

NOVEMBER 1982
75p

SANTA'S
COMPUTER
CHOICE

COMPUTER & VIDEO GAMES

THE CROYDON BLAG

YOU'RE
NICKED MY
SON!

PIMANIA



GAMES PROGRAMS FOR
ZX81, SPECTRUM, VIC,
ATARI AND MANY
MORE INSIDE

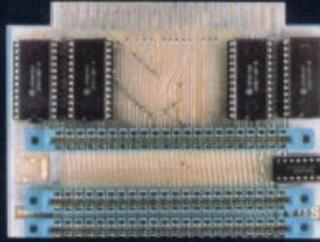
THE £6,000 COMPUTER QUEST

MORE MEMORY FOR MICROS!

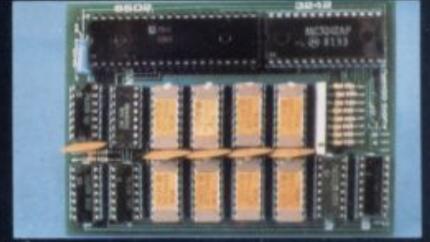
look at what we can offer:



RAMPACKS
for SINCLAIR ZX81



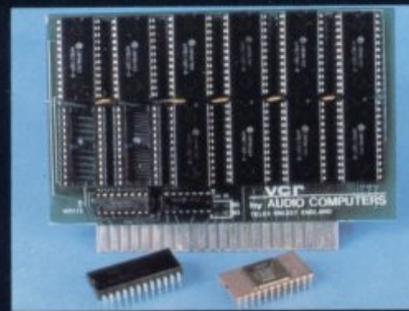
VCS 8K for VIC
8k RAM+3 slots **£44**



DU01 for ATOM
64k RAM only **£70**

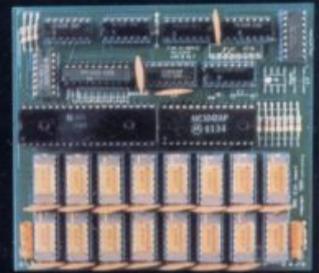
**Vic dealers.
Substantial
discounts
available.**

Please call us.

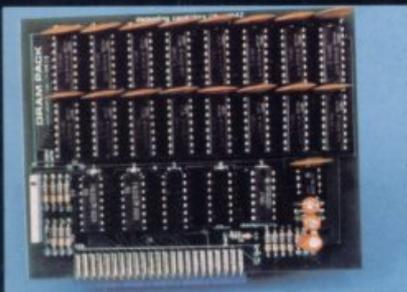


add up to 20k RAM+16k ROM

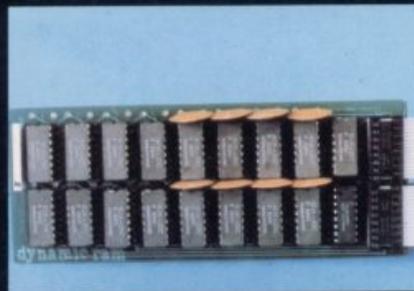
VCR 20 for VIC
4K-£24, 2k increment-£5



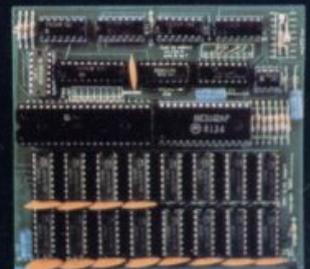
DRC for PET
64K-£80 128K-£130



32K bytes — £29



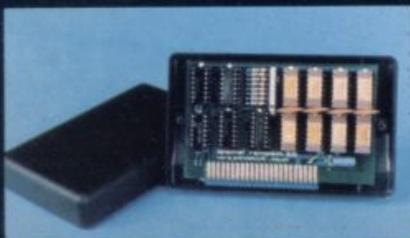
32K add on RAM £46



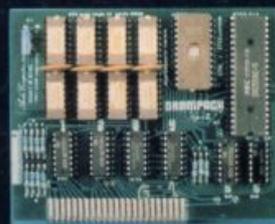
32K add on RAM **£69**

TRS80-V.GENIE

UK101:



56K — exceptional low
power consumption — £44.90



64K + Eprom programmer &
user port — only £79

We can adapt the above products for ZX81 to fit your new Spectrum for just £5 Extra.

FOR A FREE BROCHURE, RING LINDA OR
SUE ON SOUTHEND (0702) 613081
FOR CREDIT CARD ORDERS, RING JACKIE
OR PAM ON SOUTHEND (0702) 618144

CHEQUES AND P.O.'s TO:

AUDIO-COMPUTERS

87 BOURNEMOUTH PARK ROAD,
SOUTHEND ON SEA — ESSEX SS5 2JJ

ALL PRICES INCLUDE V.A.T. AND POSTAGE

TELEX 995337 G AUDCOM

A TRADEMARK OF SOLIDISK LTD.

