message base, and can change the status of any message on the board. Such things as editing the text of a message, making it private or public, deleting it, reopening a deleted message, etc.

While a user is logged onto the BBS, the sysop will see EVERYTHING the user sees, and can even assist the user while online! If the sysop types a command, it works exactly as though the user typed it. There is also a "chat" mode which permits the sysop and a caller to converse directly through their respective keyboards.

The sysop can do most BBS maintenance by logging onto the BBS through the keyboard, just as a user would, which also permits remote BBS management. Without logging on or stopping the BBS, the sysop can also edit the user records, do download maintenance, and much more.

The system will automatically respond at the proper baud rate, 300, or 1200 baud, and upon one carriage return from the user, adapt to 7 or 8 data bits, even or no parity. This permits support of most computers! The OASIS BBS can support virtually any computer, or any subject/topic at all!

If there is a printer on the parallel port, and it's turned on, the BBS will log each caller and a brief activity summary. If the printer is turned off or not connected, the BBS will just ignore it. With the printer, you can get user listings, download listings, print the mail, etc.

The BBS is very easy to use. It uses character commands that are logical and easy to remember. For help, all a user needs to do is press Return. It's very simple, and really is just a message base and up/download system. The OASIS BBS is extremely fast. Written entirely in C.

VERSION 2 will support such things as nested messages, or "threads" which permit reading through a string of related messages, rather than reading them in sequential order, satellite utilities to make maintenance of user records, etc., much faster and easier, disk caching (buffering) for faster file access and up/downloads, and much more!

THE OASIS BBS APPLICATION FORM

NAME

AGE

ADDRESS

..... POSTCODE

TELEPHONE

DO YOU BELONG TO OTHER BBS'S? IF SO WHICH ONES?

SYSTEM INFORMATION

COMPUTER

PRINTER

MONITOR

HARD DISK

MODEM

n.b. THESE DETAILS ARE CONFIDENTIAL AND WILL NOT BE RELEASED TO ANY MEMBER OF THE PUBLIC.

PLEASE COMPLETE THIS FORM AND RETURN TO COMPUTER OASIS, 324 STIRLING HIGHWAY, CLAREMONT, WESTERN AUSTRALIA 6010.

SIGNED:

Let machine code make your graphics really *flow*

ROLAND WADDILOVE
introduces the basic techniques
of moving coloured characters
around your Amstrad's screen

The graphics of some of the latest software for the Amstrad are absolutely amazing, being packed full of incredibly fast, super smooth, multi-colour, sprite-like characters.

Roland in Time (no relation) is an excellent example. Have you ever wondered how it is done?

While it's impossible to cover everything in the course of a magazine series, over the next few months I shall be showing you some of the basic techniques involved in moving multi-coloured characters of any size smoothly round the screen.

Although Amstrad Basic is pretty fast, really the only way to achieve such animation is through the use of machine code, as it runs many times faster than Basic.

So to make the most of these articles you will need a fair knowledge of Z80 machine code. Even if you haven't, you should still be able to follow the first section, which looks

at how the screen memory is organised, and you will have till next month to swot up on the subject. Mike Bibby's machine code series, which started in our January issue, should get you off to a flying start.

Mode 0 is the (relatively) low resolution, multi-colour mode that most arcade games are written in, so this is the one we shall concentrate on. But if you wish to experiment, the techniques involved can quite easily be transferred to an-

other mode with minor adaptations.

The secret of high speed multi-colour graphics is to access the screen memory directly and to use the operating system as little as possible. If you disassemble almost any commercial program you will find few firmware calls.

It's not that there is anything wrong with using the firmware – quite to the contrary, it's excellent – but it wasn't designed specifically to run arcade games in Mode 0, being intended to perform a much wider range of tasks.

For example, in the OS ROM there's a superb routine which will print any character you care to define, in any colour and in any mode at any pixel. It gives me a headache just thinking about the calculations it must perform.

To detail just a few of the problems, the foreground and background colour found and the bytes required to produce the pattern

```
10 REM PROGRAM 1
20 MODE 0: BORDER 4
30 PAPER 3: PRINT " "
40 PAPER 6: PRINT " "
50 PAPER 5: PRINT " "
60 LOCATE 4,10
70 PRINT "Address=&...."
80 address=&c000
90 WHILE INKEY#="" : WEND
100 LOCATE 13,10
110 PRINT HEX$(address)
120 POKE address,&c0
130 address=address+1
140 GOTO 90
```

Program 1


```

10 REM Screen Display
20 REM By R.A. Maddilove
30 REM (c)Computing With The Amstrad
40 REM -----
50 MODE 0
60 GOSUB 210:REM initialise
70 WHILE UPPER$(INKEY$)<>"E"
80 PLOT 0,398,colour1:PLOT 4,398,colour2
90 LOCATE 14,4:PEN colour1:PRINT CHR$(233);CHR$(9);CHR$(9);:PEN colour2:PRINT CHR$(233)
100 PEN 2:LOCATE 13,6:PRINT USING "##";colour1;:PRINT CHR$(9);USING "##";colour2
110 bytes=PEEK(&C000):LOCATE 4,5:PRINT "E";HEX$(byte,2)
120 PAPER 8:LOCATE 7,16:FOR i=7 TO 0 STEP -1:GOSUB 330:NEXT
130 LOCATE 5,20:i=1:GOSUB 330:i=5:GOSUB 330
140 LOCATE 13,28:i=0:GOSUB 330:i=4:GOSUB 330:i=6:GOSUB 330:i=6:GOSUB 330
150 PAPER 5:PEN 1
160 IF INKEY(8)-1 THEN colour1=(colour1+1) MOD 16
170 IF INKEY(1)-1 THEN colour2=(colour2+1) MOD 16

```

```

ur2+1) MOD 16
180 WEND
190 END
200 REM -----
210 REM initialise
220 DEFINT a-z
230 BORDER 1:PAPER 5:CLS
240 MOVE 0,0:DRAW 0,398,4:DRAW 636,398:DRAW 636,0:DRAW 0,0
250 MOVE 0,46:DRAW 640,46:MOVE 0,270:DRAW 640,270:MOVE 320,270:DRAW 320,400
260 PAPER 3:PEN 12:LOCATE 2,24:PRINT " ";CHR$(242); " ";CHR$(243); " change pixel ";PAPER 5
270 PEN 1:LOCATE 4,3:PRINT "Byte":LOCATE 13,2:PRINT "Pixels"
280 LOCATE 6,12:PRINT "Bit Pattern"
290 PEN 2:LOCATE 7,15:PRINT "76543210"
300 LOCATE 5,19:PRINT "1537 0426"
310 colour1=0:colour2=0
320 RETURN
330 REM -----
340 IF (byte AND 2^i) THEN PEN 1 ELSE PEN 5
350 PRINT CHR$(233);
360 RETURN

```

80 Sets pixels.
90-100 Print large pixels and pen numbers.
110 Gets byte and print hex value.
120-140 Print bit patterns.
160-170 Change pens.
210-320 Set up display, initialise variables.
340 Prints block if bit is set in byte.
30 Dims array for data.
50-100 Plot points and get hex values for pens.
170-230 Print values.

worked out before the program is run and a fantastic amount of time can be saved. Then all that is necessary is to poke the data into the correct location, using a greatly simplified routine.

It's not as versatile as the firmware routines, but is far faster.

The first thing to do is to try to find out how the Amstrad organises the screen memory. You will need Program I for this.

The memory map in the Amstrad manual doesn't tell us much except that the screen RAM is between &C000 and &FFFF – the top 16k, underneath the Basic ROM.

Program I should give you a clearer idea how things work. It prints three blocks of colour at the top left of the screen and then waits for a key to be pressed. The variable *address* is initially set to &C000 and whenever a key is pressed its value is printed and &C0 stored in the screen memory *address* is then incremented by 1.

Run the program, holding down a key. You will see that each text character is four bytes wide and

As you can see, quite a lot of work is involved.

However if we know in advance what the bit pattern, colour and mode will be, the data can be

calculated, which depends on the mode, and whether you are printing at the text or the graphics cursor using TAG. The correct addresses in the screen memory must then be found and the data poked in.

pixel row	pixels 0, 1	pixels 2, 3	pixels 4, 5	pixels 6, 7
0	&C000	&C001	&C002	&C004
1	&C800	&C801	&C802	&C803
2	&D000	&D001	&D002	&D003
3	&D800	&D801	&D802	&D803
4	&E000	&E001	&E002	&E003
5	&E800	&E801	&E802	&E803
6	&F000	&F001	&F002	&F003
7	&F800	&F801	&F802	&F803

Figure 1: Memory location corresponding to the top left screen character in mode 0

that the whole top row of pixels on the top line of the screen is poked first, then the whole of the top row on the second line, the top row of the third line, then the fourth and so on.

The actual byte being poked is displayed on the screen.

Keep a key pressed when it runs off the bottom of the screen and watch it reappear at the top &40 bytes later. There seems to be a part of the memory that is not displayed.

As you'll see the poking starts at the top of the screen again – this time filling the second row or pixels on the first line, followed by the second row of pixels on the second line and so on.

Keep an eye on the address printed and note when it runs on to the next line – it's &C000 at the start of the first line, &C050 at the start of the second line, &C0A0 on the next and so on.

Each line starts &50 lower than the previous one. That is, if you know the address of a particular pixel in a character cell, the corresponding pixel in the cell below will have an address exactly &50 higher.

When it disappears off the bottom and reappears at the top, you'll see that the second row of pixels is at &C800, the third at &D000 and so on. Each pixel is separated by

&800 in the vertical direction – except for the bottom pixel of each character cell and the top pixel of the character cell immediately below (we'll come to this in a later article).

As you'll see from Program I, a Mode 0 character is stored in 32 bytes, 8 rows of 4 bytes with each row separated by &800. Figure I shows the pattern. As each character is 8 pixels wide – this holds for all modes – a single byte must contain the colour information for two pixels.

It's easy to work out why. We saw earlier that each row of pixels is &50 bytes in length. Since there are 160 pixels across the Mode 0 screen, and as 160 divided by &50 is 2, we have two pixels per byte.

How is the information coded? Program II will help here. The two pixels in the first byte of the screen memory can be set to any of the sixteen pens by pressing the left or right cursor keys.

They can just be seen in the top left corner of the screen, but in case you find these hard to see they are repeated eight times normal size on the right, with the pen number printed below. The value of this byte is printed in hex and its binary bit pattern is shown.

Try altering the colour of the pixels and look for a pattern in the

hex value or binary pattern. It doesn't seem to make sense does it?

Four bits can be used to store the numbers 0 to 15 – %0000, %0001, %0010 . . . %1111 in binary.

So a byte, consisting of 8 bits, can store the pens (0–15) for two pixels. It would be logical to use the first four bits for the first pixel and the second four for the second pixel.

However it's not quite so simple. Bits 1,5,3 and 7 store the pen for the left pixel, and bits 0,4,2 and 6 store the pen for the right pixel. Program II prints the two nybbles (4 bits or half a byte), for each pixel near the bottom of the screen.

Press the left cursor key and the left nybble will cycle through the 16 pens %0000, %0001, %0010 and so on. Similarly the right nybble can be changed by pressing the right cursor key.

A multicoloured character could be designed on paper, and each horizontal pair of pixels could be set using this program and the data noted. It could then be stored at any position on screen. But this would be a very clumsy method to use, so in a later article in this series we will employ a sprite designer to make it a bit easier.

You should now be able to see .

Continued on page 26

FIRST — TAME YOUR TURTLE

IAN SHARPE on Logo: Part I

Included with every Amstrad disc system is DR Logo, and in this series we'll explore what this interesting and powerful language has to offer.

It was developed in the late 1960's at the Massachusetts Institute of Technology to teach children about computing. The approach taken by the designers was very different to that of Basic, the idea being to make the computer work more the way humans think rather than making humans fit what the computer wanted.

Logo was derived from a language called Lisp (short for LISt Processing language) which is widely used in artificial intelligence work. List processing is a different way of handling data to the string/numeric array/variable you may be used to in Basic, and we'll be taking a close look at this aspect later.

Firstly though, we'll get to know Logo by investigating turtle graphics.

In the early days it was found that children could relate more easily to the computer by using it to control a small robot known as a turtle. This looked like a large canister on wheels and was fitted with a pen which could be raised or lowered. The turtle could be directed from the keyboard and so could be made to draw lines on a floor covered in paper.

With the sophisticated graphics available on today's micros it's cheaper and easier to represent the turtle on the screen.

DR Logo runs under the CPM operating system. Next month we'll show you how to make a working disc, but to get started simply boot up Logo from your CPM disc. CPC464/664 owners can just insert side two of the system disc type:

! CPM

And Logo will load in automatically. Those using a CPC6128 need to insert side one of their system disc, type:

"The idea being to make the computer work more the way humans think rather than making humans fit what the computer wanted."

! CPM

and when the A> prompt appears, insert side three (DR Logo and Help) and enter:

```
setkeys keys.drl
logo3
```

All being well, you are now looking at a question mark at the top left hand corner of an otherwise blank

screen. This is a prompt, equivalent to Basic's Ready message and tells you that Logo is waiting for your instructions.

Logo has two types of screen display, and what you are looking at is the text screen with the other screen hidden behind it. To use this hidden screen type:

cs

which clears the window that looks on to the turtle's world — the graphics screen. If you get a message "I don't know how to CS" you will have learnt two things. Firstly, Logo has nice friendly error messages and secondly, it only understands instructions in lower case. So keep away from the Shift and Caps Lock keys and try again.

A triangle will appear in the middle of the screen. This represents the turtle and you can make it invisible by typing:

ht

which is short for hide turtle. Make it reappear with:

st

which, as you may have guessed, means show turtle.

I mentioned that robot turtles have a pen to draw lines on the floor. So does the screen turtle, and you can produce graphics by driving it about the screen leaving a trail. To see how this works type:

fd 100

and you will see the turtle move forward 100 units leaving a pen line to show where it has been. The turtle moves faster when it's hidden with **ht** but until you understand what's going on it's best to leave it visible.

With the **fd** command the turtle moves in the direction it's pointing, and you can make it face in a different direction by telling it to turn right or left by a specified number of degrees. The instructions are abbreviated to **lt** and **rt** so:

rt 90

will make the turtle rotate 90 degrees clockwise and:

lt 90

will turn it 90 degrees anti-clockwise.

If you missed out the space between the instruction and number you will have been told "I don't know how to fd100" or something similar. Spaces are important because they are how Logo distinguishes

guishes between different commands and parameters.

You're not restricted to sending the turtle forwards. There's also a **bk** command to send it backwards:

bk 100

causes the turtle to back up 100 units.

You can also pick up the turtle and put it back at 0,0 (the centre of the screen) using the instruction **home** which has no effect on anything else on the screen. The command **cs** homes the turtle and clears the graphics screen as well, while **clean** clears the screen but leaves the turtle where it is.

You'll meet other commands relating to the turtle as we progress.

Logo graphics are designed so that you tell the turtle to move in much the same way as if you were giving directions to another person.

Imagine you were telling a friend how to walk out a square on the ground. You'd say something like: "Take 100 steps forward, turn 90 degrees to the right, go forward 100 paces, turn right again, walk 100 paces, turn right, go 100 paces.

This is exactly how you would draw a square with the turtle. Type in the following list of commands, pressing Return/Enter after each one.

cs
fd 100
rt 90

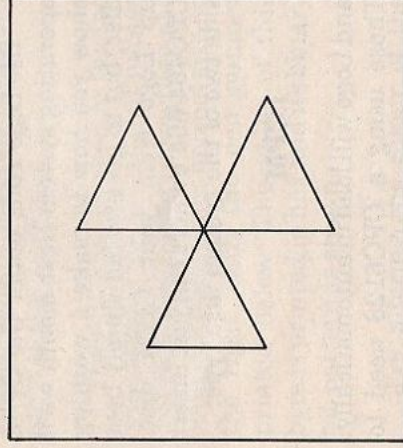


Figure 1: Your homework


```
fd 100
rt 90
fd 100
rt 90
fd 100
rt 90
```

If you haven't made any mistakes you'll have driven the turtle in a square leaving a pen line, and the turtle will be back at home facing due north.

Just like its mechanical counterpart, the screen turtle can be made to move around without leaving a trail. Simply tell it to lift the pen up with **pu** and use **pd** to put the pen down again.

Try the same set of commands but insert **pu** before the first **fd 100**, put **pd** immediately after it and you'll see the left edge of the square omitted. Experiment with these two commands and see if you can remove the right edge instead.

One thing standing out about this sequence of instructions is that there is a lot of repetition. Going back to the analogy of telling your friend where to go, it would be easier to say "Do the following four times; go forward 100 places and turn right". In Logo there is an equivalent to this in the instruction **repeat**, and we can use it to simplify drawing our square:

```
cs
repeat 4 [fd 100 rt 90]
```

The commands to be repeated are enclosed in square brackets and the instruction loops round a num-

Logo graphics
are designed so
that you tell the
turtle to move in
much the same
way as if you
were giving
directions to
another person.

ber of times specified by the value that appears between **[** and **repeat**.

An advantage the turtle has over conventional ways of producing graphics is that anything you draw is orientated in relation to the direction the turtle was facing. So the instructions we have just used can produce squares at any angle simply by pointing the turtle in a different direction - try this:

```
cs
rt 45
repeat 4 [fd 100 rt 90]
rt 45
repeat 4 [fd 100 rt 90]
rt 45
repeat 4 [fd 100 rt 90]
```

As you can see, a list of commands to draw a shape can be used in any orientation without having

to calculate sines and cosines. It looks as though there's room for another repeat instruction here:

```
cs
repeat 3 [rt 45 repeat 4 [fd 100 rt 90]]
```

does the same job, and many of you will appreciate how much neater this looks than the equivalent in Basic.

When you type a long line of instructions such as these, an exclamation mark appears when you reach the right hand edge of the screen. This is Logo's way of indicating that this line continues on to the next.

Another thing to notice is that when the turtle reaches the edge of the graphics window it disappears underneath the text screen. If you want the entire display devoted to graphics, use the instruction **fs** which stands for full screen. The text window is taken away altogether and although you can still type instructions the characters are not displayed.

If you press Escape the text window pops up again, or using **ts** will make it fill the screen.

- That's far enough for now. We've covered quite a lot of ground already, so to make sure you've been paying attention here's some homework. See if you can write a list of commands to produce the shape in Figure I. All the angles are 60 degrees and the solution is similar to the one used with the tilted squares.

Machine Code Graphics

Continued from page 22

```

10 REM PROGRAM III
20 a$=" Left Pixel Pen "
30 DIM byte(15,15)
40 MODE 0
50 FOR i=0 TO 15
60 FOR j=0 TO 15
70 PLOT 0,398,i:PLOT 4,398,j
80 byte(i,j)=PEEK(&C000)
90 NEXT
100 NEXT
110 MODE 2:PRINT
120 PRINT TAB(15)"Hexadecimal values
for left and right pixels in mode 0"
130 PRINT
140 PRINT TAB(35)"Right Pixel Pen..."

150 PRINT
160 PRINT TAB(21)"0 1 2 3 4 5 6
7 8 9 10 11 12 13 14 15"
170 FOR i=0 TO 15
180 PRINT
190 PRINT TAB(13)MD$(a$,i+1,1);" ";i
;TAB(19);
200 FOR j=0 TO 15
210 PRINT " ";HEX$(byte(i,j),2);
220 NEXT
230 NEXT
240 BORDER 3
250 MOVE 0,0:DRAW 0,398,1:DRAW 638,39
8:DRAW 638,0:DRAW 0,0

```

Program III

why in Program I storing &C0 in the screen memory, line 120, coloured it yellow. Use Program II to set both pixels to yellow and look at the hex value and bit patterns - &C0 and %0001, %0001.

Program III prints a complete table of hex values for all combinations of left and right pixels. Look down the left column for the left pixel pen, then along to the right pixel pen and read off the hex value. If this number is stored in the screen memory the two pixels will be displayed in the pens chosen.

- That's all for now. Next month we will be starting with a few simple machine code routines involving the screen

PRODUCE PICTURES LIKE THESE IN "MINUTES"
USING A DMP2000 PRINTER AND THE

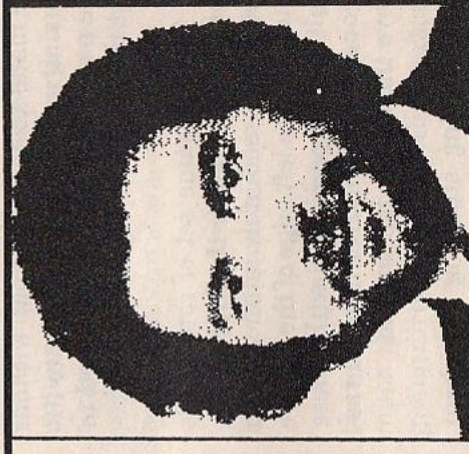
DART SCANNER

A remarkable new image scanning system which enables you to recreate & store pictures, documents, drawings, photographs etc.

- No camera or video source needed
Simply feed your original into DMP2000 printer (does not affect normal printing operations)
- Compatible with AMX Pagemaker and any light pen or mouse which works with standard screen format
- For all CPC computers

Features:
Scan - Magnification x1, x2, x3, x6
Print - Full Size/Half Size, Load & Save to Tape or Disc, Area Copy, Scrolling Window, Zoom Edit, Box/Blank, Clear Area, Add Text, Flip Screen, On screen Menu.

Applications:
Advertising/Artwork, Letterheads/Logos, Newsletters & Leaflets, Games Screens.



Package Comprises:
Scanner head, Interface,
Software on Cassette or Disc

\$195.00

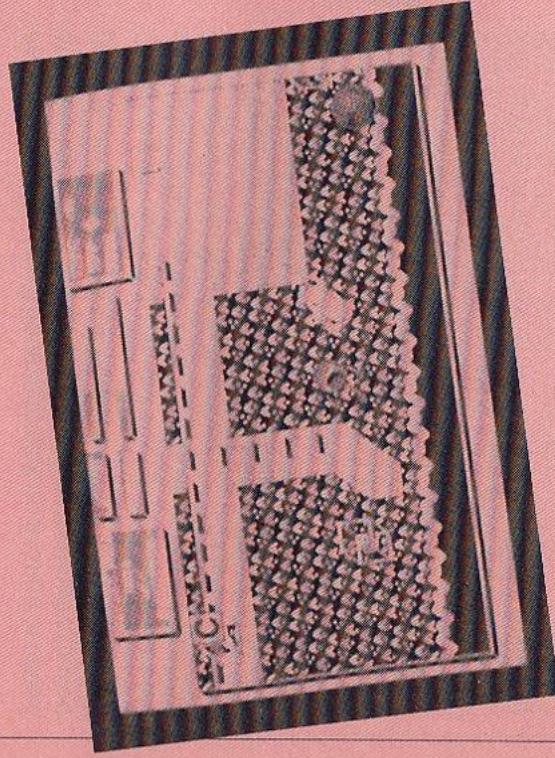
CAT # 4521 (Inc. P & P)

DART Electronics
STRATEGY SOFTWARE

Telephone: (002) 29 4377 P.O. Box 11
Blackmans Bay
Tasmania 7152

Please use order form on centre page

THE FINAL MATRIX



Gremlin Graphics

cassette, disc, joystick or keys

Nimrod the Biopton has a tough task ahead. He's been ordered to rescue fellow Bioptons who are being held hostage in the evil Craton's matrix network.

This is nothing less than a vast intergalactic prison, easy to get into but almost escape proof.

Playing the role of Nimrod your cockpit. Ahead there is a mass of stars broken up by blue squares, each of which represents a particular Craton matrix.

By fixing one in your sights you find out the name of the matrix and its force rating. Then, by pressing fire you are transported into its heart.

Each matrix is different in colour and design and it is made up of a complex 3D network of levels seen from above. The graphics here are very stylish with lots of attractive designs and detailed patterns. As a robot you can easily manoeuvre. This is just as well as you must work your way through a complex maze with danger round every corner.

Guards take the form of spiderlike beings who patrol certain areas of the complex and have strong fire power.

Less of a problem are Disrupters. These are spherical objects whose main function is to bump into you and frustrate your movements.

There are also mines to avoid – a touch from one of these and you're a dead Biopton. There are a variety of squares, some sap your energy while others thrust you away.

Areas of black ice must be avoided at all costs or you will find yourself skating into oblivion.

On the plus side, there are jump pads to get from one level to another, refuel squares and objects which can replenish your weaponry.

There is also a thrustpak which, for a limited amount of time, will allow you to hover in the air and gain access to higher levels.

Once you've found the hostage, make your way back to the launch-pad. With only 99 minutes available in which to rescue who knows how many hostages you're definitely up against it.

There's no doubt that this is an original and interesting game. Unfortunately, depending on what matrix you choose, it is also very difficult.

Tony Flanagan

Presentation 89%

Good demo mode.

Graphics 90%

Each matrix has been stylishly designed.

Sound 75%

A wide range of jungles and spot effects.

Playability 80%

Easy to begin with but a little difficult once you're in the matrix.

Addictive qualities 75%

Not really enough variation to keep you going indefinitely.

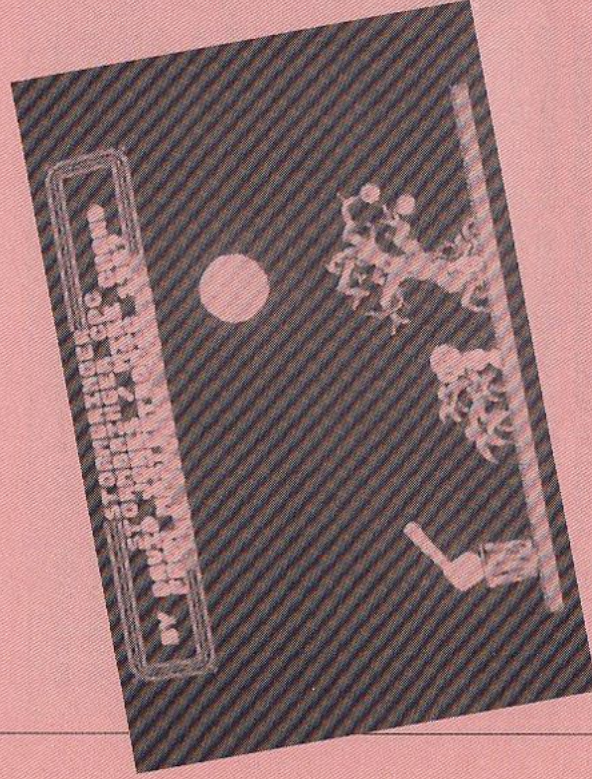
Value for money 81%

Maybe a little overpriced.

Overall 85%

A good, original game.

STORMBRINGER



Mastertronic

cass, joystick or keys

If you've been following the series you'll know that Stormbringer is the last of David Jones's Magic Knight trilogy and follows on from Spellbound and Knight Tyme.

The quiet village of Cornhamp-on-Marsh has been taken over by a cruel despot – Stormbringer. Instead of a personal stereo he carries his own personal stormcloud. He's also picked up a nasty habit of zapping people with lightning bolts.

It would be very simple if all you had to do was zap old Stormbringer a couple of times and bring his storm to an end.

Unfortunately, in arcade adventures nothing is quite so simple.

Should you kill him, then by some strange schizophrenic connection, you will also kill yourself. Your only hope is to find a way of merging with Stormbringer before being hit by one of the latter's lethal thunderbolts.

Luckily you are not on your own. Robin of Shylock, Aramis Le Peux and Reggie the Rat are some of the characters there to help you.

On the other hand, you must look after this oddball bunch, keeping them in food and making sure they get plenty of sleep. Consequently, you must check each character's status fairly regularly.

As you progress, you'll be able to pick up a range of useful objects including a chicken which has a nice habit of laying golden, silver and copper eggs.

Once you've obtained the command wand you can tell other characters what to do, whether it's simply to wake them up or to get them to help you.

If you wish, you can disguise yourself as a footman, guard, wizard, warrior, white witch or even chambermaid, though be prepared for some strange looks from your friends.

The game provides a comprehensive range of commands. You can read, examine, eat, pick, drop, take, drink, cast spells and so on.

The graphics though simple are colourful and attractive, with good animation and smooth horizontal scrolling. The locations provide an appropriate atmosphere.

Stormbringer is an enjoyable game which is delightfully playable. This last in the trilogy should keep you happy for many hours.

Tony Flanagan

Presentation 73%

Windimation as they call it works very well; quick and simple.

Graphics 69%

Colourful with smooth scrolling.

Sound 68%

Fine, once you've worked out how to turn it on.

Playability 71%

Easy to get into with plenty of puzzles and interaction to keep you at it.

Addictive qualities 67%

One you'll keep on coming back to.

Value for money 90%

At budget price what more can you ask for?

Overall 69%

Nice plot, nice scenario, nice.

WORLD GAMES

Epyx

cass, joystick or keys

We've seen Winter Games, Summer Games, Olympic Games, now we've got World Games. There are eight events: Weightlifting, barrel jumping, cliff diving, slalom skiing, log rolling, bull riding, caber tossing and sumo wrestling.

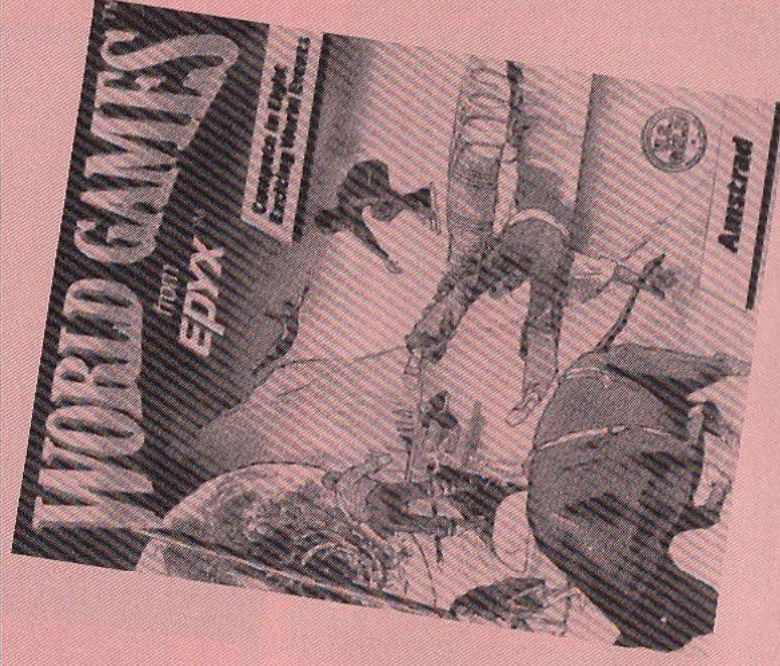
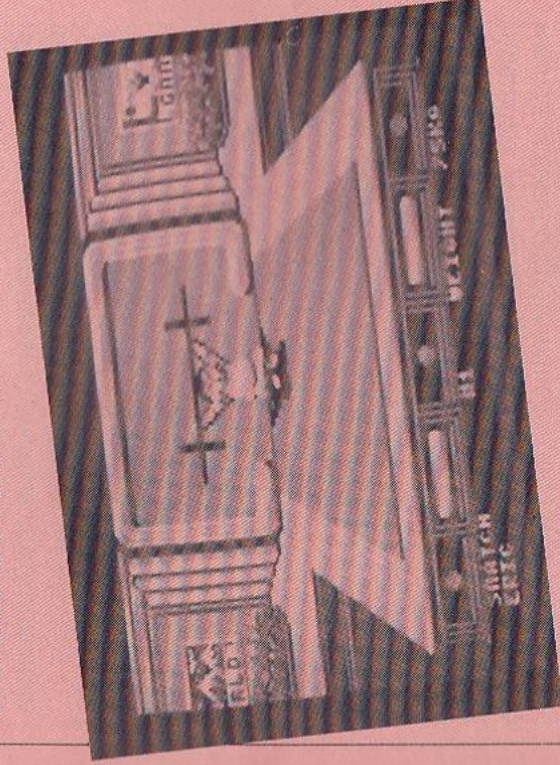
Each takes you to a different country and you get some nice graphics. There are lots of options including practice sessions, you can redefine the keys and play against the computer or with up to four other people.

Weightlifting takes you to Russia. You can do a snatch (it's a technical term for a lift not a bank raid) and a clean and jerk. You've got to get the timing right or your lifter drops his weight. If you hold it too long he falls through the floor. I've never seen that happen during a real weightlifting contest.

For the barrel jumping it's off to Germany with a nice line in mountains but not much in the way of pretzels or beer.

Your skater gives the thumbs up when he's ready to start and you press the left and right keys in time with his legs. Press fire to jump and down to land. If you don't land properly he goes through the ice.

To Acapulco (ariva! ariva!) for the cliff diving, where you can gaily plummet to your death while listening to some rather excellent music.



Actually you don't so much splatter on the rocks as bounce. Anyway, you don't die – you just score a fault. Were life so easy, I love the pelican which just watches and grins – he probably knows something I don't. This was my favourite event.

continues next page

Presentation 88%

Definable keys but I don't really want to waste time with pretty graphic loader screens.

Graphics 90%

Nice. Credit where it's due.

Sound 94%

Some atmospheric tunes, well arranged.

Playability 81%

Had problems with some events which just didn't 'feel' right but that's where practice comes in, I suppose.

Addictive qualities 82%

If you liked Winter Games and the others, you'll



Ici nous sommes dans Chamonix pour le slalom skiing. And my skiing is worse than my French. I found it a bit confusing to have to press the left key to make the skier go to my left, and I played it better once I'd turned the keyboard around.

It was either that or stand the monitor on its head. However, once you get the hang of it, it's not so hard.

The great outdoors of Canada is the venue for log rolling – to the tune of Monty Python's I'm a Lumberjack what else? When your man falls in – as he will – his opponent clasps his hands in victory and a shark's fin appears.

What, in Canada? Okay. I admit it – I'm not a lumberjack and I'm afraid I took to the water like a duck.

The bull riding is fun but rather frustrating as a certain set of actions seems to throw you one time but not another. I guess there's a lot I need to learn about bull riding, too. PS: keep off Earthquake!

To the heather-splashed hills of Scotland (it says here) for tossing the caber. Your man appears with black legs and a kilt and amuses you as he performs what seems more like St. Vitus' dance than a Highland schottische. However, the entertainment is free, and haggis is on the menu.

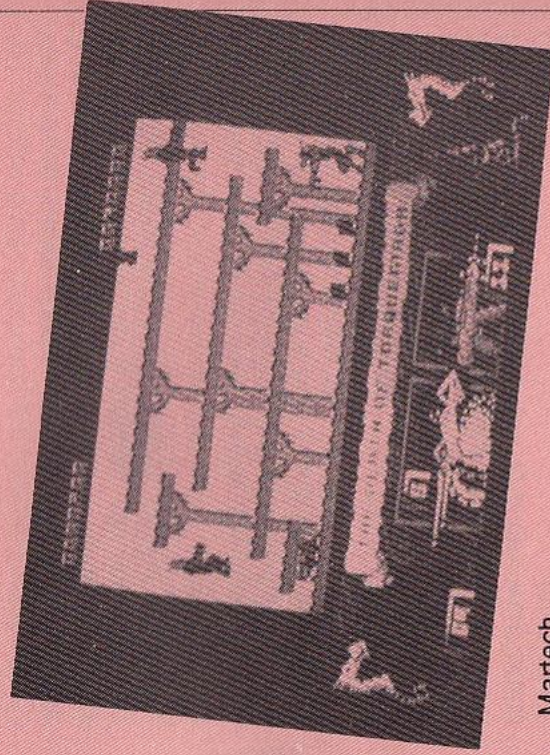
The pitfalls are many. If you don't drop the caber on your man's foot and if you can avoid letting it fall on his head, pounding him into the ground, you may just manage to toss it a few feet. Och aye, the noo. It's not as easy as it looks.

Land of lising sun plays host to sumo lestling. You must have seen these guys on TV – they make Big Daddy look like Larry Grayson. Play is better with a joystick as there are 10 moves (five with the fire button pressed and five without) and keyboard control is a pretty hectic business. No grunting sound effects, though – except from the players. And I actually managed to beat the computer – once.

World Games contains some novel events which are rather good. You don't need to bash the living daylight out of your joystick or keyboard to play and if you think all sports games are the same think again and try this.

Ian Waugh

NEMESIS THE



Martech,
cassette, disc,
joystick or keys

Who will put an end to the evil reign of Torquemada, the tyrannical Grand Master of Termight? Nemesis the Warlock will need all his skill and luck, if he is to challenge Torquemada's awesome power.

As Nemesis, your task is to fight your way through successive screens of Torquemada's minions, the Terminators, until you reach the heart of his empire.

Each screen is constructed using numerous platforms on several levels, the Terminators appear at the top of the screen and slowly work their way to the bottom.

You are armed with one large calibre firearm and a trusty sword, Excessus. Ammunition magazines are stashed around the screen, and walking over one of these provides you with 12 rounds. This is the maximum you can carry, so don't walk over any further magazines until you require them – they'll just top up the gun and vanish.

While carrying ammunition, Nemesis will always use his gun in preference to the sword. Firing is a two stage operation: A stab at the fire button adopts an aiming stance; a second press launches the projectile.

WARLOCK

Each shot is accompanied by a most impressive recoil effect and you can almost feel the impact as the shell thuds into the unsuspecting Terminator.

Once your ammunition is exhausted, out comes Excessus and the slashing begins.

At the bottom of the screen a picture of Torquemada is slowly formed. As it takes shape his power grows and the corpses begin to twitch. One by one they rise as scythe-wielding zombies – much more difficult to dispose of.

A body counter displays the number of Terminators you must kill before you will be allowed to leave the screen, assuming you can locate the exit.

Despite the fact that the characters are created from a mere three colours, they are surprisingly effective. Their diminutive size and low level of detail is more than compensated for by the excellent animation.

Nemesis the Warlock breaks no new ground, but as a slash-and-blast game it's very impressive.

James Riddell

Presentation 83%

Very classy redefinition of the character set.

Graphics 85%

Reasonably well-defined characters, though the use of colour is limited.

Sound 82%

The music is good, but I would have welcomed a sound effects only option.

Playability 86%

Good response to the controls and lifelike animation.

Addictive qualities 84%

The gameplay is relatively simple, but the animation holds the attention.

Value for money 85%

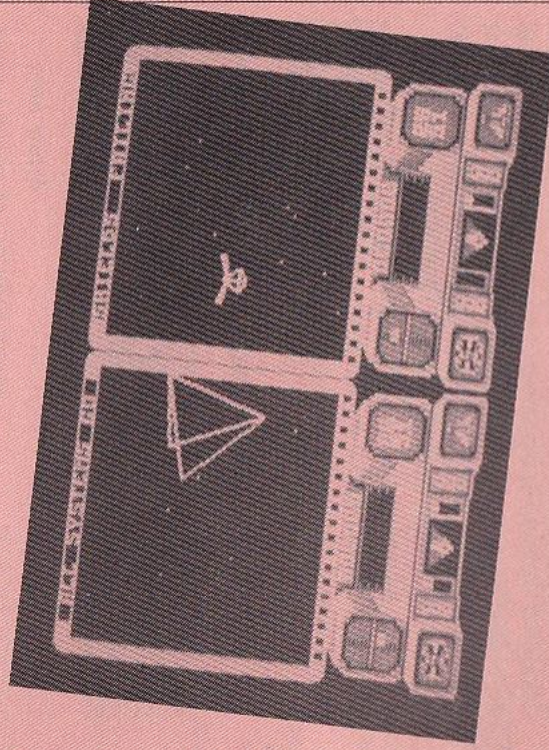
A reasonable price.

Overall 85%

A first rate version of a slash-and-blast game.

DOGFIGHT 2187

Starlight Software, cassette, disc, joystick or keys



The year is 2187 and the invasion of our universe has begun. Legend warned of impending doom, and Rhett Dexter knew the stories well – they told of nine sections of a warp-field generator. This is the only device which can close the tear in space-time and stop the aliens.

Playing the role of Rhett you steal an experimental interstellar fighter, and head into the unknown. Somewhere in the 256 sectors of the universe are 100 pieces of the warp-field generator.

You have 30 minutes of real time to locate nine of these and place them alongside the ever expanding hole. Incidentally, you can only carry two sections at a time, so you'll have to do a fair amount of shuttle work.

Dogfight 2187 is one of the few, true, two-player games on the market. The screen is split vertically, each with half of the display containing the view from the cockpit and an instrument panel.

Alien spacecraft are depicted as fast-moving 3D line drawings – beautifully animated, with many of them propelled by flapping wings. The ship's instruments give information on the location of the hole, number of generator sections being carried, time remaining, fuel and shield status.

Refuelling is a major factor – without regular top-ups your efforts will be short-lived.

In the aftermath of a dogfight, generator sections are also found, appearing as large, angular, egg timers.

These should be taken to the construction site near the

tear in the space time fabric – represented by a 3x3 grid rotating in space.

Aliens always attack from the front, if they do get behind you don't bother to chase them.

The ship seems to have a turning of infinite size, so forget the fancy manoeuvres you learned playing Elite. The best tactic is to sit tight – within a few seconds the alien ship will reappear in front of you.

Dogfight's gameplay isn't very complex so it can become a little repetitive, but if it's alien blasting you're after you've come to the right place.

Nev Astly

TRIAXOS

Ariolasoft, cassette, disc, joystick or keys

Deep inside Triaxos, a top security orbital prison, is the only man capable of activating the most powerful weapon in the galaxy. Your mission is to locate and free him.

Triaxos is devoid of human guards, with security provided by a large number of droids. There are five different types each identified by a large number emblazoned on its side. Level one droids are the easiest to destroy, but those on the higher levels have much more powerful offensive and defensive capabilities.

This is an arcade/adventure which provides a 3D display for you to explore. The prison is constructed as a matrix of connected rooms with doors in one or more walls, or in some instances, in the ceiling. Leaving via a door causes the adjoining room, plus occupants, to be quickly drawn.

Wandering around the first few rooms you must vaporize numerous droids and top up your stock of grenades.

The single life can be a bit of a nuisance, as once dead you have to start again from the beginning. Jumping through a hole in the floor only to find a second hole directly beneath it is a common way to die.

Many rooms have flashing bullseyes recessed in the floor known as facelifts. Standing on one cause you to dematerialise, and while in this state of limbo you can rotate the room. This turns a hole in the floor into a door in the wall – much less risky to jump through.

My main criticism is about the way you all too often find yourself trapped in a room with no hidden doors in the floor, or facelifts. The only option remaining is to press the abort key and begin again.

Triaxos could have been far more enjoyable had there been fewer dead ends and more than one life to play with. These little niggles dampened any enthusiasm I may have otherwise had for the game.

Carol Barrow

Presentation 82%

User–definable keys and a nice demo routine

Graphics 89%

Fast, smooth animation on both screens.

Sound 78%

Standard laser fire effects.

Playability 84%

Response to controls is fast, but limited.

Addictive qualities 82%

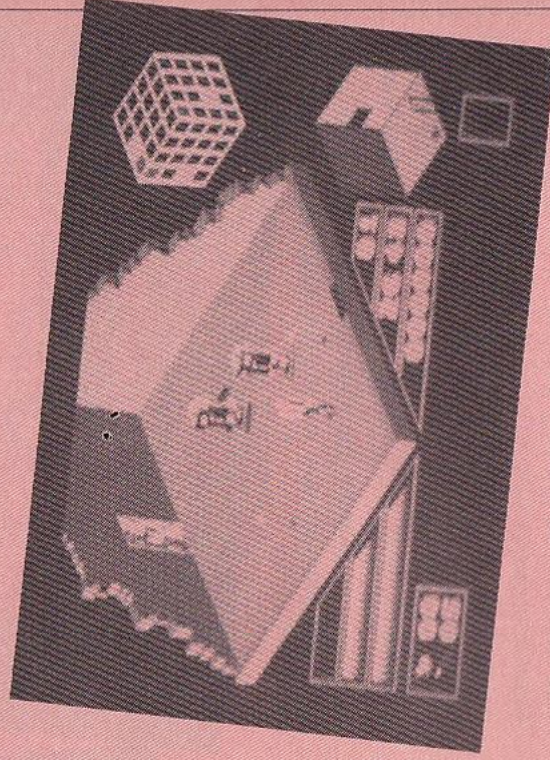
The games can be brief if you fail to locate fuel dumps.

Value for money 83%

Get your hand in your pocket.

Overall 86%

Well polished game with a high zapability rating



Presentation 78%

User–definable keys would have proved useful.

Graphics 82%

The characters are colourful and reasonably detailed, but a touch on the small side.

Sound 79%

Standard lasers and footsteps, plus a bouncy title tune.

Playability 70%

The abort key is required far too frequently.

Addictive qualities 75%

The number of dead–ends you move into is most discouraging.

Value for money 65%

An ordinary price for an ordinary game.

Overall 75%

"Without a doubt Siren Software have produced some of the best disc utilities ever seen on the Amstrad range of computers." Amitix! January 1987

★ NEW ★ DISCOVERY PLUS ★ NEW ★

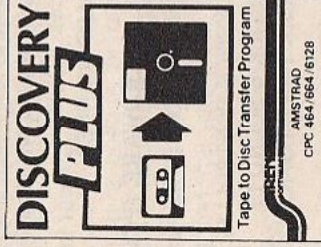
The ultimate tape to disc transfer program

"Discovery Plus must be the most advanced and probably most efficient tape to disc transfer utility to date" Amstrad Action December 1986

This program will transfer more games to disc than any other transfer program. The first person who can prove otherwise will receive twice his money back!

Discovery Plus consists of 4 easy to use programs that together will transfer an extremely high proportion of your software onto disc.