News & Reviews

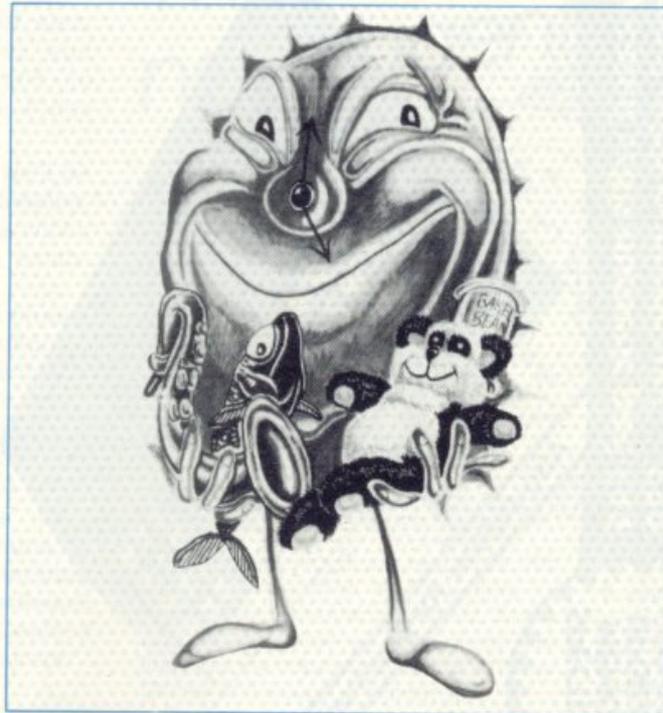
- GAMES NEWS** 16
Enter the world of high finance and when you take a break from boardroom battles, why not play golf, or even go fishing?
- VIDEO SCREENS** 20
No-one has so far solved the Riddle of the Sphinx on their Atari — could you be the first?
- ARCADE ACTION** 30
Learn to survive in the android age... tips on Robotron. Dare you delve into the Space Dungeon?
- REVIEWS** 98
Which space invaders for the Spectrum? We test out three of the top versions.
- NEXT MONTH** 5

Listings

- SPACE LASER** 32
Invaders with a difference. This time you are attacking them! Get your own back on the aliens with the aid of your T.I.99/4a.
- ICE CREAM VENDOR** 36
You'll have to be a real cool customer to become an ice-cream millionaire but pray for hot weather. Runs on an Apple and a Pet!
- THE CROYDON BLAG** 40
'Ello, ello, ello! What's all this then? A robbery is it? Well, I'll just have to invite you to accompany me down to the Vic-20 then sir. Purely routine you understand...



- URANIUM CORE** 45
Yes it's fuel crisis time again. Can you beat the interstellar recession and get your shipload of uranium rods into the economy? For Atari 400 owners.
- MONSTERS** 48
Uurgh! They are everywhere. Creepy-crawly mini-monsters. And all you Atom owners are going to eat them! How could you?
- FROGGER** 52
Hop to it frog lovers. Here's your chance to help our amphibious friends across the road. Just plug in your Spectrum for an exhaustive supply of web-footed wonders.
- SUPER LANDER** 54
Your mission is to ferry an exploration party down to the surface of a mysterious planet with the aid of your BBC Microcomputer. Who knows what you might find there?
- BUMPERS** 58
Deathrace 2000 has got nothing on this slice of motorised madness for the Sharp MZ-80K. Just keep your foot away from the brake pedal.
- FOUR-A-SIDE SOCCER** 61
Come on you Reds. Take your team through to a final in the ZX81 championships and you could be onto a winner.



Lost treasure...

A specially commissioned gold and diamond prize valued at £6,000 is on offer to Spectrum owners.

Automata Cartography is the software house which will give the prize to the first person to solve its elaborate computer adventure, Pimania.

The prize is called the Golden Sundial of Pi and an exclusive report on this Masquerade-like quest can be found on page 85.

Puzzling is the start of a new column which takes over from our old Brainware feature. It should provide something for everyone with a few moments to while away. See page 72.

Features

- MAILBAG** 7
- COMPETITION** 10
- BUILD A COMPUTER WORLD** 24
How do you create a game in a fantasy world? We provide the tips and guidelines of computer fantasy
- CHESS** 27
Why a computer can't think like a human
- THE BUGS** 28
It's Halloween and in the computer something stirs...
- REVERSI** 65
Looking in the memory mirror
- GRAPHICS** 68
Put patterns in your programs
- PUZZLING** 72
A brand new section in the magazine offers a chance to win an Invicta Electronic Mastermind
- KIT KORNER** 75
The last in the present series.
- ADVENTURE** 77
Keith Campbell offers an end-of-term exam
- PRACTICAL PROGRAMMING** 80
- PIMANIA** 85
- SANTA'S COMPUTER CHOICE** 86
We help Mr Claus get to grips with new technology

Editor Terry Pratt, Staff Writer Eugene Lacey, Editorial assistant Susan Cameron, Production editor Tim Metcalfe, Advertisement manager Rita Lewis, Advertising executive Neil Wood, Advertising assistant Louise Flockhart, Publisher Tom Moloney

Editorial and advertisement offices: Durrant House, 8 Herbal Hill, London EC1R 5JB; Telephone Editorial 01-278 6556, Advertising 01-278 6552

COMPUTER AND VIDEO GAMES POSTAL SUBSCRIPTION SERVICE. By using the special Postal Subscription Service, copies of COMPUTER AND VIDEO GAMES can be mailed direct from our offices each month to any address throughout the world. All subscription applications should be sent for processing to COMPUTER AND VIDEO GAMES (Subscription Department), Competition House, Farndon Road, Market Harborough, Leicestershire. All orders should include the appropriate remittance made payable to COMPUTER AND VIDEO GAMES. Annual subscription rates (12 issues): UK and Eire £10.00 Overseas surface mail £12.00 Airmail Europe £20.00 Additional service information including individual overseas airmail rates available upon request. Circulation Department: EMAP National Publications. Published and distributed by EMAP National Publications Ltd. Printed by Eden Fisher (Southend) Limited.

© Computer & Video Games Limited ISSN 0261 3697.

Cover: Stephen Gulbis. Next Issue: November 16th.

DKtronics ZX80/81 Hardware Software

ZX KEYBOARD



Also suitable for Spectrum

Fully cased with numeric pad £45
Uncased with numeric pad £30
Case £15

NEW FROM DKtronics

- (A) 16K Ram Massive Add On Memory Fully assembled and tested £19.95
- (B) 64K Memory Expansion £49.95
- (C) 4K Tool Kit full of utilities to aid the programmer in constructing and de-bugging E. Prom version for use with graphics Rom £9.96
- (D) Cassette version £6.95
- (E) Flexible ribbon connector (as illustrated) £10

**SPECTRUM
MEMORY
UPGRADE
TO 48K
£39.95**



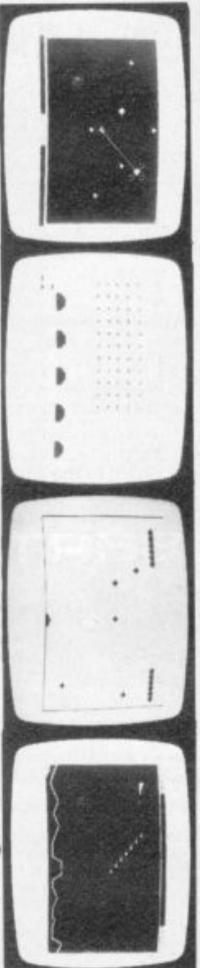
4K Graphics Rom



SOME OF THE GRAPHICS NOW POSSIBLE ON THE ZX81

The 4K Graphic module is our latest ZX81 accessory. This module, unlike most other accessories fits neatly inside your computer under the keyboard. The module comes ready built, fully tested and complete with a 4K graphic ROM. This will give you an unbelievable 448 extra pre-programmed graphics, your normal graphic set contains only 64. This means that you now have 512 graphics and with their inverse: 1024. This now turns the 81 into a very powerful computer, with a graphic set rarely found on larger more expensive machines. In the ROM are lower case letters, bombs, bullets, rockets, tanks, a complete set of invaders graphics and that only accounts for about 50 of them, there are still about 400 left (that may give you an idea as to the scope of the new ROM). However, the module does not finish there, it also has a spare holder on the board which will accept a further 4K of ROM/DRAM. This holder can be fitted with a 1K2K/4K and can be used for user definable graphics so you can create your own custom character sets.

£29.95



*ASTEROIDS *SPACE INVADERS *CENTIPEDE *DEFENDER
16K GRAPHICS ROM SOFTWARE

DKtronics

23 Sussex Road,
Gorleston,
GREAT YARMOUTH,
Norfolk.

Tel: (0493) 602453



Send off the coupon today or telephone 0493 602453 for our extensive service. Delivery by air and express services available. Please add on £1 for P/P.

Please send me £

Please add on £1.25 for P/P. 1 envelope & quantity and price when ordering.

Name
Address

Cheques & D payable to D.K. Tronics

YULETIDE INVADERS

NEXT MONTH

The world of electronic toys and games comes to *Computer & Video Games*.

Still in time for Christmas we'll be sifting through the latest bleeping, burping and talking creations which are chipping away at the established toy market.

For the chess enthusiasts amongst you, we'll have a rundown on the chess machines which are expected to sell this yuletide. From the expensive coffee-table versions, to the travelling companion sets, we'll find out the advantages these dedicated machines have over microcomputer chess programs.

And completing Santa's shopping list will be a pick of the software selection for TV Games Centres and the more popular computers.

THE SHAPE OF THINGS . . .

NEXT MONTH

The more observant among you, may have noticed a few changes taking place among *C&VG's* more regular features.

The disappearance of Down to Basic is one example. In this issue you will find no Brainware as this has been replaced by our Puzzling pages. And other changes to the format are coming soon.

Down to Basic will be replaced next month by a column more suited to most home computer owners — and especially the games players. Machine code is already understood by many of *C&VG's* readers (especially the younger ones it seems) but for those of you who have not yet grasped the fundamentals we are starting up a column to help you get to grips with it.

The column is being written by Ted Ball and since we don't want to overload him too much, the December *Practical Programming* will be the last in the series.

Our machine code series will quickly be followed by an article showing you how to put your new-found knowledge to good use in setting up a wargame format, but more of that at a later date.

Kit Korner is also coming to the

This here's my newsagent



Me 'n my newsagent are real close. His name's Bill or Fred or something . . . Anyway we got an arrangement. Every month, you know what he does? He looks out my copy of *Computer & Video Games* and keeps it, just for me.

So none of the other punks on the street can get hold of my copy. And that's important to me. Mebbe it's important to you too. So go n' see your newsagent with that coupon below all filled out. If he's like Harry here, you're gonna like him.

end of its run. And Keith Mott will be writing his last piece for us under that banner in this issue. Then he is being rested for December before returning in January with a projects page which will help you to get more out of your computer.

GAME WITH A DIFFERENCE

NEXT MONTH

The Seventh Empire was the rebel which challenged the stable rule of the known galaxy and set a pattern of warring confusion which holds sway to this day.

Piracy became commonplace, no planet was safe from the threat of invasion and whole star systems changed allegiance as the tribes fought for the raw materials on which galactic fortunes rested.

The Seventh Empire is the name of a computer game so different it will take us three issues to get it started. December sets the scene of the game which can even be played by those without a home computer.

To my newsagent: Please deliver/reserve me a copy of *Computer and Video Games* every month. Price 75p.

Name

Address

STAR GUARD FOR GRANNY!