Also included is details on how to transfer over 100 games.
Silver Screwdriver Award Amitix! January 1987



Discovery Plus only \$39.95 on disc for the 464/664/6128

★ NEW ★ HANDYMAN ★ NEW ★

FORMAT YOUR DISCS TO 416K

Handyman the unique disc enhancement package allows you to manage, use and get more from your discs. Look at these unique features:

- Format your discs to 416K (208K per side on a standard CF2 disc)
- Save unwanted discs onto tape to release expensive disc space
- Full disc/file search and edit. Find and alter messages in programs
- Superb menu maker puts a menu selection system on your discs
- Filemate displays ASCII files, finds text in files, prints files etc etc

"Siren has come up with another marvellous piece of software" Amstrad Action December 1986
"This is just about the best disc utility that I have had to use" Amitix! Jan 87

Amitix! Golden Screwdriver Award Jan 87
Handyman on disc for the 464/664/6128 only \$34.95



MASTER DISC
ON SHIP DISC
ONLY \$51.95

★ ★ MASTER DISC ★ ★

THE DISC USERS UTILITY

Master Disc contains a disc copier, directory editor, fast formatter, sector editor, deprotector, disc and tape header readers, trans disc, trans tape, disc map, typefile, dumpfile & zipdisc.

"The package seems to work very well on the full range of machines" Amitix! June 86

"Each section is fully documented with clear and precise instructions" Amitix! June 86

"This Siren package really does offer you quite a lot for your money" Amstrad Action June 86
"So far we have yet to find a disc that it cannot copy from, it even copies unformatted discs" Amitix! June 1986

Master disc available on disc only \$34.95 for the 464/664/6128



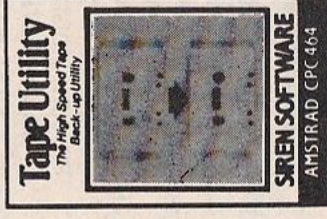
TAPE UTILITY

464 OWNERS, LOAD IN YOUR SOFTWARE AT UP TO 4 TIMES THE NORMAL SPEED

Tape Utility will allow you to make back up copies of your tape base software that will load at up to 4 times the normal speed.

- ... So easy to use, simple one key operation
- ... Handles up to 42K (Approx) in one go
- ... Will copy normal, headerless, speedlock & flashloaders
- ... Tests have shown that it will back up about 90% of all Amstrad software
- ... Choice of 10 speeds up to 4000 baud
- ... Removes protection from basic & speedlock programs
- "Simply the best, the tape to tape backup copier to beat all tape to tape backup copiers".

AMISCLUB
Written specifically for the 464, this is not a Spectrum conversion
TAPE UTILITY ON TAPE ONLY \$17.95. AMSTRAD CPC464 ONLY



PRINT MASTER

The printer utility and enhancement package. No printer owner should be without this.

This unique suite of programs will allow you to make the most of your DMP2000 or any Epson compatible printer.

- Superb large 16 shade printer dump of any mode 0 screen
- Large black and white dump of any screen in any mode
- Fast character dump of screen
- Amazing 16K interrupt driven printer buffer
- Print out files from most wordprocessors (Protext, Tasword etc) in a variety of fonts, sizes and styles.
- Include screen dumps as illustrations
- 10 great fonts included New! Latest version 20 fonts
- A terrific font designer allows you to create your own fonts

This spectacular package is available on disc only for your Amstrad 464/664/6128. Only \$39.95 on disc.



To order, please use the form on centre page

ORDERING INFORMATION

All prices include postage & packing

SOFTWARE ON TAPE (CPC)

CAT #	TITLE	PRICE
1006	TOOLBOX	\$19.99
1007	FLEXIFRIEND	\$19.99
1008	GRASP	\$19.99
1009	CHAOS FACTOR	\$17.99
1010	MUZICO	\$18.99
1011	DRUMKIT	\$18.99
1012	MUSIC COMPOSER	\$19.99
1013	EASIDATA II	\$29.99
1014	EASIDATA III	\$42.99
1015	DATABASE/MAIL LIST	\$29.99
1024	MYRDDIN FLIGHT	\$17.99
1030	AMS-FORTH	\$27.99
1056	TAPE UTILITY	\$19.99
1071	FLETCHERS CASTLE	\$29.99
1072	THE RAIDERS	\$29.99
1073	TREASURE	\$29.99
1074	THE PERFUME HUNTER	\$29.99
1075	MARKET STALL	\$29.99
1076	FERRY CAPTAIN	\$29.99
1101	PROTEXT	\$49.99
1102	MAXAM	\$49.99
1103	MODEL UNIVERSE	\$39.99
1201	PLAN-IT	\$39.99
1202	MINI-OFFICE II	\$39.99
1203	MAGIC SWORD	\$24.99
1204	FUN SCHOOL (2-5)	\$17.99
1205	FUN SCHOOL (5-8)	\$17.99
1206	FUN SCHOOL (8-12)	\$17.99
1207	CHARTBUSTERS	\$17.99
1208	CLASSIC GAMES	\$17.99
1209	RED ARROWS	\$29.99

SOFTWARE ON DISK (CPC)

2001	BRUNWORD 6128	\$79.99
2007	FLEXIFRIEND	\$29.99
2008	GRASP PLUS	\$29.99
2009	CHAOS FACTOR	\$27.99
2012	MUSIC COMPOSER	\$29.99
2014	EASIDATA III	\$52.99
2015	DATABASE/MAIL LIST	\$39.99
2016	EASI-WORD COMBO	\$49.99
2017	GENESIS	\$39.99
2018	EASY MUSIC	\$29.99
2024	MYRDDIN FLIGHT	\$29.99
2051	DISCOVERY PLUS	\$43.99
2052	HANDYMAN	\$37.99
2053	MASTER DISC/HANDYMAN COMBO	\$59.99
2054	MASTER DISC	\$37.99
2055	PRINT MASTER	\$43.99
2056	CHERRY PAINT	\$29.99
2057	DISCOLOGY	\$43.99
2070	FERNLEAF ED. PACK	\$89.99
2101	PROTEXT	\$74.99
2102	MAXAM	\$74.99
2103	MODEL UNIVERSE	\$49.99
2104	ARNOR C	\$199.99
2105	MAXAM II	\$199.99
2106	PROSPELL	\$69.99
2107	PROMERGE	\$69.99
2108	BCPL	\$99.99

4502	STOP PRESS (P/MAKER v.2)	\$139.99
4505	AMX MAX	\$59.99
4506	AMX 3D ZICON	\$74.99
4507	AMX UTILITIES	\$59.99
2201	PLAN-IT (CPC)	\$49.99
2202	MINI-OFFICE II	\$49.99
2203	MAGIC SWORD	\$34.99
2204	FUN SCHOOL (2-5)	\$27.99
2205	FUN SCHOOL (5-8)	\$27.99
2206	FUN SCHOOL (8-12)	\$27.99
2207	CHARTBUSTERS	\$27.99
2208	CLASSIC GAMES	\$27.99
2209	RED ARROWS	\$39.99
2401	MT-BASIC (CPC)	\$149.99

SOFTWARE ON DISK (PCW)

2301	PLAN IT	\$59.99
2302	DESKTOP PUBLISHING	\$79.99
2303	DTP C/W AMX MOUSE	\$249.99
2351	PROTEXT	\$199.99
2352	ARNOR C	\$199.99
2353	MAXAM II	\$199.99
2354	PROSPELL	\$74.99
2355	BCPL	\$99.99
2356	POCKET PROTEXT	\$99.99

PUBLIC DOMAIN DISKS (CP/M + CP/M PLUS)

2801	PD VOL. 1	\$21.95
2802	PD VOL. 2	\$21.95
2803	PD VOL. 3	\$21.95
2804	PD VOL. 4	\$21.95
2805	PD VOL. 5	\$21.95
2806	PD VOL. 6	\$21.95
2807	PD VOL. 7	\$21.95
2808	PD VOL. 8	\$21.95

SOFTWARE ON ROM (CPC)

4101	ROMBO ROM BOX	\$89.99
4102	PROTEXT ROM	\$99.95
4103	PROSPELL ROM	\$89.99
4104	PROMERGE PLUS ROM	\$89.99
4105	MAXAM ROM	\$99.99
4106	UTOPIA ROM	\$74.99
4107	BCPL ROM	\$99.99

DKT 464/664 PERIPHERALS

4201	DKT SPEECH SYNTH	\$119.99
4202	DKT LIGHT PEN	\$79.99
4203	DKT 64k RAM EXP	\$99.99
4204	DKT 256k RAM EXP	\$199.99
4205	DKT 256k SILICON DISK	\$199.99
4206	DKT REAL TIME CLOCK	\$99.99
4207	DKT 64k SILICON DISK OS	\$79.99

DKT 6128 PERIPHERALS

4301	DKT SPEECH SYNTH	\$119.99
4302	DKT LIGHT PEN	\$79.99
4304	DKT 256k RAM EXP	\$199.99
4305	DKT 256k SILICON DISK	\$199.99
4306	DKT REAL TIME CLOCK	\$99.99
4307	DKT 64k SILICON DISK	\$99.99

CPC PERIPHERALS

4401	DKT TV TUNER	\$269.95
4501	AMX MOUSE C/W ART	\$189.99
4503	AMX DIGITIZER	\$269.99
4504	AMX MAGAZINE MAKER	\$389.99
4508	AMX MOUSE	\$99.99
4521	DART SCANNER	\$199.99

HARDWARE (PCW)

9000	DKT MEM UPGRADE TO 512K	\$74.95
9001	JOYSTICK CONTROLLER I/F	\$49.95
9002	J/STICK & SOUND I/F	\$99.95
9903	REAL TIME CLOCK	\$89.95
9501	AMX PCW MOUSE	\$239.99

Computing With The Amstrad SUBSCRIPTIONS

CAT #	TITLE	PRICE
5001	MAGAZINE ONLY	\$45.00
5002	MAGAZINE + TAPE	\$90.00
5003	MAGAZINE + QUARTERLY DISK	\$110.00

Computing With The Amstrad BACK ISSUES

CAT #	TITLE	PRICE
6008	CWTA PREMIERE EDITION	\$4.95
6009	CWTA SEPTEMBER ISSUE	\$4.95
6010	CWTA OCTOBER ISSUE	\$4.95
6011	CWTA NOVEMBER ISSUE	\$4.95
6012	CWTA DECEMBER ISSUE	\$4.95
6101	CWTA JANUARY ISSUE	\$4.95
6102	CWTA FEBRUARY ISSUE	\$4.95
6103	CWTA MARCH ISSUE	\$4.95
6104	CWTA APRIL ISSUE	\$4.95
6105	CWTA MAY ISSUE	\$4.95
6107	CWTA JULY ISSUE	\$4.95
6108	CWTA AUGUST ISSUE	\$4.95
6109	CWTA SEPTEMBER ISSUE	\$4.95
6110	CWTA OCTOBER ISSUE	\$4.95

TAPES

CAT #	TITLE	PRICE
7008	DIAMOND DIG (8/86)	\$7.50
7009	ICE FRONT (9/86)	\$7.50
7010	da BELLS (10/86)	\$7.50
7011	DISCMAN (11/86)	\$7.50
7012	ROGBOT RON (12/86)	\$7.50
7101	OTHELLO (1/87)	\$7.50
7102	SPACE BASE (2/87)	\$7.50
7103	GALACTIC INV. (4/87)	\$7.50
7104	SMILEY (3/87)	\$7.50
7105	BACKGAMMON (5/87)	\$7.50
7107	ROULETTE (7/87)	\$7.50
7108	CENTIPOD (8/87)	\$7.50
7109	DIGGER (9/87)	\$7.50
7110	HOWZAT (10/87)	\$7.50

DISKS

CAT #	TITLE	PRICE
7051	7008/7009/7010 AS ABOVE	\$19.95
7151	7011/7012/7101 AS ABOVE	\$19.95
7152	7102/7103/7104 AS ABOVE	\$19.95
7153	7105/7107/7108 AS ABOVE	\$19.95

MAIL ORDERS TO: STRATEGY SOFTWARE
PO BOX 11, BLACKMANS BAY, TASMANIA 7052
 Enquiries (002) 29 4377
 Orders, including subscriptions – local call fee – (008) 030930
Use your VISA, MASTERCARD or BANKCARD for mail orders.

Please include all information requested on the order form, and make sure you have enclosed your name and address (you'd be surprised!) and the correct amount for the goods you require.

If sending a cheque or ordering using Visa, Mastercard or Bankcard please ensure that the date on your cheque is valid (ie 1987 not 1986) and that your credit card has not expired.

Please follow the instructions below carefully **before** ringing. This number will only be answered by a machine and cannot be used for general enquiries or messages. Anything other than an order will be ignored – you have been warned!

A) Complete the order form at right as though you were going to order by mail. Do not wait until ringing before deciding which titles you require or trying to find your credit card. The answering machine is voice activated and any pause over a couple of seconds will result in the machine hanging up on you.

B) When the machine answers, read the order from your order form slowly, clearly and distinctly giving all the information you have written down. Where possible leave a telephone number just in case we can't understand or hear your order.

D) Allow 28 days for the delivery of your order – orders which we cannot despatch within 2–3 days of receipt will be advised of the likely delay by mail. Back issue orders will be mailed at the same time as the current issue.

MAIL ORDERS TO: STRATEGY SOFTWARE
PO BOX 11, BLACKMANS BAY, TASMANIA 7052
 Enquiries (002) 29 4377
 Orders, including subscriptions – local call fee – (008) 030930
Use your VISA, MASTERCARD or BANKCARD for mail orders.

CAT #	TITLE	PRICE
#5001	SUBSCRIPTIONS FOR COMPUTING WITH THE AMSTRAD MAGAZINE ONLY (12 ISSUES) ☐ (\$45)	
#5002	MAGAZINE AND TAPE (12 ISSUES) ☐ (\$90)	
#5003	MAGAZINE AND QUARTERLY DISK ☐ (\$110)	
	TOTAL	

[illegible]

Signed _____ Expiry _____

[illegible]

Address

Phone Date

SAVINGS ON SOFTWARE

Save over \$100 on this compact

HR-5 Super-Handy Thermal Transfer Printer

As advertised on the back cover

Another first from brother

Available till stocks run out – use order form

LocoScript 2

Speed and print are the two main new features, but LocoScript 2 is packed with other surprises ^{BT}

Press [f5] ... enter the page to jump to ... A short pause, the disc whirrs, and suddenly you are at the start of the specified page ^{BT}

you can put any accent over any letter (Welsh speakers, there you are!) And there are full modern Greek and Russian character sets ^{KC}

Quite simply, almost no other word processor at any price can produce the sheer range of characters that LocoScript can. For foreign language or mathematical work, do you have any choice? ^{BT}

In LocoScript 2, the use of alternative printers is about as simple as it can be ^{KC}

There's a good chapter on converting yourself from LocoScript 1 to LocoScript 2 ^{KC}

One of the most exciting features of the new program is its ability to send text direct to any printer attached to the expansion port at the back of the computer ^{KW}

All PCW owners who type anything more than straight single page letters will benefit from LocoScript 2 ^{BT}

Costing just \$69.99 LocoScript 2 is almost certain to be popular among the majority of PCW owners. ^{KW}

The good news is that you may never have to use CP/M again and your days of running DISCKIT to format and copy discs are over. You can do all necessary disc housekeeping and preparation entirely from the LocoScript disc management menu in LocoScript 2 ^{BT}

Is LocoScript 2 better than LocoScript 1.2? The answer is a resounding yes ^{KH}

General moving about the screen in Edit mode is two to three times faster ^{KH}

Now that you can get daisywheel print out of LocoScript, there seems hardly any argument not to use it ^{BT}

the program has been made easier to use, and the new manual is a treasure chest of useful information ^{KH}

It uses a completely new and far superior character set ^{KC}

All documents prepared under the original program can be loaded into version 2 ^{KH}

At \$69.99 LocoScript 2 is virtually a giveaway and includes as standard many features that are not found on more expensive packages ^{KH}

the whole process of editing is speeded up by some much desired short cuts ^{KC}

LocoScript 2 is Locomotive's answer to criticisms it has received over LocoScript 1, and impressive it is too. ^{BT}

The new guide is far more user-friendly and features a comprehensive glossary and checklist ^{KW}

there are numerous extra goodies ^{KC}

Full upper and lower case options in Find and Exchange ^{KC}

moving to a specific page is done in the time it takes to read the file and display it on the screen ^{KH}

When printing characters with accents, the character is printed at full height with the accent above it, so accented capitals do not need to be squashed in order to accommodate the accent ^{KH}

LocoScript 2 is the new word processor from Locomotive Software for the PCW8256 and 8512.

LocoScript 2 is much faster than the original LocoScript, is easier to use, has more features, better printing and can use a range of high quality printers.

But don't just take it from us - read what the experts in the specialist press say.

At just \$69.99 can you afford *not* to buy LocoScript 2?

Further information from:



STRATEGY SOFTWARE

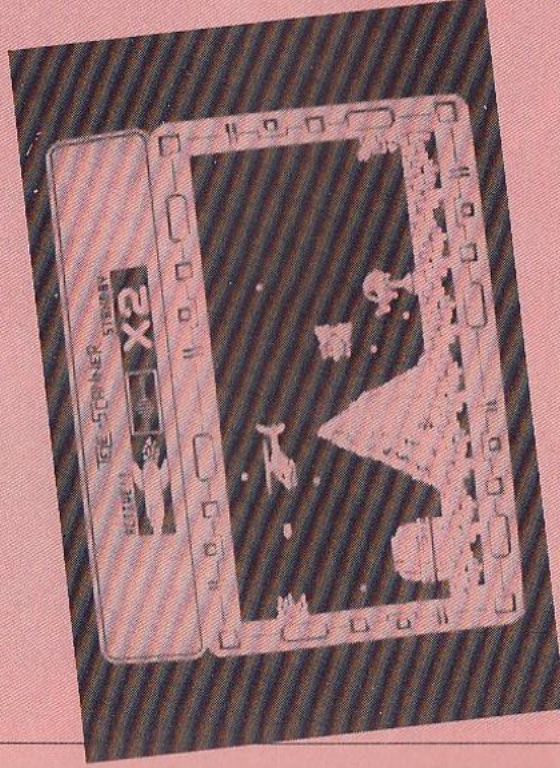
PO Box 11,
Blackmans Bay,
Tasmania 7152
(008) 03 0930

Extracts from reviews by:

Ben Taylor, 8000 Plus, May 87
Ken Hughes, Computing with the Amstrad PCW, June 87
Kelvin Walker, Putting your Amstrad to Work, June 87
Katherine Cranford, Amstrad Professional Computing, June 87

TRIO

Elite, cassette, disc, joystick or keys



Compilations figure largely in the software charts these days. They're often a collection of previous releases and if you aren't in a rush to get your hands on the latest game they can be great value for money.

In Trio on Elite's Hit-Pak label each of the three games is an original.

For your money you get Airwolf2 – blast-em–apart of the Scramble variety, 3DC – a wander about the Ultimate style maze game and Great Gurianos slice-em–up coin-op conversion.

Airwolf2 looked uninspiring at first but in 10 minutes I was hooked. You guide Stringfellow Hawke and his super-doooper new helicopter in his bid to save civilisation by destroying the alien craft that threatens it.

As the scrolling scenery unfolds various enemy craft toootle about. Collision with them or any of the other screen furniture means the loss of a life.

Guns and missile launchers that take the odd pot shot at you are immune to your fire. Collecting the quivering blobs has the effect of equipping your 'copter with jet power or trading in your weaponry for something with a bit more oomph.

The object in 3DC is to assemble a submarine by collecting the parts from around the sea bed. Your deep-sea diver and his best mate Eric the eel are the heroes, while a big green octopus aided by an army of jellyfish provide the opposition.

Oxygen is limited and too much effort will increase your nitrogen level to a lethal level.

I found this unsophisticated compared to some 3D maze games but it could prove entertaining to those not so battle hardened as me.

Finally, Great Gurianos has you controlling a big hairy-chested sprite armed with shield and sword. The aim is simple – anything that gets in your way must be carved up.

The graphics are bright and colourful, and the scrolling of the background smooth. I didn't find much interest in this one but young John in the office spent most of an afternoon with it and had to be prised off, so it must have something.

None of the games are exceptional in graphics or originality but Airwolf2 in particular has that I–just–gotta–have–another–go quality which must be the acid test of whether your money has been well spent.

Ian Sharpe

Presentation 75% Airwolf OK but Gurianos and 3DC fiddly to control.

Graphics 75% Good but not outstanding.

Sound 80% Competently designed.

Addictive qualities 85% We couldn't keep away from it.

Value for money 85% Better than many singles at this price.

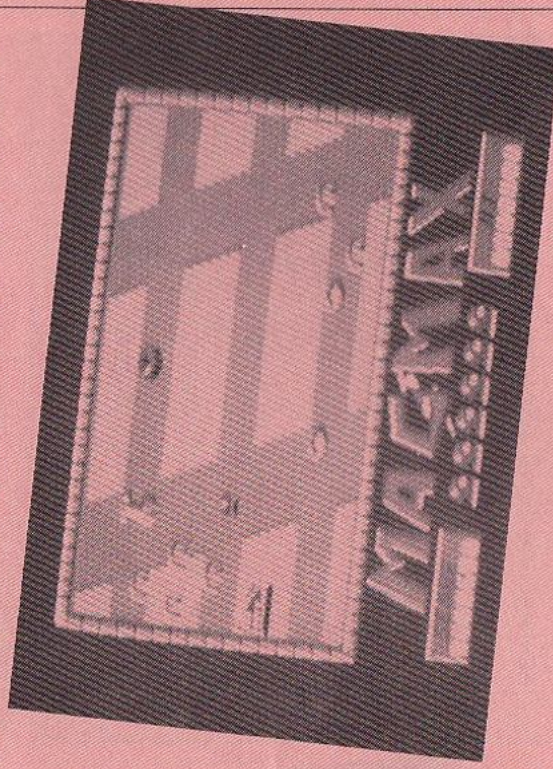
Overall 80% Definitely worth a look.

MAG MAX

Imagine Software, cassette, disc, joystick or keys

Hot on the heels of its conversion to the Commodore and Spectrum, Nicibutsu's Mag Max has found its way on to the Amstrad.

Essentially, it's nothing new, being an amalgam of several 'zap-the-nasties' with hints of Scramble and Zaxxon. The idea is to travel around the on screen planet



assembling the all-powerful robot Mag Max, in an attempt to repel the invaders.

With each part of the robot in place you become stronger, your firepower increases and it takes an additional hit to lose a life.

These robot components are quite elusive, they're scattered around the planet and have to be collected in a certain order.

The above ground screens unfold in a similar fashion to Zaxxon with bunkers firing intelligently towards you and as the game progresses, swarms of aliens mounting quick attacks.

There are craters which transport you into the underground section of the game where things become more straight-forward with success depending on the speed of your trigger finger rather than positional skill.

The neat, three-channel title tune aside, there seems little to tempt at first. The on-screen instructions are kept to a minimum which is only a problem for pirates without the inlay card. What does constitute a definite drawback however, is the complete lack of an option to redefine the keys.

Another grumble concerns the high score table. Entering your name is slow and clumsy and the display of the highest score as you play doesn't appear to work.

There is nothing particularly novel in Mag Max but what makes it so enjoyable is its genuine arcade feel. The ship/robot under your control is superbly responsive, graphics are well designed and the use of sound is simple but effective.

I got the impression that every obstacle and the movements of the enemy ships had been carefully planned and considered, the brief being to present a challenge without it being insurmountable.