NEXT MONTH

Star Guard sets you the task of preserving fuel pods from a fleet of attacking aliens.

Granny is probably not in the best of taste but its heart is in the right place so we published it anyway.

MARK GETS HIS PRIZE

Winner of our Beat-the-Bugs Competition, Mark Williams from Sutton Coldfield in Birmingham came down to visit us and collect his BBC Model B machine.

Mark was also given a selection of Acornsoft cassettes to go with his machine — courtesy of Small Enterprises and Acorn.

But his success did not stop here, for a local businessman, who heard of Mark's programming expertise has asked him to help set up a microcomputer system for his insurance broker firm.

**IF THE CLOUDBOPPERS,
WASPS, SPIDERS, METEORS,
OR SATELLITES DON'T
BEAT YOU...**

**...RENAISSANCE
WILL**



CLOUDBURST
meteor run
Renaissance
SPIDERS OF MARS
satellites
and meteorites

**5 More great
VIC Cartridge games from Audiogenic**

Available from all VIC dealers or direct from Audiogenic Ltd, PO Box 88, Reading, Berks. (0734 586334) Credit cards accepted. Meteor Run, Renaissance, Spiders of Mars, Satellites and Meteorites £24.99, Cloudburst: £19.99 (inclusive of VAT and p&p). All titles copyright UMI INC represented in Europe by Audiogenic. Send for full catalogue.



Please drop us a line at: Computer and Video Games, EMAP, Durrant House, 8 Herbal Hill, London EC1R 5JB.

SPOT THE BODGE!

Dear Sir,
After unscrambling your Mini Defender program for the 1K ZX81 — talk about spot-the-bodge, huh! I found that the game itself was very enjoyable and interesting and I must hasten to add that the unscrambling bit was fun — GREAT FUN!

My high score was 535 and this was obtained after changing the loop in 'E' (line 70 — yes the one that looked like you had a rush of M/C to the brain: '(QINKEYS' — I ask you) to FOR E = 9 TO 1 so that another 'group of aliens' — denoted by a '?' — attack before the loop ends.

Then I proceeded to add a flagship (OU — so it was an inverse 'less-than' sign) which looked real menacing — honest! I was scared — petrified! This gave a random score between 0 and 36 by using $LET S = S + (10 - E) * (INT(RND * 5)) * (B$(E) < > (8($ and pushed my final highest score to 822 — yes 822 — let's see someone beat that then!

Phillip Hall,
Hinkley,
Leicestershire.

FRUSTRATED OWNER

Dear Sir,
Thank you for a very good and interesting magazine, it has been a great help to me and my programming over the past month.

However, I own a TRS-80 colour computer and being a video game fanatic, I am getting very frustrated. I don't expect a program listing in your magazine every month as I do understand that the TRS-80 colour computer does not seem to be very popular, but a mention in your September Graphics feature

would have been pleasing.

I cannot understand why the computer does not seem very popular with established TRS-80 model 1 and 3 software producers, I am finding it very difficult to get new software.

However, I would like to pass on a bit of information, if I may, to other users. I have been in contact with Microdeal of Bodmin, Cornwall, and found that they have a lot of imported products for the colour computer. So there seems to be a ray of hope there!
Mr A.E. Mann,
Boston,
Lincolnshire.

VIEWS ON MICROVADERS

Dear Sir,
In response to your request for comments on the Microvaders program in the July issue. Here are mine:-

1. Having the machine code in separate REM's and putting it up to the top of the memory is a big advantage over putting it on top of a REM full of 0's.

2. Unfortunately I found that the M/C program to move it up in the memory didn't work. So I wrote a basic program to do this for me but it takes about 50 seconds.

3. The M/C program in line one as printed is very ambiguous, as the question

mark can mean many things.

I enjoyed playing the game with my home-made joystick. I am looking forward to more M/C programs in *Computer and Video Games*.

Adrian Ellis
Worsley,
Manchester.

DISC DRIVE DOUBLE . . .

Dear Sir,
Your reply to Mr Spencer in the September issue stated that there were no disc drives available for the Sinclair ZX81. At present I know of two disc drive systems for the computer. One is produced by Monolith Systems and the other by Macronics.

As both companies keep lowering their prices in competition, it is hard for me to say a price. My advice would be that Mr Spencer contacted the two companies.

There addresses are:
Monolith Systems, 5/7 Church Street, Crewkerne, Somerset.
Macronics, 26 Spiers Close, Knowle, Solihull, West Midlands.

I am glad to see a binder from my copies of *Computer and Video Games* — they will no longer be strewn all over the floor! By the way keep up the good artwork both inside and front covers.
James Mortleman,
South Woodford,
London.

SOME ALIEN BUG TROUBLE

Dear Sir,
Thank you for the amendment sheet concerning the Microvaders program from your July Z-Extra supplement. Unfortunately, this was not enough to make the program work.

I wrote to Microx requesting an original listing. I received prompt attention, a listing and the answer to my problem.

Mr P.W. Norris of Microx pointed out that in line 18 of the program the 10th character from the end of the line is a 'B' and not an '8', which is almost unbelievable when looking at the listings.

I wish to express my thanks to both your magazine and to Microx, for your attention, to which end I hope you publish this letter.

Mr C. Brooks,
Cheltenham,
Gloucestershire.

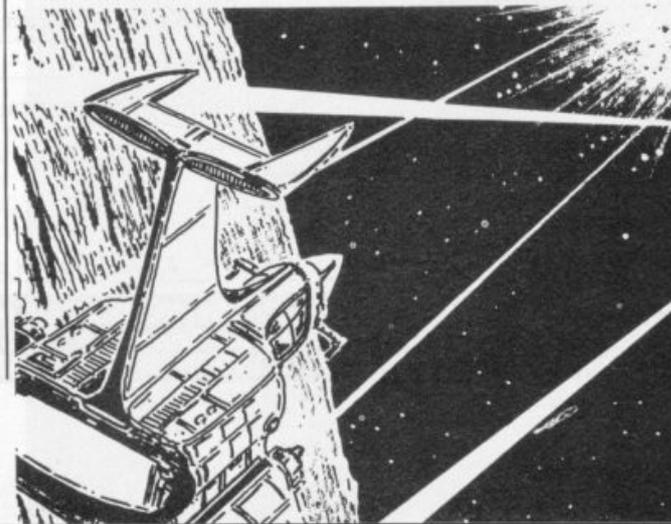
DISCOVERING TEXAS . . .

Dear Sir,
I bought your magazine for the first time in September and I was quite startled to find so many programs in your magazine for only 75p!

I recently bought my son a Texas Instruments computer and I am looking for game programs for him to occupy himself with. I looked through your magazine and did not find any TI programs. After all the TI is a good computer so why is your magazine neglecting this well developed piece of machinery?

P. Evans,
Great Yarmouth,
Norfolk.

Editor's reply: Our magazine is now on the TI bandwagon Mr Evans, there is Space Laser in this issue. 





MAILBAG



PLAYING THE MICRO GAME

Dear Sir,
Thank you for a marvellous and good value for money magazine which I have read from issue one. I particularly like Video Screens and Arcade Action.

Being a newcomer to the micro scene I would be grateful if you could help me over the problem of which micro to buy.

My main reason for wanting a micro is for playing good quality games and high resolution graphics are important to me. My price boundary is about £200. Can computers at this price play games up to the standard of Mattel's Intellivision?

Finally, having owned an Intellivision for quite some time now, I would be grateful if you could update me of any new developments to do with Mattel's computer.

David Liddle,
Hexham,
Northumberland.

Editor's reply: To answer your last question first David, the standard of software for most of the popular home computers is as high as Intellivision games.

Sound and good quality graphics are available from several machines under your £200 ceiling. The VIC-20, Spectrum, Atari 400, T.I.99/4a and the Dragon may all be worthy of your attention. For further details on what these machines are capable of read our Buyers Guide on page 86.

FROM THE SHARP END

Dear Sir,
I have recently acquired the use of a Sharp MZ-80K computer. Unfortunately however my programming knowledge is limited and I cannot yet make my own good games listings.

Your magazine was recommended to me by a friend as having many listings for the MZ-80K, but I have found to my disappointment that you do not.

Please print some

interesting, exciting and adventurous programs for my computer. You often do a Sinclair Selection so why not do this for other computers. I know several programmers in my area who would also appreciate more Sharp programs.

John King,
Cheadle Hulme,
Cheshire.

Editor's reply: Hardly fair criticism John. The Sharp has frequently been the computer to feature our "star" games. Ideally we would like to have several programs for each computer, each month, but space restrictions make this impossible. The Sinclair Selection you mention, consisted of only 1K programs which would be a waste on the Sharp's large memory capacity.

BACK TO BASICS

Dear Sir,
First of all, a great magazine! Glad to see that there is a colourful magazine bringing a bit of relief to the usually dreary magazine racks.

I have purchased all but two of your issues, and was particularly interested in June edition which featured World Cup Manager. I am a great football fan, and would very much like to try this game, if only I had a Sharp MZ-80K. Unfortunately, I haven't got access to one of these

machines, but am at present awaiting the delivery — seven weeks so far — of my 48K Sinclair Spectrum.

I have not yet been able to grasp the more difficult aspects of Basic programming. I attempted, however, to convert World Cup Manager game to run in Sinclair Basic, but I became stuck with a few things and was wondering if you could help me to convert such expressions as "Left \$", "Right \$", "Mid \$", and "On I Goto ..." into Spectrum Basic.

Please could you help by publishing those lines of the program concerned as I would dearly love to try the game on my Spectrum, when it arrives.
S. A. Wiltshire,
Peterborough,
Cambridgeshire.

Editor's reply:
LEFT \$(a\$,n) by a\$(1 to n)
RIGHT \$(a\$,n) by a\$(n to L)
where L = LENA\$
and MID \$(a\$,nl,n2) by a\$(nl to n2)
on I GOTO by
IF I = 1 THEN GOTO 100
IF I = 2 THEN GOTO 200

VIC MEETS BUZZBY!

Dear Sir,
I am writing to your very good magazine with the hope that you could answer some questions.

Please could you tell me if any company produces adventure programmes for an unexpanded or expanded VIC-20, i.e. Scott Adams.

Also when I bought my computer a friend bought one at the same time — they are both VIC-20's. Is there any way that my VIC-20 and his Vic can swap programmes, communicate, etc. — over the telephone lines?
Richard T. Gilday,
Ramsgate,
Kent.

Editor's reply: Yes, Richard you can link up with your friend using the telephone lines. You need an IEEE488 capability and this can be provided by the appropriate interface, say VIC1112 at £44 from Commodore.

Commodore have published some software for PETS connected together and this can be adapted for the VICs. I suggest you contact them at their offices in Slough for programs. The address is 675 Ajax Avenue, Slough, Berkshire.