In short, it's a superior shoot-em-up which should keep arcade addicts amused for a considerable time.

Clive Gifford

Presentation 55%

No options and not much of title screen either.

Graphics 60%

Plenty of colour but nothing very special.

Sound 75%

Simple but effective use of sound.

Playability 78%

Extremely responsive to keyboard or joystick.

Addictive qualities 85%

Please...just one more go.

Value for money 80%

Could save quite a few dollars at the arcades.

Overall 75%

Not inspiring but an enjoyable game nonetheless.

STARFOX

**Ariolasoft,
cassette, disc,
joystick or keys**

Many 3D games have appeared for the CPCs over the last three years and they largely fall into two categories – the Ultimate type corner-on perspective and the wire-frame efforts such as Starglider.

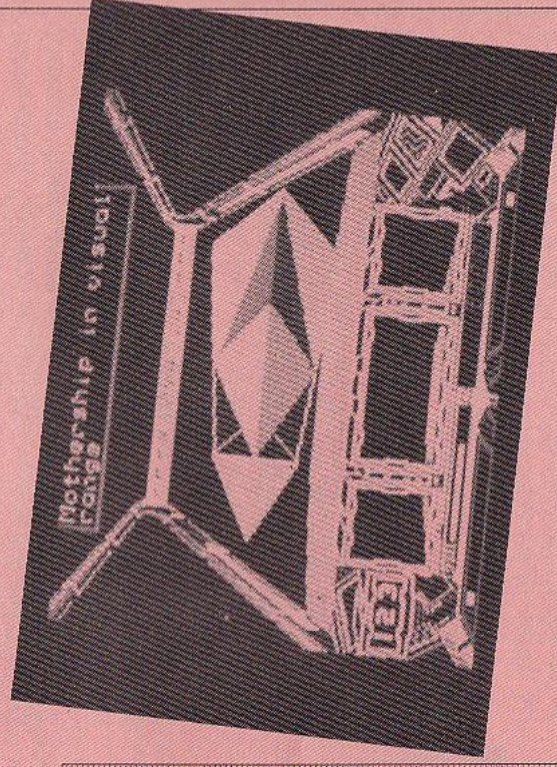
Ariolasoft's Starfox was written by adherents to the wire-frame school of 3D video gaming – Real Time Software who converted Starglider.

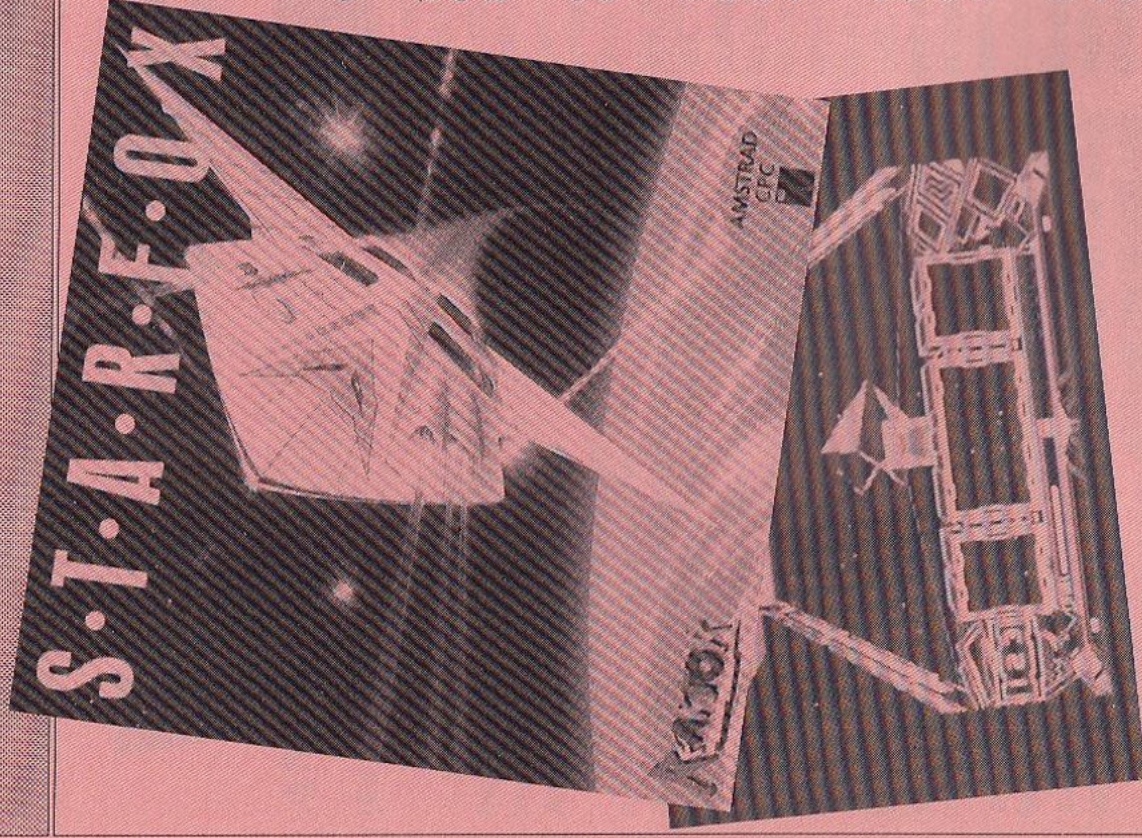
What's different about this one is that the frames are filled in giving solid shapes which are shaded to provide a convincing effect. Not completely new, but it's only been done a couple of times before and not to such great effect.

The scenario is that the eight-planet Hyturan system is surrounded by a protective cube known as the Rubicon. This has been breached by a mysterious ninth planet whose inhabitants are now throwing their weight around and causing havoc in this peaceful backwater.

As Hawkins, pilot of the Starfox, your mission is to save life, the universe and everything from the alien undesirables.

I bet that when the aliens finally show up they'll turn out to be jolly nice chaps finishing off the software industry at a stroke.





end up using the most potent hardware too early.

There's a strong element of strategy, and play is further complicated by limited fuel supplies which can be replenished from fuel ships as well as the planets.

You also have to contend with storms which can destroy Starfox's shielding if you fly through them in turbo mode.

The graphics are impressive and technically very clever but here lies the flaw. The screen update is so slow that to compensate the programmers have opted for large jumps between sprite positions making for jerky, porridge-like handling.

This is most noticeable in the battle sequences and it's frustratingly difficult to draw a bead on your target. Matters are improved by a homing device but in pursuit of spectacular effects I feel that some playability has been lost.

Despite that, Starfox is a great game and one I'll be spending a lot more time playing. You can save a part completed game and the more you learn the better it gets.

Ian Sharpe

Anyway, the game has eight levels and you must complete a mission before progressing to the next.

You can call up a holographic representation of the Rubicon for navigation with the planets plotted within. At first you can't see any planets because they aren't programmed in and they only appear in the holocube as you stumble across them in your travels.

The worlds are all hidden from view and when you draw near one a warning sounds. You can make it your destination by using the auto-pilot log. On approaching the invisible planet a worm hole in space becomes visible.

This looks like a corridor of squares floating in the void and as you fly through them the stars fade away and the planet appears.

You're now in orbit and have a chance to dock with the mother ship. Here Starfox's fuel is topped up and you can select beefier armaments.

Unfortunately the aliens can deduce the design of your weapons when they're deployed and will start using cloned versions and suitably improved defences on the next level.

Is the ninth planet populated by Taiwanese, I ask myself? You must choose something that keeps you one step ahead without accelerating the arms race so that you

Presentation 90%

Very professional.

Graphics 90%

Clever rather than pretty.

Sound 65%

Nothing special.

Playability 85%

Let down by syrupy handling.

Addictive qualities 90%

Not at first but you get drawn in.

Value for money 85%

Games should be a bit cheaper but it's good in comparison to many others.

Overall 85%

Be prepared for late nights for weeks.

Hubble, bubble, toil and trouble

From your letters it seems that some of you don't know what to do with a poke once you have typed it in. Just to set the record straight here are the two main methods for using them. Use these unless the text beforehand indicates another method.

Using cassette

First type in the listing and save it. If you have a disc system type ITAPE after the poke has been entered to return the Amstrad to tape mode. Now run the poke routine.

If all is well the game will load and run. Some poke programs work in a way which may seem odd, as if the program was loading incorrectly. Just be patient and wait

for the load to finish. If you are still having no luck, check the poke against the listing and start from scratch.

Using disc pokes

Type in the program as listed, including any REM statements as they can contain code which affects the way the program works. Save the poke to another disc. Insert the game disc and run the poke — the program should now load and run.

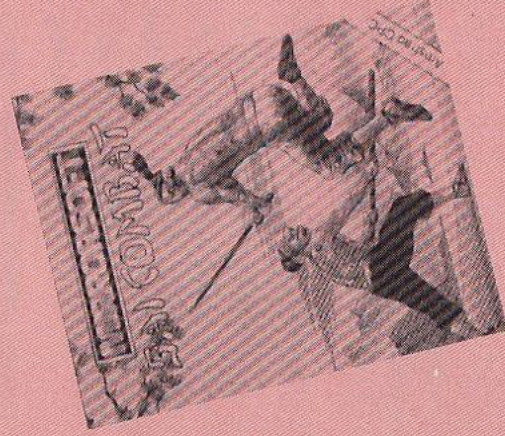
Some disc pokes alter the disc and if the poke is of this type you will be told in the text beforehand. Check the code several times and only try the poke on a backup of your game. We cannot be held responsible for damage to your disc. Now on with the show.

SAI COMBAT

(Mirrorsoft)

The most deadly blow is the thrust to the head. Don't use the roundhouse kick or you'll get your neck broken by your opponent's stick. Instead, use the chest or high kick.

Never somersault backwards as you can be hit in mid air. To defeat all men walk towards them and keep chest kicking, not letting your foot touch the floor.



IKARI WARRIORS

(Elite)

If you are driving a tank, keep well back when shooting buildings, or the explosion will destroy you and the tank. Always try to kill the special man because he leaves supplies behind.

If there are several tanks in a row when getting into one, never face any other as you will shoot it and end up destroying both.



SCOOBY DOO

(Elite)

ANTIRIAD

(Palace)

Matthew Kane of Drightington, West Yorkshire sent in these extensive tips for Palace's mega game. Used with the poke I gave you in June, it should be possible for anyone to complete the game.

The best of the two starting positions is the extreme left, but you can choose either side. The first task is to activate the suit, allowing objects to be collected and your energy level to be represented.

Do this by facing outwards while in front of the armour. Walk left through five screens then work your way up until you find the screen with the boots.

Destroy all the nasties using rocks, then jump up to the far platform and collect the boots. Return to the armour and enter it. Stand inside until your strength rebuilds. Take off in the armour and go straight up.

Not far away is the pulse gun – be careful not to get shot or touch the gunman who protects it.

Fly to the top of the volcano to collect the mine and particle negator.

If you run out of power on the screen with dragons, get out of the suit, go down to the bottom of the volcano and turn right. A few screens in that direction is a place where you can teleport back to the suit, hopefully with an energy crystal in tow.

Keep moving towards the top of the volcano – a few more recharges may be required – and place the suit on the lowest platform of the topmost screen. Antiriad is now complete.

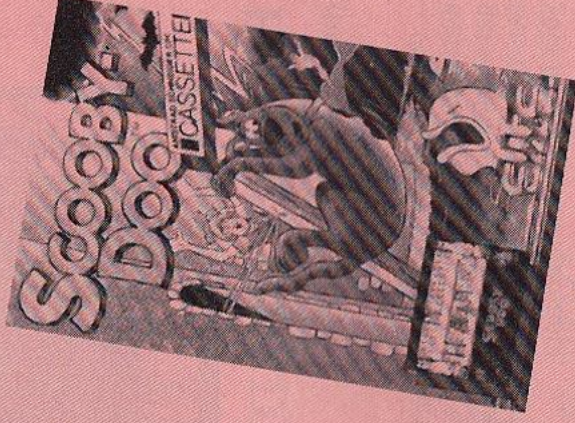
GALACTIC PLAGUE

(Amsoft)

I've had so many people send this tip that I feel everyone must know it by now. Just to be sure here it is for the last time.

To progress to the next stage with a large bonus press G,R, or N depending on the version of the game you have.

A busy man indeed ... The following tips have all been sent in by Peter White of Sheffield – enough to keep any tipster busy for a while.



BRUCE LEE

(US Gold)

To receive 100 lives, choose the two-player option and get to the Yin-Yang symbols without dying. Run into them and you'll be able to complete the game easily.

If you are Yamo, remember that you can climb and jump. To get the roar which Yamo gives out at the start of a screen pull the joystick down. To get though most internal doors, walk into them and duck.

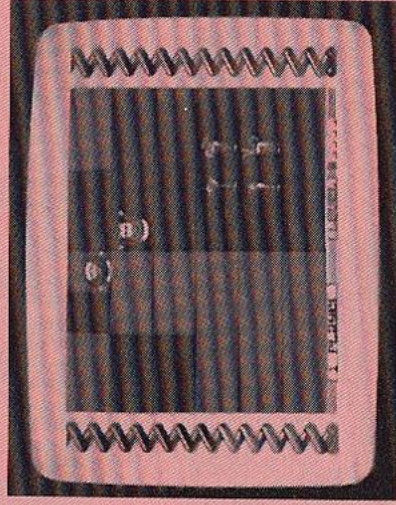
Trailblazer

(Gremlin)

Poke location 800 with the following before loading the game.

- Values 0–7 give different sprites, a ball, a man in a wheelchair, thing on a spring
- Values from 8–255 to get different backgrounds, crossover tracks, bridges and so on.

To get both effects, simply add the sprite number to the background number. For instance, to set up sprite 7 and background 128, poke 800 with 135 (7+128). Once the location is poked, load the program as normal.



HARVEY HEADBANGER

(Firebird)

Always stay close to Hamish as it's easier to get him this way. Always watch his moves as he tries to cut you off. To get his drinks, ring them with squares of your own colour. Don't try to get too many drinks – Hamish will turn up to foil your plan at the last moment.

MISSION ELEVATOR

(Micropool)

To get a code from the barman, choose whisky. When drunk turn the joystick upside-down. Try examining: chair, socket, bar, clock, table, and anything else. The master key is in reception.

GAUNTLET

(US Gold)

Never choose Elf. Don't bother mapping – it's easier to learn your way around. When someone dies collect their keys. Look at special potions, the symbol on them will determine if they are useful to you.

WAY OF THE EXPLODING FIST

(Melbourne House)

Run up to the man and do a flying kick to beat him. You can do this twice in three seconds.

WHO DARES WINS II

(Alligata)

On outposts four and above, zigzag into the building, turn round and shoot down the screen. Knock out mortars first. When moving up an unknown screen, walk diagonally. This way fighter planes will not harm you.

COBRA

(Ocean)

Amtips would not be complete without a poke. So here's one for infinite lives, courtesy of Daniel Gibson. Use the method described for entering tape pokes.

```

10 MODE 1: MEMORY 12345
20 LOAD
30 TOT=0
40 FOR N=&A700 TO &A748
50 READ A$:A=VAL("&" + A$)
60 POKE N,A: TOT=TOT+A
70 NEXT N
80 IF TOT<>7305 THEN PRINT "THIS DATA HAS AN ERROR IN IT!" :END
90 CALL &A734
100 DATA DD,21,00,BF,11,4F,00,CD
110 DATA 4E,BC,21,C3,1A,11,A7,AF
120 DATA 22,1B,BF,ED,53,1B,BF,C3
130 DATA 00,BF,21,00,00,22,CA,4E
140 DATA 22,CC,4E,C3,00,41,3E,A8
150 DATA 21,67,FC,32,00,02,22,01
160 DATA 02,F3,F1,C9,3E,C3,21,26
170 DATA A7,32,E2,39,22,E3,39,21
180 DATA FF,AB,11,40,00,C3,AF,39
190 DATA 4A
    
```

A great little poke Daniel, you will also be pleased to know you have won this month's Amtips prize. It will be winging it's way to you just after this Amtips goes to print.

- That about wraps it for this month – happy hacking.



Sure draw for the professional

If your ambitions for using computer graphics are to sketch your grandmother's cat or to emulate Picasso you will not find much to interest you in Microdraft, Timatic's new CAD and technical drawing package designed for the PC1512, PCW8256 and CPC6128.

If on the other hand you wish to use your Amstrad to help you with serious technical drawing and design then this could be the answer.

There are two kinds of drawing package. First there are those

MIKE CROWE
examines and
illustrates the qualities of
Microdraft, the latest
drafting package
from Timatic

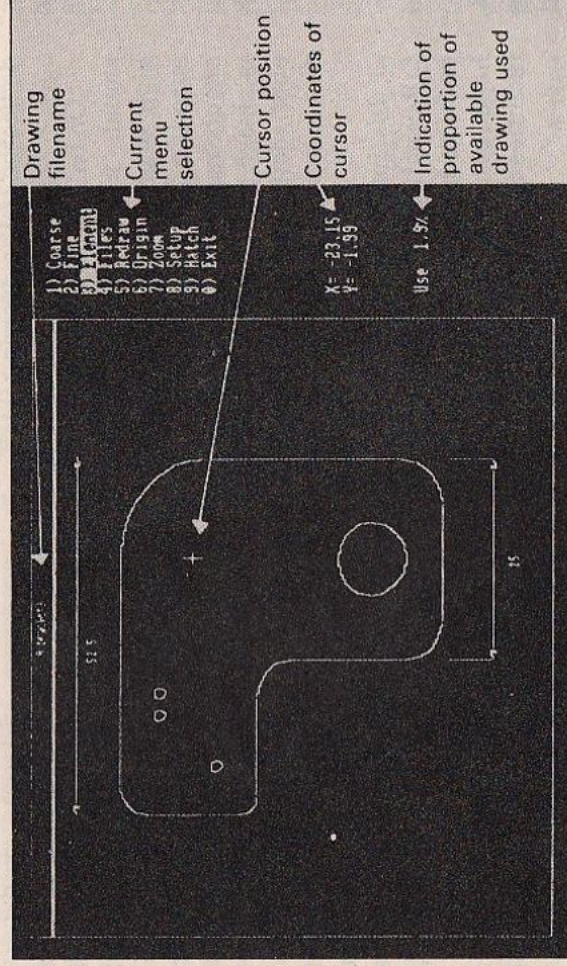


Figure 1: Microdraft in action: The main drawing screen

which store the image as a set of pixels in much the same way as the image is displayed on the screen. An excellent example is the Electric Studio Light Pen software.

However, such packages have limited resolution, require considerable storage – typically 40k per image, record only the image itself rather than how it was constructed and are not compatible with plotters.

The second type are more appropriate for architectural, electronic, mechanical, schematic or other technical drawing. They store the image as a

set of elements such as lines and arcs and reconstruct it cursorily on either a screen or a matrix printer or plotter. Accuracy is normally only limited by the chosen output device.

Drawings stored in this way can be more readily edited and require much less storage but often take longer to reproduce because of the processing required.

Microdraft is an example of the latter. Internally, all elements are represented to a resolution equivalent to 0.01mm on an A3 sized image – over 100 times the resolution of a PCW8256 screen. The drawings accompanying this article were produced using Microdraft and give some indication of the type of quality it can produce.

Microdraft's presentation ignores the conventional user-friendly approach and caters for the experienced professional. The emphasis is on speed and efficiency rather than ease of use and learning, which would be required by a novice.

It might even go a little too far: Menu prompts are cryptic and poorly signposted giving an unwelcome feeling to the occasional user.

This approach is in stark contrast to DR Draw which I reviewed in the October 1986 issue of *Business Computing* with the Amstrad, whose interface is optimised for the novice and is painfully slow and clumsy for the expert.

Figure 1 shows the format of Microdraft's main drawing screen. The current menu appears top right and has a maximum of 10 options selectable using the numbers, or any other user-defined keys. Keys 0,1,2 are the same in all menus and other frequently used selections are assigned to keys 3,4, and 5.

There is a danger that with auto repeat keys it is possible to be taken through 10 menus before you know it – sometimes with dramatic consequences!

Menu selection and cursor control is a lot easier via the PC1512 mouse and Timatic says PCW owners will not have to wait long for a Kempston mouse package which works with Microdraft.

However, I cannot help feeling that just a little more help could be provided – perhaps using windowed menus, which could also increase the amount of the screen dedicated to the drawing itself.

On balance, having seen professionals using Microdraft with a high degree of proficiency, I feel sure the designers' priorities were about correct – but a greater burden is placed on the tutorial and reference sections of the handbook for newcomers.

It's impossible to describe the full capabilities of such a powerful package in this short article but I hope I can convey the flavour of the facilities it offers.

One way to think of it is as a set of drawing instruments which al-

lows anyone capable of drawing with pen and paper to produce and amend high quality computer-based technical drawings. Figure 2 illustrates the point.

I found the most heavily used function to be straight line drawing. You can specify the two ends of the line by any combination of the following:

- Cartesian coordinates in any units, typically millimetres.
- Polar coordinates, optionally relative to an existing point.
- Pre-stored points in a 10 coordinate memory.
- End of an existing line nearest the cursor.
- Intersection of two existing lines.
- Cursor position, with the cursor controlled by the arrow keys and the step size selectable.

An extra feature in the latest upgrade release 2.2 is Snap, which lets you indicate the nearest point to the cursor on a "drawing grid". This allows accurate alignment of elements of a drawing without precise cursor positioning.

There are other options for specifying lines which pass through one point and which are perpendicular to another line or tangential to a circle.

Microdraft can draw circles from a given centre and radius, or from three specified points through which the circle must pass.

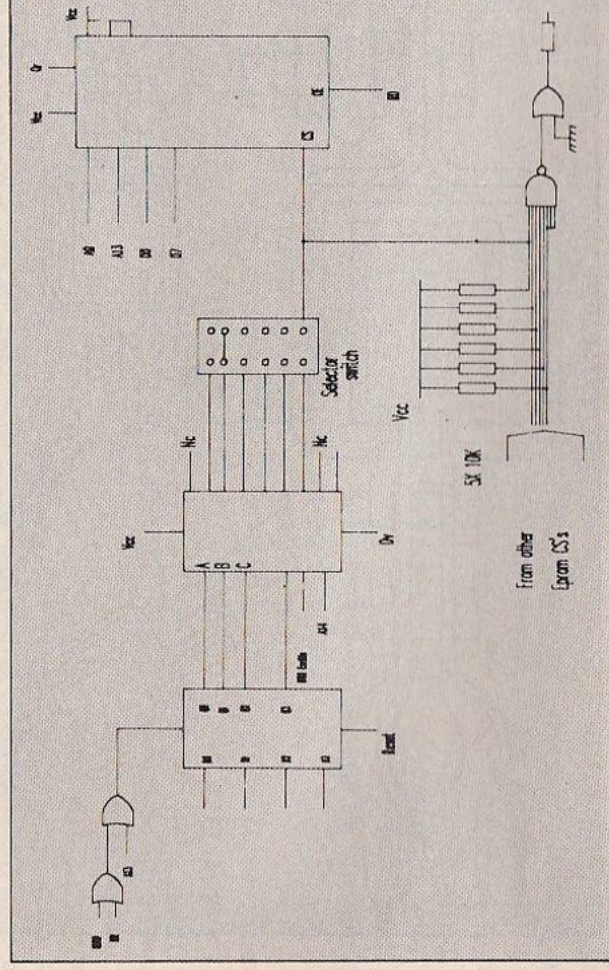


Figure II: Microdraft is suitable for circuit schematics and for layout drawings

Arcs and ellipses can also be drawn and a particularly useful construct for schematics and block diagrams is the box - a rectangle with sides located by defining two diagonal corners.