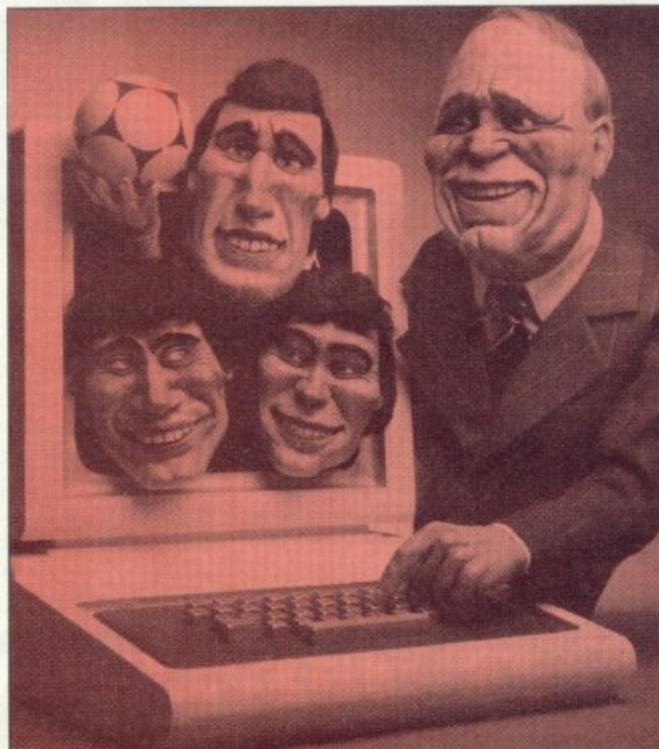
There are a variety of Scott Adams Adventure games which can be purchased from Commodore.

MORE FOR UK, OK?

Dear Sir,
Thank you very much for a brilliant magazine, it is the best money can buy. I have only one complaint. I have not seen any reviews of UK101 software, please could you publish one.

Being a UK101 owner, it is rather difficult for me to transpose programs from VIC, Atari, ZX81 and the like. I am sure many UK101 owners would love to see a program for their machine published in your magazine.
Bobby Lynas,
Margate,
Kent.

Editor's reply: There is not much games software around for the UK101 Bobby, but when we do get to hear of a new game, we will cover it in our Games News section. The UK101 has never really been seen as a games players' computer which probably accounts for this lack of software. But, space permitting, I will try to feature a UK101 game in the future.



Every Fantasy Should Have Its Own Dragon



In the realm of fantasy, one computer has to stand out. I refer of course to the Dragon 32 smoking away quietly in that dark corner.

A Dragon microcomputer will go to the winner of our fantasy ideas competition. So if you could find room in your house for a well-behaved Dragon then read on . . . or better still read the feature on page 24 first.

If you've digested the tips on building your own computer fantasy game we now want you to dig deep into your imagination and come up with just such a game.

You can either go back in history (or even pre-history) to set your game against a backdrop, like *Gladiator*. Or you can go forward into a distant future.

But fantasy should put no holds or bars on your imagination and perhaps you would like to set this particular adventure in a time that never was.

Your entry should include:

- The idea: not just a title but a description of how you think the game would work and how it would be operated.
- The algorithms: the basic functions which would form the core of the program and determine the outcome of conflicts.
- Practicality: a paragraph outlining why you think the game would be commercially viable.

The entries should be sent to: Fantasy Competition, Computer & Video Games, Durrant House, 8 Herbal Hill, London EC1R 5JB and reach us before 16 November 1982.

They will be judged by Mitre

The Welsh Dragon has made a fiery entrance to the microcomputer market.

Styling itself the "family" micro-computer, it is selling well at its £199 price tag and looks set for a good Christmas.

The winner of our Fantasy Game Competition will have a Dragon on his hearth complete with 32K of memory and a screen size of 16 lines by 32 characters.

It plugs into the common domestic television and uses a household cassette recorder to save and load programs.

It already has several fantasy adventures in its software range and with independent software houses now producing games cassettes for it, the machine should soon have a comprehensive library of games software behind it.

So no dragon feet, get those imaginations working overtime and those entries off quickly.

Wargames, whose Mark Blundell wrote the article on building a fantasy game and if they are sufficiently impressed, Mitre have undertaken to try and turn the winning entry into a computer moderated game and invite the prizewinner to help produce and market it on a royalties basis.

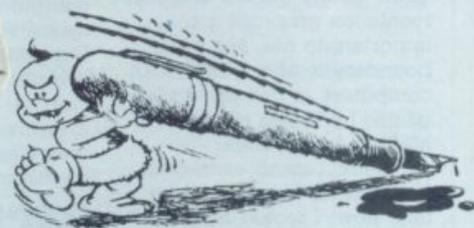
Employees of EMAP, Dragon Data and Mitre Wargames and their relatives may not enter the competition. The judge's decision is final and no correspondence will be entered into.

BRAINWARE

The answers to last month's Mind Routine are:

1. Maximum product of node sums = 34012224
2. Minimum product of node sums = 25625600
3. Maximum sum of node products = 2925
4. Minimum sum of node products = 1212

The solution to October's Nevera Crossword is printed right.



Confessions of a Bug

There's nothing we Bugs like better than a good Atari program to get our teeth into.

T. Hitch has run up an Atari bugging routine so sophisticated and subtle that it defies solution.

Take *Wild Strawberries* for example: never in the history of this magazine has a readership been so split over a program. Half of them seem completely unable to get the game running no matter what. The other half are phoning up to congratulate *C&VG* on producing such a good Atari game which runs first time on being entered. Even better, the ones who have problems all claim a different line as being the culprit.

You should see the poor editor tearing his hair out trying to understand what's going on. The only piece of advice he can offer is to check all the 0 and Os in the program carefully.

Vic owners may have had some difficulty with *Brick Blaster* as the cursor control symbols have printed up badly. If you have had problems with this game please ring or write for a correction sheet.

ANSWERS



PINBALL PATIENCE

If you have entered our Pinball Competition please be patient as these have to go to America to be judged by the Bally Pinball Division.

They will be back to us soon to give us their nomination for the lucky winner, who is due to receive a Bally Electra Pintable in his front room.

And hopefully find that Bally have taken his design ideas and incorporated them into the sort of pinball machine he would like to play.

But a special thanks from me to all the many people who put so much effort into the competition.

We were overwhelmed by the standard of the response and the carefully constructed and detailed diagrams which accompanied the ideas.

The Sinclair game idea competition has been whittled down to the top 20 ideas.

These are currently with software house Psion, whose top game designers will be trying to pick an overall winner from here.

● The winners of our September Brainware Competition are: A Crowhurst of Drakes Way, Mariners Park, Portishead in Bristol — who won the Nevera Crossword — and Richard Parkin of Northwich Road, Weaverham, Cheshire who was first out of the hat with our Mind Routines answer correct. Champagne is on its way to both.

OUTER SPACE ARTHUR NEGUS'S

Collecting on a galactic scale, is the task of the Itemizer race.

These outer-space Arthur Neguses are controlled by Dean Goodman and are currently engaged in notching up points in the C&VG game of Starweb.

Dean's Itemizers are currently up to their short green necks in intrigue and tactical thinking so convoluted as to make the valuing of a early Chippendale seem pedestrian in comparison.

So on with the antiques space highway show . . .

As the richest person in the solar system, Itemizer the artifact collector becomes monumentally excited by the idea of owning unique things.

On many of the worlds in the system there are various indestructible artifacts left behind by a now extinct race of beings.

Despite his passive nature, Itemizer will do almost anything to possess these objects, although aggression is not his strongest point.

On one occasion, driven by greed, he attacked a foreign fleet but now regrets that action as it appears to have been a tactical mistake. Overwhelming reinforcements arrived the following turn calling for a quick exit by the home fleet.

Tactics have to be adapted as other game characters reveal themselves. Because each player needs different things and because each player acts in different ways, some middle ground usually exists for negotiations and barter. Successful negotiation has so far proved difficult however.

Two fleet controllers dis-

appeared before contact had been cemented (leaving populations converted to religious extremism), and another controller destroyed the fleet sent to establish contact!

At the highest level it is important to have an overall strategy and to keep to it. Itemizer keeps his forces and artifacts close to his homeworld and avoids spreading fleets thinly. Unprotected worlds are weaknesses and the empire could become vulnerable as a result.

So what orders will be sent-in next turn? The empire's centre line is under threat from a Pirate and as the extreme right flank has proved unprotective, a shift of two fleets from the right to help reinforce will be necessary. Probing fleets will be sent to explore three worlds on the left flank in the hope that more artifacts will be found.

If you get an opportunity to take in a computer-moderated game such as Starweb, jump to it. Intelligent gaming is both mentally stimulating and intensely enjoyable, despite the lengthy turn-around time (four weeks).

PUZZLING SOLUTIONS

ALL BOXED UP

Puzzling solution? Well they will be if you haven't yet found our sparkling new page of brain-teasers.

Turn to pages 72 and 73 to test out your mind, or, perhaps, your computer, before reading any further.

SWORD OR WORDS?

- 1. Hornet
- 2. Rotund
- 3. Batman
- 4. Minuet
- 5. Sprout
- 6. Escort
- 7. Pistol
- 8. Sparta
- 9. Sister
- 10. Raffia
- 11. Abroad
- 12. Entrap

COMING AND GOING

	CAR	APPROACH	EXIT
Miss Ellis	Rolls	Copper	Silver
Mr Price	Maxi	Brass	Gold
Mrs Downs	Van	Gold	Lead
Mr Lucas	Mini	Lead	Brass
Mr Turner	Estate	Silver	Copper

So Mrs Downs has some questions to answer as to what is in her van.

- 2 Rockets @ 51p = £1.02
- 22 Silver Serpents @ 15p = £3.30
- 17 Thunder-Claps @ 4p = 68p
- Total £5

The solutions of the Mastermind competition have been held over until next month.

This will give you all a chance to test your logic circuits and see if you can come up with the four answers, unaided.

If you do, then please rush in an entry to us at: Puzzling, Computer & Video Games, Durrant House, Herbal Hill, London EC1.

And you could win an Invicta Electronic Mastermind to practise on.

TOMORROW'S GAMES TODAY!

The most amazing TRS-80 compatible graphics software yet, with extensive use of sound, real-time etc., etc., now available from Bullock Computers.

PENETRATOR

You are the sole survivor of a fighter squadron whose mission is to invade the enemy defense rings and blow up their illegal neutron bomb store. The unique customising feature allows you to change the landscape at will, giving you hundreds of different situations with just this one game. If you're only going to buy one game this year it has to be this one! Joystick compatible.

ALIEN DEFENSE

In this highly-sophisticated, fast action game, you have to defend as well as attack. Your enemy is invading aliens who are intent on capturing your men. As the game progresses the action gets faster. The disk version also gives spoken information. Both versions have an 'attract' mode. Model 1/III.

FORTRESS

Defend your fortress from alien fighters - but watch out for the sneak attack! The game starts off slow but speeds up very quickly. Model 1/III.