Mechanical engineers will welcome the automatic "filleting" function which, roughly speaking, rounds off sharp corners to a given radius.

The auto-dimensioning feature, which draws and labels a dimension line complete with arrowheads and witness lines where appropriate, should delight most craftsmen. The drawing in Figure I shows an example of filleted corners and dimension lines.

Areas may be hatched with parallel lines but there are no textured in-fills available with Microdraft, which confines itself to features available with cursive plotters.

Text can be added anywhere. Only one font is available but TImatic will be releasing an add-on package which will include additional ones.

However, the default font is suitable for most purposes given that you can set the character size for each piece of text, though some of the less commonly used characters are missing.

Powerful zoom facilities exist to allow detailed work at high magnification and you can move to the neighbouring part of a drawing when working at high magnification using the Pan feature.

The real joy of Microdraft is that its redraw speed is so high that you can flip between detail and overview in a matter of seconds.

Apart from its speed, the features which distinguish Microdraft as a serious CAD package are the

Blocks, Micros and Library features.

A group of elements such as lines, circles, text and so on, which make up a composite element like a nut and bolt or an electronic symbol, can be designated as a block. Thereafter this can be moved, copied, rotated, mirror-imaged or cancelled as a single item.

What is more, blocks may be nested so that components, sub-assemblies, assemblies and so on can all be treated as single composite items. One function on a block which seems to be missing is the ability to expand or reduce its scale directly.

A whole drawing may be saved to disc as a file and may be incorporated in the current drawing using the Macro function which allows rescaling not provided for blocks.

Release 2.2 of Microdraft can

MICRODRAFT IS ABLE TO DRAW VERY COMPLEX SHAPES AND REPRODUCE WITH REMARKABLE PRECISION

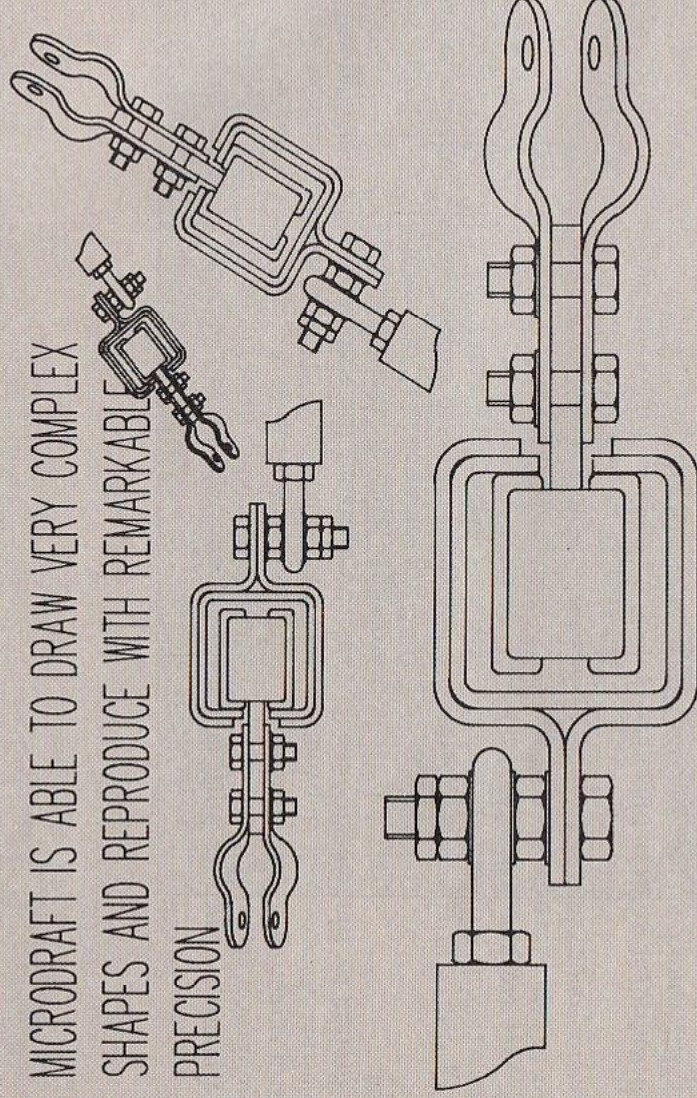


Figure III: The output from the plotter

interface with a new optional add-on Library package which provides a more efficient means of storing and calling up predefined symbols and shapes. Unlike Macro, which uses a whole file (minimum 1k) to hold each drawing. Library allows hundreds of shapes to be held in one disc file and called up by name.

Several features have been included to give it its high speed performance. For example, Microdraft does not use the standard GSX graphics extension but instead has its own far more specialised and efficient graphics interface.

To save time, hatching is only produced on the screen if explicitly requested. Furthermore, text is only written when it is of readable size – in contrast to DRDraw which can waste minutes laboriously writing illegible text.

This unfortunately means that text is often suppressed leaving the

draftsman uncertain whether he has already entered it and if so where – it would be better if suppressed text were at least depicted as lines.

In view of the work that goes into a drawing it is surprising that Microdraft departs from the common practice of automatically backing-up drawing files rather than overwriting them. Few users would begrudge the extra seconds taken and extra disc space used to save a drawing to give added security of keeping the old version.

My initial impressions of the manual are favourable – it has 60 A5-size spiral bound pages, clearly printed on good quality paper. On first reading it seemed satisfactory but I found it disappointing when used as a reference book alongside the micro. The lack of index and page numbers is a serious shortfall in a professional publication.

It is difficult to locate an expla-

nation of a particular set of menu options. A full menu tree map would be useful along with a page per menu reference section. It would also be easier if the menu name itself were displayed, rather than just the selections.

The software works fast and well on an unexpected PCW8256. The basic package comes on one side of a 3in disc and comprises three programs: MDRAFT (the interactive drafting program), MPLOT and MPRINT.

MPLOT produces superb hard copy of a drawing file on a Hewlett-Packard compatible plotter as can be seen from Figure III, while the very acceptable results of MPRINT and the Amstrad PCW printer are shown in Figure IV.

The PC1512 implementation allows all software to be resident, but CP/M restrictions force the CPC and PCW to use 13 overlays. On the PCW all MDRAFT software can be

accommodated in memory or drive M: making for almost instant overlaying.

On CPCs the overlays are held on disc and are much slower. On both the PCW and CPC the hard copy programs must be loaded and run after the drawing file has been prepared by MDRAFT but on a PC1512MPRINT and MPLOT may be run concurrently with MDRAFT.

Timatic Systems, and its sister software development company Dalek Software, took a brave decision to develop a drafting system for the Amstrad and we should be pleased they did. Microdraft is a no-nonsense package for serious engineering, architectural, electronic and technical drawing.

It is definitely not aimed at the hobbyist who wants to knock out a couple of sketches a year — after all it includes over 100k of sophisticated software — yet it is well within the price range of the serious amateur.

Microdraft will not turn a novice into an expert draftsman overnight. It does take time to become proficient at using the program, although once mastered the unconventional user interface is very efficient.

The package is undergoing continued development and Timatic is responsive to enquiries and is guided by user suggestions for enhancements — although there seems to be no shortage of ideas in-house!

Timatic generously sends later releases of Microdraft to bonafide users who signed and returned the licence agreement and who return their master disc. Add-on packages are in the pipeline concerning libraries, additional fonts and to support mouse control.

All in all Microdraft seems a thoroughly professional product.

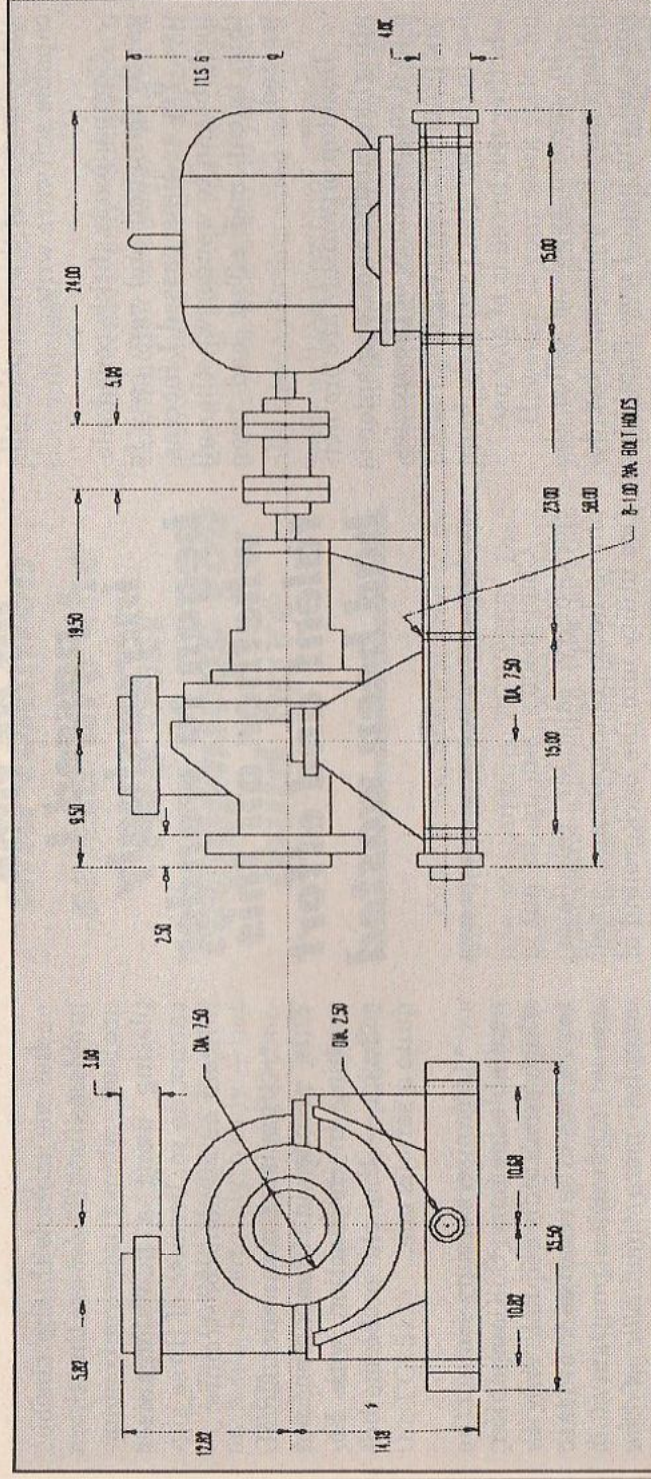


Figure IV: For many purposes good quality drawings can be produced on the PCW printer

Your sort of companion?

One of the first reviews I wrote for this magazine was of a product called Entrepreneur. I rated it so highly that when I was recently asked to nominate my software Top Ten for the Amstrad, I just had to include it.

Consequently I looked forward with great anticipation to using a new program by its creator, Nik Sen. Within minutes I found all the old hallmarks of this exceptionally capable software writer.

Companion is slickly coded, elegantly designed and very easy to use. Yet as time passed I increasingly began to wonder whether all this talent and effort had been wasted.

Desktop organisers are proliferating like rabbits and Companion is a first rate example of the species. My problem in writing this review lies in the fact that I seriously doubt whether the breed is of any use.

In certain types of office the dollars may be well spent, but despite all the hype I now firmly believe that such instances are quite rare.

**Companion is
slickly coded,
elegantly
designed and
very easy to use.
Yet as time
passed I
increasingly
began to wonder
whether all this
talent and effort
had been wasted**

Companion's aim is to put a clock, diary, calendar, calculator, phone book, notebook and small Dos utility into the background of your PCW while you get on with your other work.

Should the need arise you can call up a simple menu in the top left of your screen, select the task you require such as making an entry in the diary, log an appointment and then return to wherever you left off.

Companion does everything it sets out to do without blemish – unfortunately, this only sounds marvellous until you think a little more deeply.

Let me start with the obvious problems first. These are that there are times when a user even contemplating using a PCW organiser cannot do so, because of three significant equipment constraints:

- Organisers run under CPM. This results in Companion not running in conjunction with Lo-coScript – the old problem, but quite a serious one.

- Organisers occupy some of the available memory. So Companion, which admittedly requires only 4k to run, has to be removed in order to use an application program if it occupies more than 57k of the maximum 61k TPA available.

• Certain applications, especially those with their own menus, may need to be installed with keys set up for non-standard functions, or in some cases with changes to some of the screen characters.

This can make an organiser unusable while the other program is running, since you cannot predict what the effect of your actions will be. Either the application or more probably the organiser itself becomes unworkable or unreadable since the two programs in memory fight over what key means what and to which.

For instance, when using Supercalc 2 with Companion in memory, after using the calculator the spreadsheet's cursor keys are rendered inoperative, although all other functions work perfectly.

I must raise several more points, which again are less to do with the products than the way in which many of us work.

Calling up a clock on the screen may seem useful, but how many of us are there who do not have some means of telling the time?

Time or date stamping records on a file is certainly handy – but Companion can't do this. Furthermore, on reinitialising your PCW you must re-input the time, since there is no battery back-up (unlike the PC1512).

My misgivings regarding the calculator, diary and calendar are very similar. The only difference is that when attending meetings my diary, rather than my PCW, comes with me. And on my return I have little desire to transcribe the entries I have made to disc.

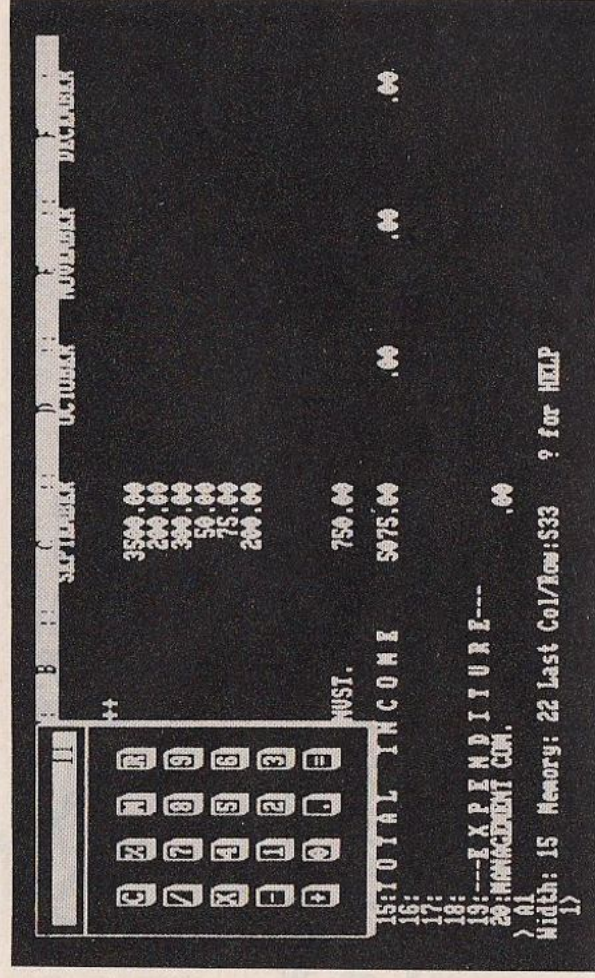


Figure 1: Using the calculator with Supercalc 2

the diary, phone book and notepad files should be resident.

Nobody in their right mind would switch discs from an application just to look up a phone number. Finding 20–30k on the M or even B drive of a PCW8512 is rarely a problem but when you are strapped for space on a PCW8256, the disc swapping hassle makes the whole operation valueless.

This leaves only Companion's Dos function to discuss. I liked it greatly and checking free space on the disc or looking at a file can be useful, but how often do you actually need to do this when working a well-written program?

I do try to be constructive in my criticism, but sadly in this instance I see no alternative but to advise giving this product a miss.

However, if your work style can justify an organiser, Companion will be ideal. But I still feel that an HB pencil and common sense are the two best companions you could have.

**I still feel that
an HB pencil
and common
sense are the
two best
companions you
could have.**

Even if you are prepared to do this, you will have a problem if you use a standard PCW8256. Disc swapping is bad enough with many applications through lack of storage space on the smaller PCW.

This is compounded when using an organiser since to be of any use,

QUARTS INTO PINT POTS will GO

IAN SHARPE gets more out of discs by compressing text files

This utility is for disc drive owners who, like me, tend to fill up discs with old files that they may never need but don't want to erase. It will compress most text files to between 60%-70% of their original size.

Type in and run Program I which loads the machine code and sets up two new commands - I COMPACT, @f1\$, @f2\$ and I EXPAND, @f1\$, @f2\$.

With I COMPACT, f1\$ is the text file to be compacted and f2\$ is the name to call the compacted file. So if you want to compact a file called "bigfile" and call it "tinyfile" you would use:

f1\$="bigfile"

f2\$="tinyfile"

I COMPACT,@f1\$,@f2\$

CPC664/6128 owners have an easier life because they can use:

I Compact,"bigfile","tinyfile"

Expanding a file with I EXPAND is the reverse process, so f1\$ would be the name of a previously compacted file and f2\$ the name to give the expanded file. You may even find it convenient to use the same filed in both strings so that the old file is converted to a .bak file.

The only limitation is that your source file should not contain characters above 128 which means special control codes and the pound sign. If you have these in your file they will be made into a 'legal' character below 128 but will not be converted back when you expand the file.

In the case of the pound sign this is converted to a hash which can easily be rectified with a selective search and replace.

The compacter will accept Protext documents as input but this gives rise to a small problem. When you expand the file and reload it, you will find that it is in program mode and a space has been inserted at the start of each line.

That's fine if you only want to see the contents of the file. But if you need to make alterations or print it out the text will not format properly because all the soft carriage returns will have been replaced by the hard variety.

The difference between the two types is that hard returns force Protext to start a new line and soft returns are only temporary markers at the end of a line.

If you change the ruler width and reformat, the soft returns are moved to a suitable new end of line and allow words to be moved to suit the new format. The hard returns do not move and will always force a new line at that point.

Help is at hand with Program II. Make sure the memory is clear, then load your text and put Protext in document mode with the DOC command.

Now type in the short Basic listing exactly as you see it here, with no extra spaces, and replace the 9500 in line 10 with the size of the document. This is displayed on the

reverse video bar between the editing and command windows.

Run the program and the hard carriage returns will be replaced with soft ones. Now re-enter Pro-text and type:

Format

Multiple hard returns are ignored, so if there are places where you want hard returns such as at

the end of a paragraph, insert an extra line by pressing Return/Enter at the appropriate point.

```
10 FOR a%=&1CE TO&1CE+950
0: IF PEEK(a%)= 10 AND PEEK
(a%-2)<>10 AND PEEK(a%+2)<
>10 THEN POKE a%,138
20 NEXT
```

Program II

Each character in a text file is

represented as a number known as an Ascii code. Ordinary characters range from 32 to 127.

The compacter works by replacing common two letter combinations with a single character between 128 and 255. For instance, the characters "a", that is space + a, crop up over and over again so these are replaced by one character thus saving one byte for every occurrence.

```
10 REM      Ascii file compacter
20 REM      by Ian C. Sharpe
30      (c) Computing with the Amstrad
40 REM      _____CPC_____
50 MEMORY &6FFF: ln=140
60 FOR adr=&7000 TO &7297 STEP 13
70 READ byte$:chk=0
80 FOR i=0 TO 12
90 v=VAL("&"+MID$(byte$m,i*2+1,2))
100 POKE adr+i,v:chk=chk+v
110 NEXT
120 IF chk<>VAL("&"+RIGHT$(byte$,3)) THEN Print
"ERROR in LINE",ln:STOP
130 ln=ln+10:NEXT:CALL &7000
140 DATA 3EC9320070010E70219472C3D14E3
150 DATA BC1670C32470C37F70434F4D5057A
160 DATA 4143D445850414EC400CDB77058C
170 DATA CDE270CD1671CD80BCCDD770577E7
180 DATA CD80BCDA4C70FD218C71CABF707B3
190 DATA 7ACD95BCFD218471C3BF70CDD7841
200 DATA 705F06800E80FD2194717AFDBE63B
210 DATA 00C266707BFDBE01CA6D70FD23696
220 DATA FD230C10EB78FE00CA777051C3662
230 DATA 34707ACD95BC53C3470CDB7706EA
240 DATA CDE270CD1671CD80BCDA9C70FD85F
250 DATA 218C71CABF70FD218471C3BF7071C
260 DATA CB7FCAB170CBBF2194715F160065A
270 DATA 19197ECD95BC237ECD95BCC3886D8
280 DATA 70FD213B71FE02C8E1CD7ABCCD7B3
290 DATA 8FBCFD7E00CBBFCD5ABBFDCB007FA
300 DATA 7EC0FD23C3570FE80D8E67FFE90F
310 DATA 20D03E20C9DDE5DD6E02DD6603366C
```

```
320 DATA E5DDE1DD4600DD6E01DD660211668
330 DATA 9872CD77BCDDE1DA0971E1FD2181B
340 DATA 4971C3BF70CB3FFE03D0E1FD21786
350 DATA 5F71C3BF70DDE5DD6E00DD6601713
360 DATA E5DDE1DD4600DD6E01DD660211668
370 DATA 987ACD8CBCDDE1FD216D71D8E189A
380 DATA C3BF70506172616D6574657273606
390 DATA 2121218743616E2774206F70653FB
400 DATA 6E20696E7075742066696C6587505
410 DATA 4261642066696C6520747970654A9
420 DATA 8743616E2774206F70656E206F495
430 DATA 75747075742066696C6587446F53C
440 DATA 6E52069748741626F72746564518
450 DATA 8765202074732020610D0A696E3A2
460 DATA 642074206E20651572206920202D373
470 DATA 2D726F697420776F7220706F754D7
480 DATA 72202063206F746F746572616F4A2
490 DATA 6E207379206973657320626564499
500 DATA 6173206673656E6474696C6563515
510 DATA 6F70726174206D2072616D6E674E8
520 DATA 6172656E6D202E206F666D6568490
530 DATA 696E74696376656F6D6E656720528
540 DATA 6465686C6263697869796C646C561
550 DATA 6C72656620682061630A0A7374410
560 DATA 2064616C796F736972696C20684E4
570 DATA 6163616D61626C2C202079696C47B
580 DATA 2065677275736368736F6F676C535
590 DATA 69206C757475206669657477694FB
600 DATA 6E736C6F6561696F656D2075204E1
610 DATA 6E7461636562656F6454687761539
620 DATA 7373706C6E6F72736C796B656659F
630 DATA 6F652E616420547768747370654D6
640 DATA 63746F746D6F6C61666500000042E
650 DATA 0000000000000000000000000000
0000
```


Gunpowder Plot

In Gunpowder Plot you play Guy Fawkes, bent on blowing up the Houses of Parliament. To do this you have to plant gunpowder in the form of large fireworks under the surrounding lawns, and when you've plant-ed enough they will blow the buildings sky-high.

Plant the gunpowder by stepping on to the lawn. As you do so grass is removed at the point where the gunpowder is planted. However if you step on the same area again the gunpowder is removed and replaced by grass.

The government is not so stupid as to leave intruders wandering around the gardens at will, so they have two dangerous karate masters on guard.

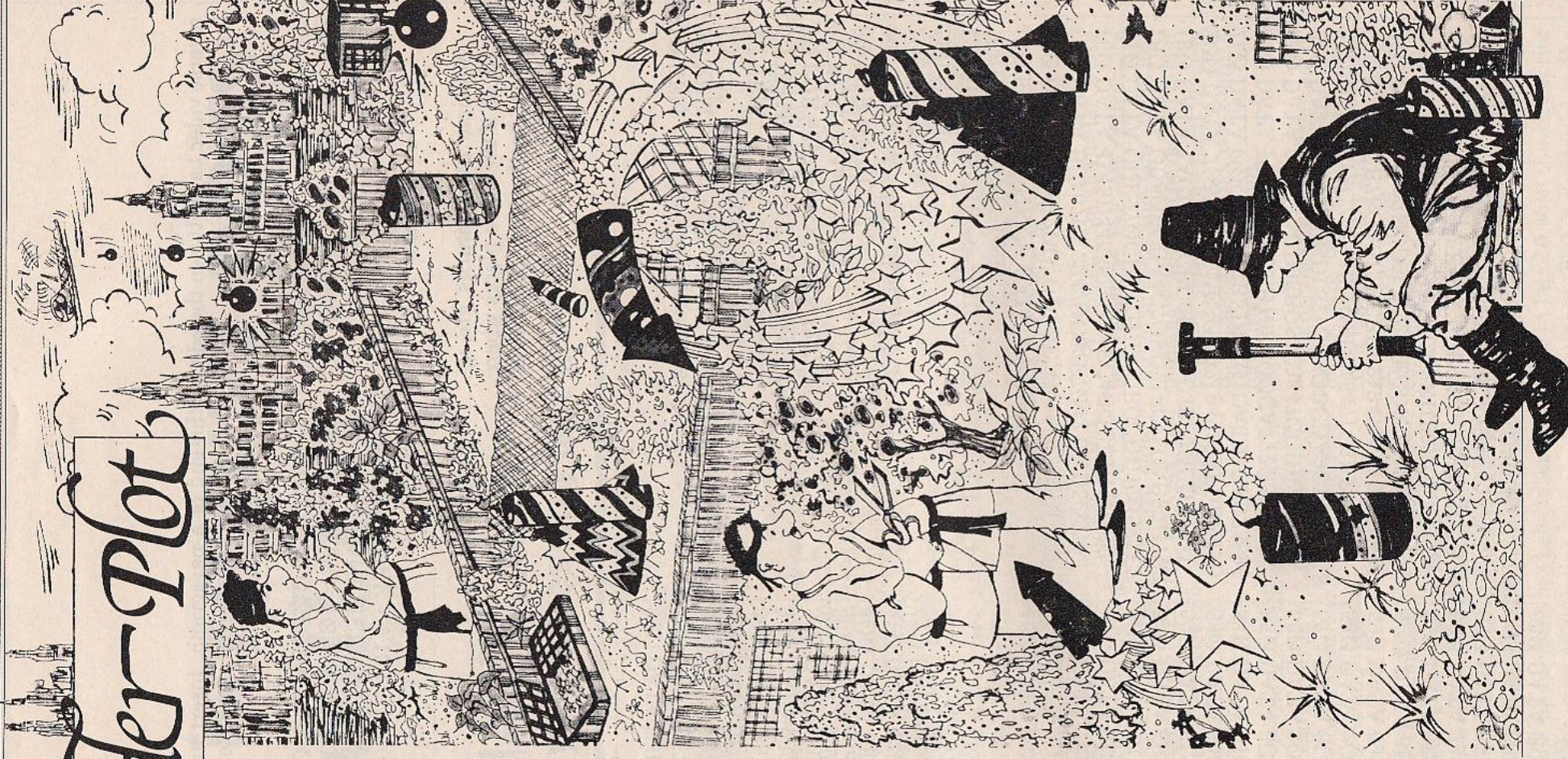
Dangerous they might be, but bright they are not, so to complement them mines are concealed around the gardens. Contact with any of them ensures instant death.

From time to time a special worker will appear and dig up your gunpowder. He moves quite quickly, but you can see him off by bumping into him.

To even things up for you every now and then an accomplice will drop flash bombs down to the garden from his helicopter. When you pick them up they explode, and the intense light blinds the guards and disables the mines for a while.

The game has five levels of difficulty controlling the speed of the guards and the flash bombs' power, and your points increase accordingly. You control Guy using the standard A,Z,K and L keys or a joystick.

There are two ideal ways to cheat. Firstly to help you debug your typing to extend the number of lives you can increase the variable li in line 1960 or remove li=li-1 from line 1760. Secondly you can get through a screen quickly by making the variable en=145 in line 2030.



By DAK LONG LAU

VARIABLES

H(10) Top 10 scores.
N\$(10) Top 10 scorers.
MA(20,25) Screen map.
A(2),B(2) Guard's coordinates.
J(2) Guard's direction.
HI High score.
SC Score.
X Guy's x coordinate.
Y Guy's y coordinate.
MM Digger's x coordinate.
MN Digger's y coordinate.
DR Digger's direction.
IN Guy's number.
EN Random of fireworks planted.
SCR Screen number.
LI Lives.
VV Number of high scorers.
PO Power of flash bomb.

PROGRAM STRUCTURE

10-20 Initialisation.
220-330 Print screen.
340-450 Main loop.
460-980 Guy's movements.
990-1560 Guards' movements.
1570-1670 Digger's movements.
1680-1720 End of game.
1730-1870 Guy gets killed.
1880-2040 Introduction.
2050-2230 High score.
2240-2350 Enter high scorer's name.
2360-3210 Set up screen data.
3220-3230 Screen flash routine.
3240-3400 Instructions.
3410-3520 Miscellaneous subroutines.

```

10 REM *****
****
20 REM
30 REM
40 REM
50 REM
60 REM
70 REM *****
****
80 REM (c) Computing with the Amst
rad
90 ENV 1,100,2,2:ENT 2,20,2,1:ENT
3,20,2,1:ENV 3,20,2,1:ENV 4,1,0,5,
10,-4,2:ENT 4,4,1,3,5,4,2,4,4,1
100 ENT 5,50,2,2:ENV 6,50,2,5:ENT
6,50,5,5:ENV 7,20,2,2:ENT 7,25,2,5
:ENV 5,50,2,2:ENV 8,30,2,2
110 DIM ma(20,25):DIM a(2),b(2):DI
M j(2),hi(10),n$(10):vv=1
120 CALL &BBFF:INK 4,18:INK 6,16:I
NK 13,0
130 REM *** set characters ***
140 FOR f=1 TO 20:FOR g=4 TO 25:ma
(f,g)=0:NEXT:NEXT
150 SYMBOL AFTER 37:SYMBOL 91,28,2
8,8,56,120,14,50,96:SYMBOL 93,56,5
6,16,28,30,112,76,6
160 SYMBOL 123,56,56,18,124,144,40
,44,96:SYMBOL 125,56,56,18,124,144
,40,44,96

```

```

170 SYMBOL 38,56,56,16,254,16,40,6
8,130
180 SYMBOL 64,3,4,8:SYMBOL 141,0,0
,16,60,124,248,240,96
190 SYMBOL 148,126,195,153,165,165
,153,195,126:SYMBOL 149,0,60,102,9
0,90,102,60,0
200 SYMBOL 203,0,221,221,221,0,119
,119,119
210 GOTO 1880
220 REM *** build screen ***
230 INK 0,3:BORDER 13
240 CLS
250 FOR f=2 TO 20:FOR g=4 TO 24
260 ON ma(f,g)+1 GOTO 270,290,270,
300,310
270 NEXT:NEXT
280 GOTO 320
290 PEN 4:LOCATE f,g:PRINT CHR$(20
7):GOTO 270
300 PEN 2:LOCATE f,g:PRINT CHR$(20
3):GOTO 270
310 PEN 5:LOCATE f,g:PRINT CHR$(14
8):PRINT CHR$(22)+CHR$(1):PEN 9:LO
CATE f,g:PRINT CHR$(149):PRINT CHR
$(22)+CHR$(0):GOTO 270
320 LOCATE 1,1:PEN 6:PRINT" HI SC
SCORE":PEN 1:LOCATE 18,1:PRINT S
TRING$(li,""]")

```


GAME OF THE MONTH

```

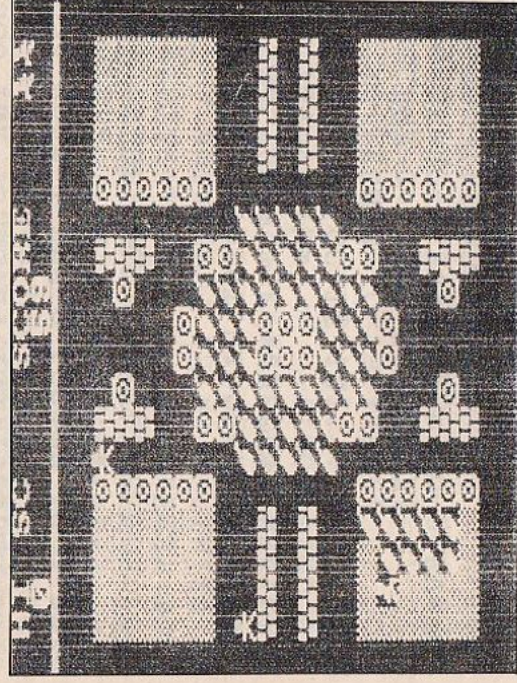
330 PEN 1:LOCATE 2,2:PRINT hi:LOCA
TE 10,2:PRINT SC
340 REM *** start ***
350 INK 10,17:INK 7,26:INK 9,1:INK
5,25:x=11:y=22:a(1)=3:b(1)=11:a(2
)=18:b(2)=11:mm=0:pl=0:ti=0:po=0:d
r=0:j(1)=1:j(2)=4
360 LOCATE x,y:PEN 1:PRINT "["
370 LOCATE a(1),b(1):PEN 7:PRINT "&
":LOCATE a(2),b(2):PRINT "&"
380 PEN 7:LOCATE 1,3:PRINT STRING$
(20,208)
390 z=1:GOSUB 3440
400 z=2:GOSUB 3440
410 I1=INT(RND*350):IF pl=1 THEN 4
20 ELSE IF I1=18 OR I1=3 THEN SOUN
D 2,50,40,1,7,7,1:ma(11,14)=5:LOCA
TE 11,14:PEN 15:PRINT CHR$(231):pl
=1
420 IF pl=1 THEN po=po-1:IF po=0 T
HEN pl=0:INK 7,26
430 IF INT(RND*ap)=5 AND mm=0 THEN
SOUND 3,250,60,8,8:mn=INT(RND*20)
+4:mm=20
440 IF mm>0 THEN GOSUB 1580
450 GOTO 390
460 REM *** guy up ***
470 LOCATE x,y:PRINT"}":IF y=4 THE
N RETURN
480 te=TEST(x*32-16,(26-y)*16+8):I
F t=7 THEN 1730
490 IF te=9 AND po>0 THEN RETURN E
LSE IF te=9 THEN 1730
500 IF te=2 THEN RETURN
510 IF te=15 THEN GOSUB 3430:ma(x,
y-1)=0:GOTO 570
520 IF te=14 THEN 3500
530 LOCATE x,y:
540 IF ma(x,y)=1 THEN GOSUB 3410:I
F en=146 THEN 1680 ELSE 570
550 IF ma(x,y)=2 THEN GOSUB 3420:I
F en=146 THEN 1680 ELSE 570
560 PRINT " "
570 PEN 1:y=y-1:LOCATE x,y:PRINT"}
":RETURN
580 PRINT " ":RETURN
590 PEN 4:PRINT CHR$(207):RETURN
600 PEN 2:PRINT CHR$(203):RETURN
610 PEN 5:PRINT CHR$(148):PRINT CH
R$(22)+CHR$(1):LOCATE mm,mn:PEN 9:
PRINT CHR$(149):PRINT CHR$(22)+CHR
$(0):RETURN
620 PEN 15:PRINT CHR$(231):RETURN
630 REM *** guy right ***
640 LOCATE x,y:PRINT"]":IF x=20 TH
EN RETURN
650 te=TEST(x*32+16,(25-y)*16+8):I
F te=7 THEN 1730

```

```

660 IF te=9 AND po>0 THEN RETURN E
LSE IF te=9 THEN 1730
670 IF te=2 THEN RETURN
680 IF te=15 THEN GOSUB 3430:ma(x+
1,y)=0:GOTO 740
690 IF te=14 THEN RETURN
700 LOCATE x,y
710 IF ma(x,y)=1 THEN GOSUB 3410:I
F en=146 THEN 1680 ELSE 740
720 IF ma(x,y)=2 THEN GOSUB 3420:G
OTO 740
730 PRINT " "
740 PEN 1:x=x+1:LOCATE x,y:PRINT"}
":RETURN
750 REM *** guy down ***
760 LOCATE x,y:PRINT{"":IF y=24 TH
EN RETURN
770 te=TEST(x*32-16,(24-y)*16+8):I
F te=7 THEN 1730
780 IF te=9 AND po>0 THEN RETURN E
LSE IF te=9 THEN 1730
790 IF te=2 THEN RETURN
800 IF te=15 THEN GOSUB 3430:ma(x,
y+1)=0:GOTO 850
810 IF te=14 THEN 3500
820 LOCATE x,y
830 IF ma(x,y)=1 THEN GOSUB 3410:I
F en=146 THEN 1680 ELSE 860
840 IF ma(x,y)=2 THEN GOSUB 3420:G
OTO 860
850 PRINT " "
860 PEN 1:y=y+1:LOCATE x,y:PRINT"}
":RETURN
870 REM *** guy left ***
880 LOCATE x,y:PRINT["":IF x=1 THE
N RETURN
890 te=TEST(x*32-48,(25-y)*16+8):I
F te=7 THEN 1730
900 IF te=9 AND po>0 THEN RETURN E
LSE IF te=9 THEN 1730
910 IF te=2 THEN RETURN
920 IF te=15 THEN GOSUB 3430:ma(x-
1,y)=0:GOTO 980
930 IF te=14 THEN 3500
940 LOCATE x,y
950 IF ma(x,y)=1 THEN GOSUB 3410:I
F en=146 THEN 1680 ELSE 980
960 IF ma(x,y)=2 THEN GOSUB 3420:G
OTO 980
970 PRINT " "
980 PEN 1:x=x-1:LOCATE x,y:PRINT"[
":RETURN
990 REM *** guard up ***
1000 IF in=1 THEN 1110
1010 IF a(v)=x AND b(v)-1=y THEN 1
730
1020 IF ma(a(v),b(v)-1)=4 OR b(v)=
4 THEN 1110

```

```

1290 IF b(v)+1<20 AND ma(a(v),b(v)
+1)>4 THEN j(v)=3:RETURN
1300 j(v)=1:RETURN
1310 REM *** guard down ***
1320 IF in=3 THEN 1110
1330 IF a(v)=x AND b(v)+1=y THEN 1
730
1340 IF b(v)=24 THEN 1110
1350 IF ma(a(v),b(v)+1)=4 THEN 111
0
1360 ON ma(a(v),b(v))+1 GOTO 1370,
1380,1390,1400,1410,1420
1370 PRINT " ":GOTO 1430
1380 PEN 4:PRINT CHR$(207):GOTO 14
30
1390 GOSUB 3510:GOTO 1430
1400 PEN 2:PRINT CHR$(203):GOTO 14
30
1410 RETURN
1420 PEN 15:PRINT CHR$(231)
1430 b(v)=b(v)+1:LOCATE a(v),b(v):
PEN 7:PRINT"&":RETURN
1440 REM *** guard left ***
1450 IF in=4 THEN 1280
1460 IF a(v)-1=x AND b(v)=y THEN 1
730
1470 IF a(v)=1 THEN 1280
1480 IF ma(a(v)-1,b(v))=4 THEN 128
0
1490 ON ma(a(v),b(v))+1 GOTO 1500,
1510,1520,1530,1540,1550
1500 PRINT " ":GOTO 1560
1510 PEN 4:PRINT CHR$(207):GOTO 15
60
1520 GOSUB 3510:GOTO 1560
1530 PEN 2:PRINT CHR$(203):GOTO 15
60
1540 RETURN
1550 PEN 15:PRINT CHR$(231)
1560 a(v)=a(v)-1:LOCATE a(v),b(v):
PEN 7:PRINT"&":RETURN
1570 REM *** destroyer ***
1580 IF mm-1=x AND mn=y THEN LOCAT
E mm,mn:ON ma(mm,mn)+1 GOSUB 580,5
90,590,600,610,620:mm=0:RETURN
1590 LOCATE mm,mn:ON ma(mm,mn)+1 G
OTO 1600,1610,1620,1630,1640,1650
1600 PRINT " ":GOTO 1660
1610 PEN 4:PRINT CHR$(207):GOTO 16
60
1620 SOUND 1,10,20,0,3,3:en=en-1:s
c=sc-1:LOCATE 10,2:PEN 1:PRINT sc:
ma(mm,mn)=1:LOCATE mm,mn:GOTO 1610
1630 PEN 2:PRINT CHR$(203):GOTO 16
60
1640 PEN 5:PRINT CHR$(148):PRINT C
HR$(22)+CHR$(1):LOCATE mm,mn:PEN 9
:PRINT CHR$(149):PRINT CHR$(22)+CH

```

```

1030 ON ma(a(v),b(v))+1 GOTO 104
0,1050,1060,1070,1080,1090
1040 PRINT " ":GOTO 1100
1050 PEN 4:PRINT CHR$(207):GOTO 11
00
1060 GOSUB 3510:GOTO 1100
1070 PEN 2:PRINT CHR$(203):GOTO 11
00
1080 RETURN
1090 PEN 15:PRINT CHR$(231)
1100 b(v)=b(v)-1:LOCATE a(v),b(v):
PEN 7:PRINT"&":RETURN
1110 IF a(v)=20 THEN j(v)=4:RETURN
1120 IF (ma(a(v)+1,b(v))>4 OR a(v
)+1<20) AND x>a(v) THEN j(v)=2:RET
URN
1130 IF a(v)-1>0 AND ma(a(v)-1,b(v
))>4 THEN j(v)=4 :RETURN
1140 j(v)=2:RETURN
1150 REM *** guard right ***
1160 IF in=2 THEN 1280
1170 IF a(v)+1=x AND b(v)=y THEN 1
730
1180 IF a(v)=20 THEN 1280
1190 IF ma(a(v)+1,b(v))=4 THEN 128
0
1200 ON ma(a(v),b(v))+1 GOTO 1210,
1220,1230,1240,1250,1260
1210 PRINT " ":GOTO 1270
1220 PEN 4:PRINT CHR$(207):GOTO 12
70
1230 GOSUB 3510:GOTO 1270
1240 PEN 2:PRINT CHR$(203):GOTO 12
70
1250 RETURN
1260 PEN 15:PRINT CHR$(231)
1270 a(v)=a(v)+1:LOCATE a(v),b(v):
PEN 7:PRINT"&":RETURN
1280 IF (ma(a(v),b(v)-1)>4 OR b(v
)-1>3) AND y<b(v) THEN j(v)=1:RETU
RN

```


GAME OF THE MONTH

```

R$(0):GOTO 1660
1650 PEN 14:PRINT CHR$(231)
1660 mm=mm-1:IF mm=0 THEN LOCATE 1
, mn:PRINT" ":RETURN
1670 LOCATE mm, mn: PEN 14:PRINT"&":
RETURN
1680 REM *** task finished ***
1690 SOUND 1,50,150,0,6,6
1700 FOR f=1 TO 25:LOCATE 1,1:PRIN
T CHR$(11):NEXT
1710 scr=scr+1:IF scr=6 THEN MODE
1:LOCATE 11,12:PEN 1:PRINT"WHOLE
GAME COMPLETED":LOCATE 15,14:PRINT
"WE'LL DONE !!!":FOR F=1 TO 3200:N
EXT:MODE 0:GOTO 2050
1720 en=0:MODE 0: ON scr GOTO 2360
,2540,2730,2900,3060
1730 REM *** guy killed ***
1740 SOUND 1,50,100,0,5,5
1750 INK 4,18,0:INK 2,21,23:FOR f=
1 TO 5555:NEXT:INK 4,18:INK 2,20
1760 li=1i-1:LOCATE 21-(3-1i),1:PR
INT" ":IF li=0 THEN 2050
1770 IF mm>0 THEN LOCATE mm, mn:ON
ma(mm, mn)+1 GOSUB 580,590,590,600,
610,620
1780 z=1:GOSUB 3520:z=2:GOSUB 3520
1790 LOCATE x,y:ON ma(x,y)+1 GOSUB
1810,1830,1870,1850,1820,1860
1800 GOTO 350
1810 PRINT" "
1820 RETURN
1830 PEN 4:PRINT CHR$(207):RETURN
1840 PEN 10:PRINT CHR$(64):PRINT C
HR$(22)+CHR$(1):LOCATE a(v),b(v):P
EN 1:PRINT CHR$(141):PRINT CHR$(22
)+CHR$(0):RETURN
1850 PEN 2:PRINT CHR$(203):RETURN
1860 PEN 15:PRINT CHR$(231):RETURN
1870 PEN 10:PRINT CHR$(64):PRINT C
HR$(22)+CHR$(1):LOCATE x,y:PEN 1:P
RINT CHR$(141):PRINT CHR$(22)+CHR$
(0):GOTO 350
1880 REM *** introduction ***
1890 PEN 3: LOCATE 14,5:PRINT"GUNP
OWDER PLOT"
1900 PEN 9:LOCATE 16,7:PRINT"BY D.
L. LAU"
1910 PEN 9:LOCATE 11,12:PRINT" A-
UP
Z-DOWN"
1920 PEN 6:PRINT:PRINT"
L-RIGHT K-LEFT"
1930 PRINT:PEN 5:PRINT"
OR USE A JOYSTICK"
1940 GOSUB 3240
1950 FOR F=1 TO 500:NEXT:FOR F=1 T
O 25:SOUND 1,F+10,1:LOCATE 1,1:PRI
NT CHR$(11):NEXT

```

```

1960 INK 15,20,24:INK 14,5,26:sc=0
:li=3
1970 MODE 1:PEN 2:LOCATE 18,7:PRIN
T"ENTER ":PEN 1:PRINT:PRINT"
DIFFICULTY LEVEL":PEN 5:PRIN
T:PRINT"
(2-5) EASY TO H
ARD"
1980 PEN 3:PRINT:k$="":WHILE INSTR
("12345",k$)<1:k$=UPPER$(INKEY$):W
END:lev=VAL(k$)
1990 PEN 1:LOCATE 12,11:PRINT" ("
k$;") ":PEN 3
2000 FOR co=1 TO 500:NEXT
2010 DF=20-(LEV*2):AP=450-(LEV*70)
:WE=300-(LEV*35)
2020 FOR f=1 TO 25:LOCATE 1,1:PRIN
T CHR$(11):NEXT:MODE 0
2030 en=0:sc=0:scr=1
2040 ON SCR GOTO 2360,2540,2730,29
00,3060
2050 REM ** hi score ***
2060 FOR f=1 TO 25:LOCATE 1,1:PRIN
T CHR$(11):SOUND 1,f*2,2:NEXT
2070 IF vv<9 THEN 2250
2080 FOR f=1 TO 9:IF hi(f)<sc THEN
2250
2090 NEXT
2100 FOR f=1 TO 10
2110 FOR g=f+1 TO 10
2120 IF hi(f)<hi(g) THEN ee=hi(f):
e$=n$(f):hi(f)=hi(g):n$(f)=n$(g):h
i(g)=ee:n$(g)=e$
2130 NEXT:NEXT
2140 CLS:PEN 15:PRINT:PRINT"
L OF F":PRINT" L A":PRI
NT" A M":PRINT" H
E"
2150 ORIGIN 270,360:DRAW 100,0:DR
AW 0,-35:DRAW -100,0:DRAW 0,35:
ORIGIN 130,310:DRAW 380,0
2160 LOCATE 1,6:PRINT STRING$(4,C
H R$(143)):LOCATE 17,6:PRINT STRING$
(4,CHR$(143))
2170 LOCATE 1,25:PRINT STRING$(20,
CHR$(143)):LOCATE 1,1:PRINT CHR$(1
1):FOR F=7 TO 24:LOCATE 1,F:PRINT
CHR$(143):LOCATE 20,f:PRINT CHR$(1
43):NEXT
2180 cc=1:FOR F=8 TO 24 STEP 2:LOC
ATE 2,f:PEN 4:PRINT hi(cc):LOCATE
11,f:PEN 5:PRINT n$(cc):cc=cc+1:NE
XT
2190 hi=hi(1):FOR f=1 TO 5555:NEXT
:FOR f=1 TO 25:LOCATE 1,25:PRINT C
HR$(10):SOUND 1,150-(f*5),2:NEXT
2200 MODE 1:LOCATE 15,14:PRINT"Ano
ther game ?"
2210 a$="":WHILE INSTR(" YN",a$)<2

```


GAME OF THE MONTH

```

:a$=UPPER$(INKEY$):WEND
2220 IF a$="N" THEN END
2230 GOTO 1960
2240 REM *** enter name ***
2250 FOR f=1 TO 100:k$=INKEY$:NEXT
2260 CLS:n$(10)="":PEN 1:PRINT:PRI
NT:PRINT" ENTER YOUR NAME "
2270 HI(10)=SC
2280 PEN 4:LOCATE 7,8:PRINT STRING
$(8,CHR$(208))
2290 FOR f=7 TO 14
2300 IF INKEY(18)=0 THEN 2350
2310 j$=INKEY$:IF j$=" " THEN 2310
2320 PEN 2:LOCATE f,7:PRINT UPPER$(
j$)
2330 SOUND 1,f*5,5,4:n$(10)=n$(10)
+j$
2340 NEXT
2350 vv=vv+1:n$(10)=UPPER$(n$(10))
:hi(10)=sc:GOTO 2100
2360 REM *** Screen 1 ***
2370 REM *** Set grass ***
2380 FOR f=1 TO 20:FOR g=4 TO 24:m
a(f,g)=0:NEXT:NEXT
2390 FOR f=2 TO 5:FOR g=5 TO 10
2400 ma(f,g)=1:ma(f+14,g)=1:ma(f,g
+13)=1:ma(f+14,g+13)=1:NEXT:NEXT
2410 FOR f=9 TO 12:FOR g=10 TO 18:
ma(f,g)=1:NEXT:NEXT
2420 FOR f=7 TO 8:FOR g=12 TO 16:m
a(f,g)=1:ma(f+6,g)=1:NEXT:NEXT
2430 REM *** set deadly bombs ***
2440 RESTORE 2480
2450 FOR f=5 TO 10:ma(6,f)=4:ma(15
,f)=4:ma(6,f+13)=4:ma(15,f+13)=4:N
EXT
2460 FOR f=10 TO 11:ma(f,9)=4:ma(f
,19)=4:ma(f,13)=4:ma(f,14)=4:ma(f,
15)=4:NEXT
2470 RESTORE 2480:FOR f=1 TO 16:RE
AD q,w:ma(q,w)=4:NEXT
2480 DATA 9,6,12,6,9,9,12,9,8,10,8
,11,13,10,13,11,8,17,8,18,13,17,13
,18,9,19,12,19,9,22,12,22
2490 REM *** set obstacles ***
2500 FOR f=5 TO 7:ma(8,f)=3:ma(13,
f)=3:ma(8,f+16)=3:ma(13,f+16)=3:NE
XT
2510 FOR f=2 TO 5:ma(f,13)=3:ma(f,
15)=3:ma(f+14,13)=3:ma(f+14,15)=3:
NEXT
2520 ma(9,9)=0:ma(12,9)=0:ma(9,19)
=0:ma(12,19)=0
2530 GOTO 220
2540 REM *** screen 2 ***
2550 FOR g=4 TO 25:FOR f=1 TO 20:m
a(f,g)=0:NEXT:NEXT
2560 REM *** set grass ***

```

```

2570 FOR f=2 TO 9:FOR g=7 TO 9:ma(
f,g)=1:ma(f+11,g)=1:NEXT:NEXT
2580 FOR f=2 TO 3:FOR g=5 TO 6:ma(
f,g)=1:ma(f+16,g)=1:NEXT:NEXT
2590 FOR f=9 TO 12:FOR g=14 TO 20:
ma(f,g)=1:NEXT:NEXT
2600 FOR f=2 TO 6:FOR g=18 TO 23:m
a(f,g)=1:ma(f+13,g)=1:NEXT:NEXT
2610 FOR f=4 TO 6:FOR g=16 TO 17:m
a(f,g)=1:ma(f+11,g)=1:NEXT:NEXT
2620 FOR f=7 TO 9:ma(20,f)=0:NEXT
2630 REM *** set obstacles ***
2640 FOR f=9 TO 12:ma(f,5)=3:ma(f,
24)=3:NEXT:FOR f=7 TO 14:ma(f,12)=
3:NEXT
2650 FOR f=2 TO 5:ma(f,13)=3:ma(f+
14,13)=3:NEXT
2660 REM *** set deadly bombs ***
2670 FOR f=2 TO 8:ma(f,10)=4:ma(f+
11,10)=4:NEXT:RESTORE 2690
2680 FOR f=1 TO 34:READ aa,bb:ma(a
a,bb)=4:NEXT
2690 DATA 5,4,16,4,7,6,14,6,9,7,9,
8,9,9,12,7,12,8,12,9,10,11,11,11,2
,12,19,12
2700 DATA 8,14,13,14,3,16,18,16,2,
17,3,17,18,17,19,17
2710 DATA 8,19,13,19,4,20,17,20,9,
21,10,21,11,21,12,21,4,21,17,21,7,
23,14,23
2720 GOTO 220
2730 REM *** screen 3 ***
2740 FOR f=1 TO 20:FOR g=4 TO 24:m
a(f,g)=0:NEXT:NEXT
2750 REM *** set grass ***
2760 FOR f=4 TO 17:FOR g=5 TO 8:ma
(f,g)=1:NEXT:ma(3,5)=1:ma(3,6)=1:m
a(18,5)=1:ma(18,6)=1:NEXT
2770 FOR f=8 TO 13:FOR g=12 TO 18:
ma(f,g)=1:NEXT:NEXT
2780 FOR f=2 TO 4:FOR g=15 TO 23:m
a(f,g)=1:ma(f+15,g)=1:NEXT:NEXT
2790 FOR f=5 TO 6:FOR g=21 TO 23:m
a(f,g)=1:ma(f+10 ,g)=1:NEXT:NEXT
2800 REM *** set obstacles ***
2810 FOR f=2 TO 5:ma(f,11)=3:ma(f+
14,11)=3:NEXT:FOR f=9 TO 12:ma(f,2
3)=3:NEXT
2820 REM *** set deadly bombs ***
2830 FOR f=5 TO 15 STEP 2:ma(f,9)=
4:NEXT:FOR f=8 TO 13:ma(f,11)=4:NE
XT
2840 FOR f=2 TO 5:ma(f,13)=4:ma(f+
14,13)=4:NEXT
2850 FOR f=15 TO 18:ma(7,f)=4:ma(1
4,f)=4:NEXT
2860 FOR f=9 TO 12:ma(f,19)=4:ma(f
,21)=4:NEXT

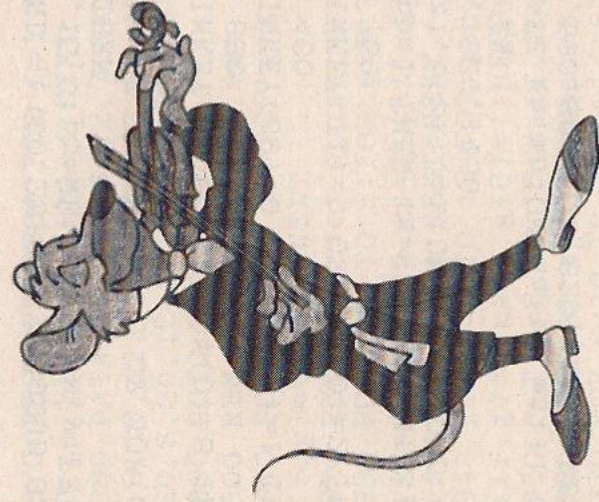
```


GAME OF THE MONTH

```

2870 RESTORE 2880:FOR f=1 TO 16:RE
AD aa,bb:ma(aa,bb)=4:NEXT
2880 DATA 8,5,10,6,12,7,14,8,2,8,1
9,8,10,15,11,15,10,16,11,16,5,19,5
,20,6,20,15,20,16,19,16,20
2890 GOTO 230
2900 REM *** screen 4 ***
2910 FOR f=1 TO 20:FOR g=4 TO 24:m
a(f,g)=0:NEXT:NEXT
2920 REM *** set grass ***
2930 FOR f=2 TO 8:FOR g=5 TO 9:ma(
f,g)=1:ma(f+11,g)=1:ma(f,g+13)=1:m
a(f+11,g+13)=1:NEXT:NEXT
2940 FOR f=8 TO 13:FOR g=12 TO 14:
ma(f,g)=1:ma(f,g+6)=1:NEXT:NEXT
2950 FOR f=8 TO 13:ma(f,15)=1:NEXT
2960 REM *** set obstacles ***
2970 FOR f=10 TO 11:ma(f,6)=3:ma(f
,8)=3:ma(f,11)=3:ma(f,24)=3:NEXT
2980 FOR f=2 TO 6:ma(f,13)=3:ma(f+
13,13)=3:NEXT
2990 REM *** deadly bombs ***
3000 RESTORE 3020:FOR f=4 TO 6:ma(
f,7)=4:ma(f+11,7)=4:ma(f+1,17)=4:m
a(f+5,17)=4:ma(f+10,17)=4:NEXT
3010 FOR f=1 TO 36:READ ta,tb:ma(t
a,tb)=4:NEXT
3020 DATA 2,5,8,5,13,5,19,5,2,9,8,
9,13,9,20,9,4,10,6,10,15,10,17,10,
5,12,16,12,10,13,11,14
3030 DATA 7,15,14,15,2,16,19,16,12
,17,5,18,16,18,4,20,7,20,14,20,17,
20,10,21,11,21
3040 DATA 8,22,13,22,6,23,15,23,3,
24,18,24,19,9
3050 ma(8,21)=0:ma(13,21)=0:GOTO 2
20
3060 REM *** screen 5 ***
3070 FOR f=1 TO 20:FOR g=1 TO 24:m
a(f,g)=0:NEXT:NEXT
3080 REM *** set grass ***
3090 FOR f=2 TO 19:FOR g=5 TO 10:m
a(f,g)=1:NEXT:NEXT
3100 FOR f=7 TO 14:FOR g=11 TO 14:
ma(f,g)=1:NEXT:NEXT
3110 FOR f=2 TO 5:FOR g=17 TO 23:m
a(f,g)=1:ma(f+14,g)=1:NEXT:NEXT
3120 REM *** set obstacles ***
3130 FOR f=14 TO 15:ma(6,f)=3:ma(1
5,f)=3:ma(8,f+7)=3:ma(13,f+7)=3:NE
XT:ma(8,23)=3:ma(13,23)=3
3140 FOR f=8 TO 13:ma(f,17)=3:NEXT
3150 REM *** set deadly bombs ***
3160 FOR f=2 TO 3:ma(f,5)=4:ma(f+1
6,5)=4:ma(f+8,6)=4:ma(f+1,7)=4:ma(
f+3,7)=4:ma(f+13,7)=4:ma(f+15,7)=4
:ma(f+8,8)=4
3170 ma(f+8,11)=4:ma(f+8,12)=4:ma(
f,13)=4:ma(f+15,13)=4:ma(f+8,15)=4
:ma(f+8,19)=4:ma(f+8,24)=4:NEXT
3180 RESTORE 3190:FOR f=1 TO 32:RE
AD ta,tb:ma(ta,tb)=4:NEXT
3190 DATA 8,6,13,6,8,8,13,8,2,10,6
,10,15,10,19,10,7,12,14,12,7,13,14
,13,4,13,19,13,8,15,13,15
3200 DATA 2,17,5,17,16,17,19,17,4,
19,8,19,13,19,18,19,3,20,6,20,15,2
0,17,20,2,23,5,23,16,23,19,23
3210 GOTO 220
3220 REM *** blinding guards ***
3230 FOR f=1 TO 10:INK 0,26:FOR g=
1 TO 20:NEXT:INK 0,0:FOR g=1 TO 10
:NEXT:NEXT:INK 0,3:RETURN
3240 REM *** instructions ***
3250 PRINT:PRINT:PRINT"
      Would you like instructions ?"
3260 a$="":WHILE INSTR(" YN",a$)<2
:a$=UPPER$(INKEY$):WEND
3270 IF a$="N" THEN RETURN
3280 CLS:PEN 1:PRINT:PRINT" It's N
ovember the 5th and as Guy Fawkes
you have accepted 5 dangerous miss
ions from the leader of the opposi
tion."
3290 PRINT:PRINT" Your task is to
place gunpowder in the gardens of
the Houses of Parliament in order
to blow the whole place up."
3300 PRINT:PRINT" As you plant the
gunpowder in the grass is removed
from the lawn. You must bury su
fficient gunpowder to remove all th
e grass to complete each mission
."
3310 PRINT:PRINT"The Government em
ploys 2 killer guards to protect
the place and you must avoid them
at all costs."
3320 PRINT:PRINT" Occasionally th
ere is a special guard who will
dig up your powder but he can be d
estroyed by bumping into him."
3330 LOCATE 8,25:PRINT"Press space
bar to continue";
3340 IF INKEY(47)<>0 THEN 3340
3350 CLS:LOCATE 1,3:PRINT" The gar
dens are a veritable minefield w
ith explosive devices protecting a
ll the areas of lawn. Contact wit
h any of these means instant dea
th for Guy."
3360 PRINT:PRINT" To help you, ran
dom flash bombs appear and when y
ou pick them up they explode. Thes
e blind the guards and disable the
deadly mines for a while."

```

New games galore for the CPC

A number of popular cartoon and real-life characters feature in the offerings from Gremlin. World Cup hero Gary Lineker has put his name to Superstar Soccer, claimed to be "a complete innovative and original genre of a football game".

From the television cartoon, Mask II features the hero Matt Trakker and has two main elements: The selection of the team and vehicles and the completion of four missions.

Also from the small screen, another youngsters' favourite, Masters of the Universe, has been tapped to produce The Feature Movie as He-Man takes on Skeletor.

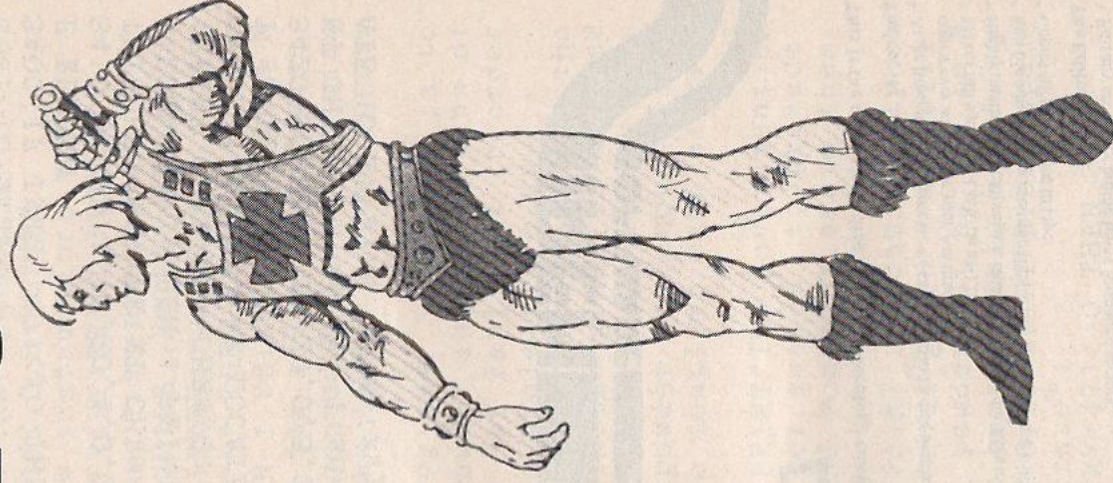
Disney Hero

Basil The Great Mouse Detective comes from the big screen and is the latest Disney hero. From his study at 221b Baker Street, he sets out to find his faithful companion Dr Dawson in elementary fashion.

Blood Valley is a Gremlin fantasy adventure based on the Duelmaster series of fighting books, while Alternative Games is a simulation including sack racing, log flogging, running up walls and boot throwing.

Compendium is described as a whacky adaptation of a series of traditional board games.

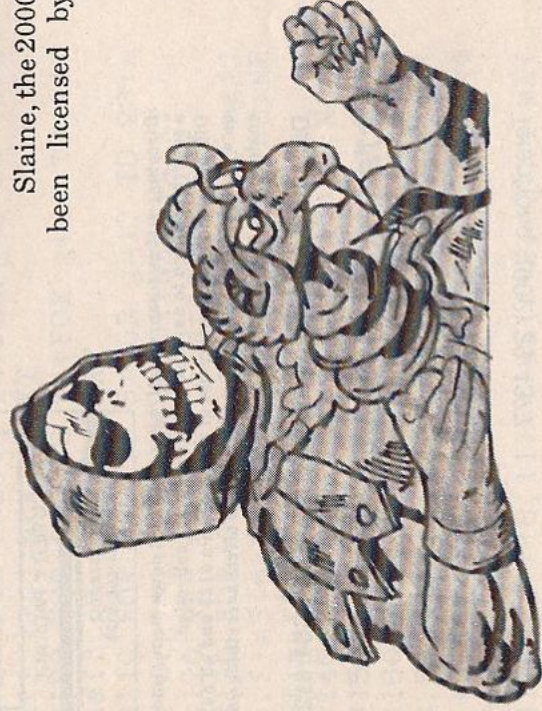
Slaine, the 2000Ad cult hero has been licensed by Martech and



turned into a game of the same name featuring Reflex – said to be a totally different type of control.

The player is required to take over Slaine's mind so that as each situation arises, the brain races to make sense of what is before it.

continues right column, next page



Champagne Hangover



A nationwide electronic mail competition in the U.K. offering a magnum of champagne as the star prize resulted in a giant hangover when the winner unwittingly caused the software in the central computer to crash.

When ex-San Francisco police officer Cameron (Cam) Lacey posted the 10,000th message on the Micro-Link bulletin board from his office in Grimsby via his CPC6128, all that should have happened was that he received a three litre bottle of Moët & Chandon to mark that milestone achievement.

Unfortunately what no one realised at the time was that the BBS system was only designed to cope with a data field of four characters — up to and including 9,999.

So when just one additional message was received, it was as if a giant fuse had blown. When the crash came there was consternation at MicroLink headquarters. What made matters worse was that

technical chief Tim Clarkson was on holiday and all attempts by his staff to revive Britain's biggest bulletin board were unsuccessful.

After two hours of frantic transatlantic telephone calls, the American authors of the bulletin board software finally traced the problem.

They were, however, unable to make the message numbering system accept a figure larger than 9,999.

All they could do was make room by deleting the first 5,000 messages.

In fact, the only person left with a grin on his face was Cameron Lacey.

According to MicroLink boss Derek Meakin, it should have been a sheepish one. For it seems that Cam cheated a little bit.

"He'd obviously written a program that started sending identical messages just as on the board was approaching the 10,000 mark".

From previous page

Interactive 3D Graphics

Driller from incentive Software features Freescape, a 3D environment simulator. Looking in any direction will produce a view in solid interactive 3D graphics.

The latest adventure from CRL — Book of the Dead — is the first from a young group of programmers called Essential Myth.

The hero is an Egyptian godling called Kteth whose father's attack on the gods leaves him banished from the heavens.

Fantasy Adventure — The Bard's Tale — is among the pre-Christmas offerings from Electronic Arts.

Spreading evil

The action takes place in the country town of Skara Brae where a small group of unproven warriors must fight to stop the spread of evil from the wizard Mangar.

Arcticfox is an Electronic Arts combat simulation based on a sub-tank designed for polar combat.

A head-up display mimics control movements on screen. The view from the tank reveals targetable alien resources and the hostile polar terrain.

The software house is releasing another combat simulation, PHM Pegasus. Here a hydrofoil missile craft travels the oceans battling with numerous enemy vessels in any of eight different combat assignments.

All the messages said was: "Is this the one?"

"So he ended up with the drink while we got left with the hangover".

BrunWord update

Brunning Software has produced an upgraded version of its word processor, BrunWord, for the CPC6128. It features a screen update more than twice as fast as its predecessor.

Brunning say that other additions include ten special user defined characters and the fact that word and phrases can now be re-placed.

BrunWord 6128 costs \$79.99, complete with BrunSpell and DataFile and is distributed in Australia and New Zealand by Strategy Software.

Crammed Chat

A program which can compress English text by as much as 50 per cent is being marketed by Ballinderry Software of Northern Ireland.

Textpak is supplied on a 27128 eprom and its 30 plus RSX commands are installed when the machine is booted. Two commands are concerned with text compression, the rest enable the user to store and manipulate text data in a ram file.

Tom Kirk of Ballinderry said: "Text compression is something which has intrigued me for many years."

When the cost of eproms fell significantly a couple of years ago I decided to begin work on such a program for the CPC."

"I think this is an ideal eprom program since it allows more text to be held in ram without using up appreciable memory."

"I have achieved my aim of an average 50 per cent compression of English text", he said.

Show goes North

New attractions have been organised for the Amstrad Computer Show in Manchester.

For the first time outside London the show will include the Amstrad Theatre - scene for non-stop presentations of all that's new for the CPC and its sister machines.

The large theatre area includes seating enabling 150 to watch and listen in comfort while experts demonstrate the latest hardware and software and conduct question-and-answer sessions.

In addition, there will be no fewer than eight huge feature stands occupied by major suppliers, Amstrad itself and the Official Amstrad Users Club.

These impressive feature areas - contributing to a total of 70 individual exhibitors - are made possible by the show's location at G-Mex in central Manchester.

The 100,000 sq. ft. Greater Manchester Exhibition Centre was specially chosen to house the UK's biggest computer specific show ever held outside London.

It runs from Friday to Sunday, October 23 to 25.

Among the many suppliers working on new CPC developments for release at the show is Siren Software.

The firm is launching an eprom programmer for the CPC range, and will also have a disc-based CPC sound system called Ultra-sound.

Subscribe now
to
**Computing
With
The
Amstrad**
... and
SAVE !!
\$\$\$ off the
newsagent's
price.

(Psst... What's more, this is the best guard against inflationary cover-price increases)

Fill in the form or pick up the phone and order now!

See the
Centre Pages
for how-to-do-it.

Channel 7 on your monitor?

**Roland
Waddilove
looks over
two TV tuners**

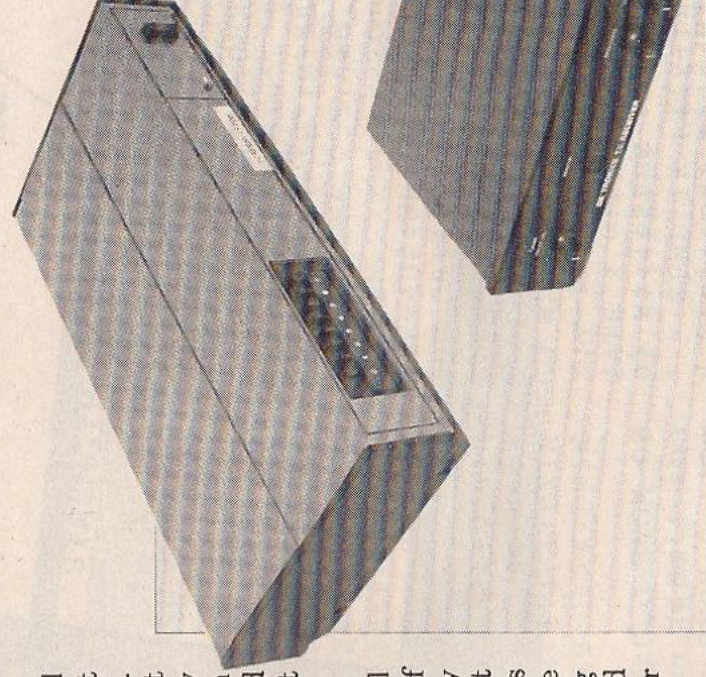
It wasn't so long ago that all home micros had a uhf TV output and had to be used with a television. This caused many an argument with some members of the family wanting to watch Coronation Street, Dallas or Eastenders and others wanting to play the latest arcade game.

Thanks to Amstrad this has all changed as one of the advantages of Amstrad computers is that they come complete with a monitor. It does push the price up a bit but it's worth every penny. You can use your micro without disturbing other members of the family, and the monitor's picture quality is far better to boot.

Now dk'Tronics and Screens have produced tuners to turn your monitor back into a television. Is this a step in the right direction? I'll leave it to you to decide.

The two units are entirely different and both have their advantages and disadvantages. However, they both do the same job — plug your monitor and TV aerial into either unit, switch on, sit back and watch TV.

The dk'Tronics tuner is a very sturdy unit made of thick metal painted black. It's the same width as the Amstrad monitor but not as deep, but the monitor sits safely on top and the whole set up takes no more space than before.



On the other hand, the Screenvision tuner is made of very thin plastic and will not support the monitor. As the Amstrad's RGB lead is very short you must remove the keyboard and place the tuner in front of the monitor.

This means you'll need more space on your table and is inconvenient when switching between TV and micro. However, compared to the rather plain dk'Tronics unit it does look rather stylish and modern.

The dk'Tronics controls are primitive and outdated compared to modern TVs and videos. There

are simply four knobs on the front with no markings at all.

The tuning knob is the main bugbear. You can't tell which station you are on or in which direction you should turn it to tune in to the station you want.

The Screenvision tuner is much better with preset, pushbutton stations and a pushbutton on/off switch. The colour, volume and brightness controls are at the back of the unit out of the way and will rarely be used once the tuner has been set up.

Continues page 66

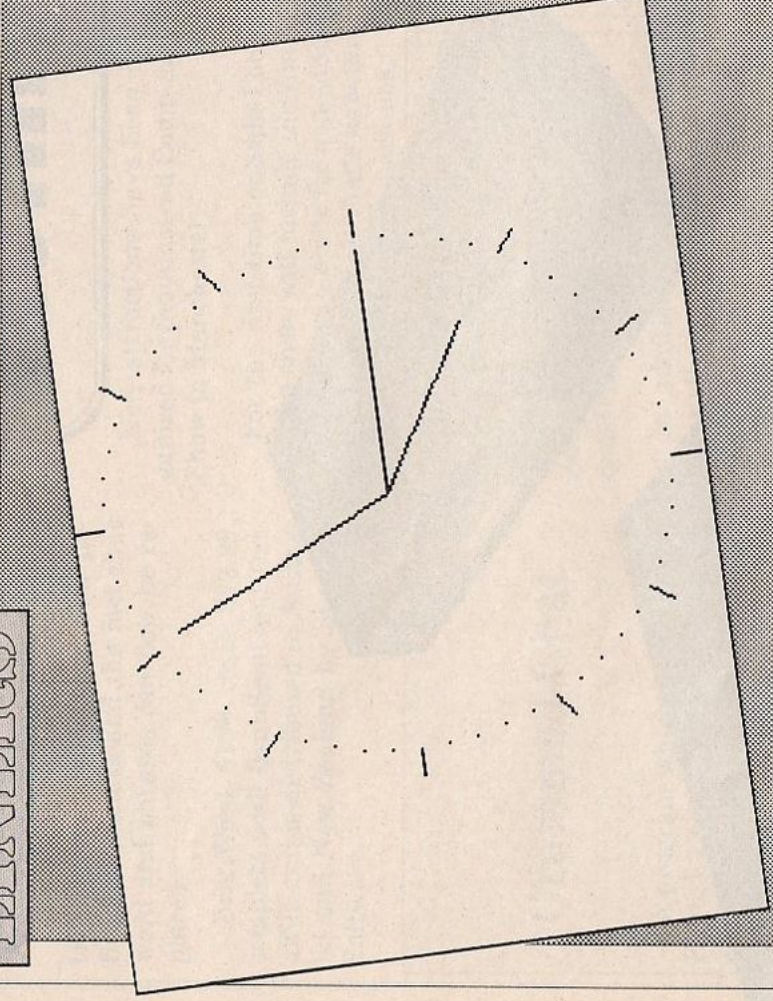
100 LINERS

Here's another selection of the best 10 liners to come our way over the last month. We never cease to be amazed at your inventiveness. Don't forget to include a stamped, self-addressed envelope large enough if you want your tape or disc returned.

Watch It

by Pete
Davenport

This horological shortie is for all the clock watchers out there. It keeps surprisingly good time so all you need now is a big, strong wrist strap and a battery pack.



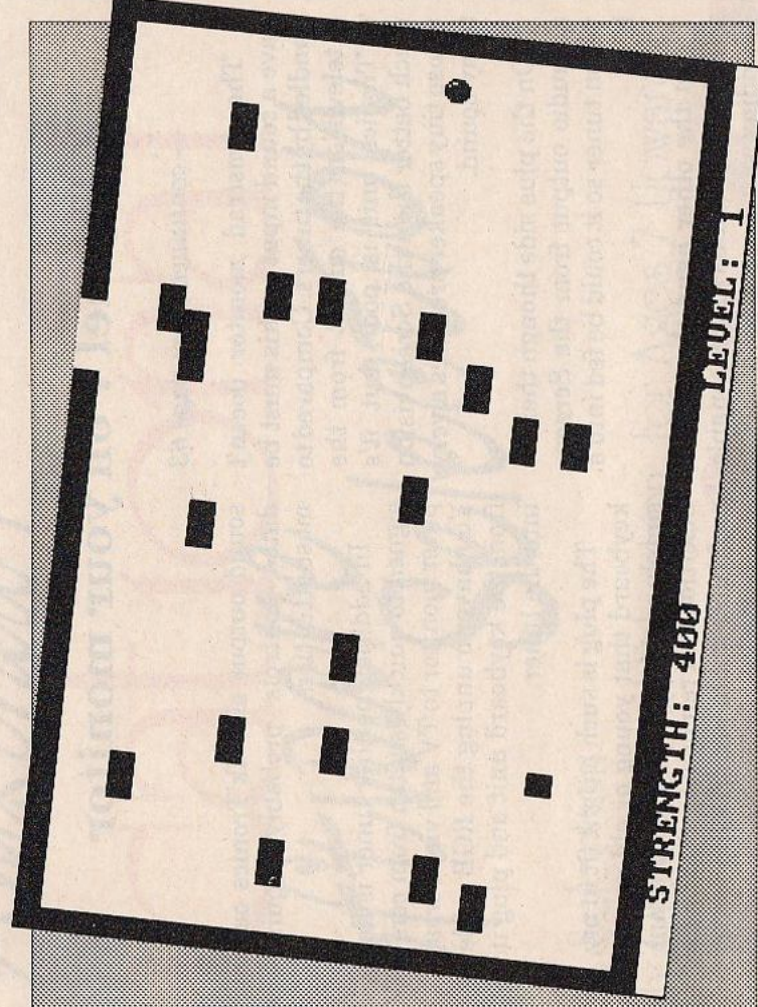
```
10 REM Pete Davonport's utility fo
r clock watchers
20 MODE 1:INPUT"What's the time? h
ours,mins: ",hrs,mins:IF hrs>12 OR
hrs<1 OR mins>59 OR mins<0 THEN P
RINT CHR$(7)"Ho hum,if you can't t
ell the time there wasn't much poi
nt typing this in, was there?":FOR
i=1 TO 3000:NEXT:RUN
30 hrs=hrs+mins/60:EVERY 50 GOSUB
50:DEG:r=178:MODE 1:BORDER 10:INK
0,10:INK 1,1:INK 2,26:INK 3,6:DRAW
639,0,1:DRAW 0,398:DRAW 0,398:DR
AW 0,0:ORIGIN 320,200:FOR i=0 TO 3
60 STEP 6:x=r*SIN(i):y=r*COS(i):PL
OT x,y,2:IF i MOD 30=0 THEN DRAW
x/10,y/10
40 NEXT:WHILE 1:WEND
50 SOUND 7,0,7,7:secs=(secs+1) MOD
60:mins=mins+1/60:hrs=hrs+1/3600:
mins=-((mins<60)*mins:hrs=-((hrs<13)
*hrs
```

```
60 MOVE 0,0:DRAW r*0.95*COS(90-((s
ecs-1)*6)),r*0.95*SIN(90-((secs-1)
*6)),0:MOVE 0,0:DRAW r*0.95*COS(90
-((secs*6)),r*0.95*SIN(90-((secs*6)
),3
70 MOVE 0,0:DRAW 0.9*r*COS(90-(6*(
mins-1/60))),0.9*r*SIN(90-(6*(mins
-1/60))),0:MOVE 0,0:DRAW 0.9*r*COS
(90-(6*mins)),0.9*r*SIN(90-(6*mins
)),1
80 MOVE 0,0:DRAW 0.7*r*COS(90-((hr
s-1/3600)*30)),0.7*r*SIN(90-((hrs-
1/3600)*30)),0:MOVE 0,0:DRAW 0.7*r
*COS(90-(hrs*30)),0.7*r*SIN(90-(hr
s*30)),1
90 RETURN
```


The Bouncer

by Ken Braggles

The object of this game is to get your ball through the hole at the top of the screen before your strength runs out. It's not as easy as it looks. Use Z and X for left and right and the spacebar to jump.



```
10 MODE 1:INK 0,0:INK 1,26:INK 2,2
4:INK 3,8:PAPER 0:BORDER 0:CLS:PEN
3:LOCATE 10,23:PRINT "PRESS SPACE
BAR TO PLAY":WHILE INKEY(47)=-1:W
END:FOR screen=1 TO 30:lstr=0
20 INK 0,0:PAPER 0:BORDER 0:CLS:PE
N 3:DIM r$(40,25):CLS:FOR n=1 TO 2
3:LOCATE 1,n:r$(1,n)="b":r$(40,n)=
"b":PRINT CHR$(143):LOCATE 40,n:PR
INT CHR$(143):NEXT:LOCATE 1,1:PRIN
T STRING$(40,143):LOCATE 1,24:PRIN
T STRING$(40,143)
30 SYMBOL AFTER 150:PEN 3:FOR n=2
TO 23:FOR m=2 TO 39:LET r$(m,n)="
":NEXT m,n:FOR n=4 TO 20 STEP 2:FO
R m=1 TO 2:mx=INT(RND*34)+3:LOCATE
mx,n:PRINT CHR$(143):LOCATE mx+1,
n:PRINT CHR$(143):r$(mx,n)="b":r$(
mx+1,n)="b":NEXT m,n
40 ex=INT(RND*25)+5:LOCATE ex,1:P
RINT " ":FOR e=0 TO 2:r$(ex+e,1)
=" ":NEXT e:LOCATE ex,5:PRINT CHR$
```

To use The Bouncer with a joystick alter lines 10, 60 and 80 as follows —
Line 10: Replace the words after PRINT with "FIRE JOYSTICK TO PLAY" and make the number after INKEY (76). It was 47.
Line 60: Make the number after INKEY (76). It was 47.
Line 80: Make the first number after INKEY (74). It was 71. Make the second number after INKEY (75). It was 63.

```
(143):CHR$(143):CHR$(143);:r$(ex,5)
)="b":r$(ex,5)="b":r$(ex+1,5)="b":
r$(ex+2,5)="b":SYMBOL 200,60,122,2
53,253,255,255,126,60
50 PEN 2:x=10:y=20:xx=x:yy=y:fx=1:
str=400:WHILE dumm=0:LOCATE x,y:PR
INT CHR$(200):IF xx<>x OR yy<>y TH
EN LOCATE xx,yy:PRINT " ":xx=x:yy=
y
60 WHILE (INKEY(47)<>-1)AND r$(x+f
x,y-1)=" ":LET y=y-1:LET x=x+fx:LO
CATE x,y:PRINT CHR$(200):LOCATE x-
fx,y+1:PRINT " ":LOCATE x,y:PRINT
" ":WEND:IF r$(x+fx,y-1)<>" " AND
x+fx>1 AND x+fx<40 THEN str=str-20
:SOUND 1,1,10,15
70 IF y=1 THEN 100 ELSE IF r$(x,y+
1)<>" " THEN 80 ELSE FOR n=y+1 TO
23:IF r$(x,n)=" " THEN LOCATE x,n:
PRINT CHR$(200):LOCATE x,n-1:PRINT
" ":NEXT n:LOCATE x,23:PRINT " ":
y=n-1:x=x ELSE LOCATE x,n-1:PRINT
" ":xx=x:yy=y:LOCATE x,y:PRINT " "
:GOTO 100
80 IF (INKEY(71)=0) AND r$(x-1,y)=
" " THEN x=x-1:fx=-1 ELSE IF (INKE
Y(63)=0)AND r$(x+1,y)=" " THEN x=x
+1:fx=+1 ELSE fx=0
90 IF lstr<>str THEN PEN 1:LOCATE
1,25:PRINT USING " strength:##
# level:##";str,screen:lstr
=str:PEN 2
```

This listing continues over page

Channel 7 on your monitor

— continued from page 63

The Amstrad monitor doesn't have a sound input so this must be handled by the tuners. Compared to a television the output from the dk'Tronics unit is poor, but it's much better than the Screenvision whose tiny speaker produces a very tinny sound.

On the plus side though there is an audio output from the Screenvision tuner so it could be fed into a hi-fi.

On the other hand the picture quality of both tuners is reasonable providing you have a good aerial. The dk'Tronics unit was slightly better and could cope with a much weaker signal yet still produce a watchable picture.

So neither tuner is perfect and there are many features which need to be improved — the Screenvision

sound output and dk'Tronics outdated controls probably require most attention.

In addition neither tuner is designed to quickly switch from computer monitor to TV and vice versa. You have to unplug the RGB cable from the keyboard unit and plug it into the tuner.

The plug is such a tight fit in my keyboard that young or old people simply could not do it and constant insertion and removal by those who could may not be good for the socket either. Portable colour televisions are falling in price all the time and it's possible to buy one which gives better sound and picture quality than either tuner. It's also possible to buy second-hand colour TVs for around the same price as these tuners.

My advice is to think carefully before deciding what to go for — and if possible ask for a demonstration first.

October Game of the Month

While the October game worked, there was a mixup in lines 1180, 1190, and 1200. Here's what you should key in:

```
1180 ORIGIN 0,0:FOR b=464 to 2
08 STEP -16:bx=b:by=192-b/15:b
c=0:GOSUB 1680
1190 bx=b+16:by=192-(b+16)/15:b
c=1:GOSUB 1680:bc=o:NEXT
1200 bx=0:by=0:GOSUB 1220:RE
TURN
```

Ten Liners — continued from page 64

```
100 IF y<>1 AND str<>0 THEN WEND E
LSE IF y=1 THEN FOR m=1 TO 26:INK
O,m:BORDER m:FOR n=1 TO 70:NEXT n:
NEXT m:CLS:INK 1,0:PEN 1:LOCATE 1
0,10:PRINT "Well Done-Try screen";
screen+1:FOR n=1 TO 1500:NEXT n:ER
ASE r$:INK 1,26:NEXT screen:END EL
SE CLS:RUN
```

Computing With The Amstrad

Computing With The Amstrad welcomes program listings and articles for publication. Material should be typed or computer printed, and must be double spaced. Program listings should be accompanied by cassette tape or disk. Please enclose a stamped addressed envelope or the return of material cannot be

guaranteed. Contributions accepted for publication by Database Publication or its licensee will be on an all-rights basis. © Database Publications and Planet Publishing Pty Ltd. No material may be reproduced in whole or part without permission. While every care is taken, the publishers cannot be held

responsible for any errors in articles, listings or advertisements. *Computing With The Amstrad* is an independent publication and neither *Computing With The Amstrad* and neither Amstrad plc or Amsoft or their distributors are responsible for any of the articles in this issue or for any of the opinions expressed.

Amstrad 1 Educational Software Selection

An Exciting and Varied Selection
of Programs For Family Pleasure and Education For Ages 7 Upwards



\$29.99 each tape
Tapes transferable
to disk

or

**All 6 on
one disk for \$89.99**

This selection of programs has been chosen with the 7 to 13 age range in mind. The programs offer different experiences — historical, mathematical, environmental and deductive thinking.

The programs put children into a variety of problem solving situations. Decisions have to be made which will determine success or failure. The discussion and sharing of these problems with family and friends will result in maximum enjoyment and educational value.

THE RAIDERS	FLETCHER'S CASTLE	TREASURE	FERRY CAPTAIN	MARKET STALL	THE PERFUME HUNTER
for ages 8 to 12 You have been chosen by the Viking Council (The Thing) to lead a raiding party to the English coast. As leader you decide the sea route, where to land, set up camp and plan raids. Your time is limited — 90 days to find enough wealth to please The Thing. Failure will result in banishment. Success will mean a new Viking saga.	for ages 8 to 12 After the Battle of Hastings a Norman Knight called Simon Fletcher is given land for his brave deeds in battle. You are the knight. Your task is to build a motte and bailey castle so that you can defend your new land. You must build the castle in 10 days or less, or else...	for ages 8 to 10 To find the treasure each player places a marker buoy which can only be done by working out correctly a multiplication sum for the chosen position. When placed, the buoy may be white, purple or red. These colours give clues to the position of the treasure. Great care is needed to avoid giving away clues to the opposition.	for ages 9 to 12 Two rival ferry companies compete with each for passengers. A daily scheduled service must be operated at fixed times. In addition extra trips need be planned and advertised. A teleprinter can be used for up-to-date information on numbers of passengers wishing to travel. Points are gained for passengers carried and trips made.	for ages 9 to 13 A mathematical game involving simple money management. The players run a market stall for a given period and with a chosen amount of starting capital. Decisions on what to buy and at what price to sell are involved. The aim is to make a profit over the trading period.	for ages 7 to 10 This is a deductive thinking and reasoning game in which clues have to be interpreted to find bottles of perfume within a set number of moves. Strategy also enters into the game in working out how to 'cover' the maximum number of squares in the moves allowed.



Available from:

STRATEGY SOFTWARE P.O. Box 11 Blackmans Bay Tasmania 7052

To order, please use order form on centre page

Another First from Brother

Imagine a fully featured dot matrix RO printer that can printout both bidirectionally and unidirectionally, on ordinary paper, and still fit into your briefcase, leaving room for your hand-held or home computer as well. And it's more than that. Since the HR-5 can operate on four standard sized flashlight batteries, it prints out a full 80 column page of your text, computer program or command list wherever, whenever and almost without a sound. Incorporating a CENTRONICS parallel or RS-232C serial interface, the HR-5 is compatible with many personal computers and a variety of software. Brother's high quality printer head not only prints on ordinary paper with its ribbon cassette but it can print on thermal paper as well. The HR-5 zips silently through your text at a good 30 characters per second, presenting you with a clean, clear, hard copy right on the spot. Weighing-in at under 2 kg, the HR-5 is the lightest, most compact and versatile RO printer available today.

Another first from Brother, Innovator and Maker of personal automation products!

SPECIFICATIONS

Printing system:

Thermal transfer, non-impact,
9 X 9 dot matrix, 8 X 480 bit image
303 X 175 X 65 mm
(11⁷/₈" X 6³/₄" X 2¹/₂")

Size (W X D X H):

Weight:

1.7 kg (3¹/₂ lbs) without batteries

Interface:

CENTRONICS parallel* or RS-232C serial

Noise:

Less than 55 dB

Character set:

USASCII — 96
BLOCK GRAPHIC — 63
INTERNATIONAL — 17

Paper feed speed:

5 lps. at 1/6" spacing

Print direction:

Text — Bi/unidirectional
Graphics — Unidirectional

Print speed:

30 CPS

Print pitch:

10, 12 characters per inch, enlarged,
condensed

Paper feed:

Friction platen

Ribbon:

One-time thermal transfer black carbon
1/6" and 1/9"

Line spacing:

80 characters per line

Printing columns:

Plain or optional thermal paper
Rolls: A4 size, 210.8 mm (8³/₈")

Paper:

Letter size, 216.0 mm (8¹/₂")
Cut sheets: Max. width — 220 mm (8³/₄")

Power:

4 X R20 (D size) batteries
(approx. 70,000 characters for manganese
batteries) or AC adapter

HR-5 Super-Handy Thermal Transfer Printer

Available from

STRATEGY SOFTWARE

P.O. Box 11

Blackmans Bay

Tasmania 7052

SPECIAL OFFER

only \$249.99 (including freight)

Optional printer cable at

only \$20 extra

Not available without printer



brother

Use the order form
on centre page to
purchase this bargain.