ELIMINATOR

You're the pilot of the Eliminator, a space fighter armed to the teeth with awesome firepower. But you're outnumbered and your attackers are keen (super-sharp graphics and sound). Joystick compatible.

DEFENSE COMMAND

The Galaxy Invaders have returned in this newest game of skill and excitement with a new twist (absolutely incredible voice effects - with high quality graphics).

VALKYRIE

Leo Christopherson at his best. One of the finest graphics-based adventures available.

FORBIDDEN PLANET

The first talking adventure; three different voices - the best yet (Disk only). All voice output through cassette port - no special equipment required.

ARMOUR PATROL

Real time battle action with excellent use of graphics. Requires great skill.

ADVENTURE (the system)

Now you too can create your own adventure type games. The Adventure System allows you to create database containing your own instructions, this database is then used by the machine language driver part of the program to actually run the adventure you just created!!! (Disk only).

FORBIDDEN CITY

The second follow-up part of Forbidden Planet - can you escape the deadly robots?? All the features of Forbidden Planet. (Disk only).

	Disk £	Cass. £
PENETRATOR	19.50	16.00
ALIEN DEFENSE	19.50	16.00
FORTRESS	19.50	16.00
ELIMINATOR	19.50	16.00
DEFENSE COMMAND	16.00	12.50
VALKYRIE	30.00	26.00
FORBIDDEN PLANET	30.00	-
ARMOUR PATROL	19.50	16.00

	Disk £	Cass. £
ADVENTURE (the system)	30.00	-
FORBIDDEN CITY	30.00	-

JOYSTICKS. Now you can add fast action to all your games with our latest joystick. The adaption for the TRS-80 includes a list of patches; this allows you to use your joystick with many of the popular Arcade games. £23.00.

The following programs are available to order: **Sky Warrior, Starfighter, & Missile Command.**

OPERATING SYSTEMS & UTILITIES

DOSPLUS 3.4/4.0.

Dosplus is the latest disk operating system from Micro Systems Software. It is the only one designed for ease of operation. Dosplus is provided with two versions of basic - most other systems only have one. Features include: built-in lower case and debugger, repeat last command, ROM drivers, repeating keys and screen printer. The system also allows for turnkey operation, and has the ability to recover inadvertently deleted files. Dosplus 4.0 is designed for hard-disk operation. £90.00 (Dosplus 3.4 model 1/III single or double - please specify when ordering - Disk only).

NECDOS. Manufactured by Racet - famous for 'Newdos', the TRS-80 disk operating system - Necdos is compatible with the existing ROM-BASIC provided with the NEC, and gives many enhancements not available with other systems. Necdos optimizes the use of memory; performance is greatly enhanced; input-output speeds are greatly improved, and a number of new

basic statements have been added. It also has the ability, via a file-translation program, to enable TRS-80 users wishing to upgrade to a NEC to make their software compatible with the NEC. £120.00. NEC DISK.

QUICKPRO. Automatic file-orientated program generator designed for users with a limited knowledge of programming. Quickpro concentrates on file handling. Model 1/III DISK ONLY. £100.00.

EDAS 3.5. Edas 3.5 is a highly sophisticated Editor and Assembler for the TRS-80, featuring a very large range of functions. It is in fact the only commercially available Editor for the TRS-80 Model III. EDAS Model I or Model III. £60.00.

The following programs are also available to order:

Super Utility	Lazywriter
Microproof	Basic - S/CMD
Maco-monitor	Basic - S
Super Utility Plus	

Mail Order Only. All our prices are inclusive of VAT at 15%. Please add £1.50 for Postage and Packing. All programs available for Model 1/III. Please state Model and whether disk or cassette when ordering. 24-hour answerphone. Access Cards accepted.

Bullock Computers

Specialist Microcomputer Hardware and Software Consultancy
Bullock Computers Ltd., Monaco House, Bristol Street, Birmingham B5 7AS. Phone: 021-622 2167

SPECTRUM

**We won't be
be beaten on
price!**

SPECTRUM is a rapidly expanding group of independent retailers who specialise in selling home computers. Our group policy is simple - **WE WON'T BE BEATEN ON PRICE!** - our **BULK BUYING** ensures this. We select and buy the best and pass the savings on to **YOU**, the customer. We **GUARANTEE** that if you find an item currently advertised and in stock at another dealer and at a better price than ours - **WE WILL MATCH THAT PRICE ON THE SPOT.**

**Only trained personnel
at Spectrum!**

We believe that our product 'know-how' is crucial to you the customer. That's why in every one of our centres you'll find fully trained personnel, who have been trained by the importers or distributors themselves - so we know and understand the products we sell and can help every customer even the complete beginner. At SPECTRUM we find the **RIGHT** equipment to suit your needs. Handing over sealed boxes is not our line - our service includes 'hands-on' experience that we pass on to **YOU.**

After Sales care

SPECTRUM service centres will ensure that should your machine 'go-down' we will get it running again as quickly as possible. We also offer extended warranties at reasonable prices too! - ask your SPECTRUM HOME COMPUTER CENTRE for full details.

Shop News!

New Spectrum Centres
CANTERBURY
MANCHESTER
PAIGNTON
PRESTON
STAFFORD

Don't miss Fisher's

**COMPUTER
SHOW**

to be held at the

**LADBROOK MERCURY
HOTEL Basingstoke on**

OCTOBER 21st

from 4 p.m. - 9 p.m.

ADMISSION FREE! - TICKETS AVAILABLE

COMPUTER DEALERS!

(or prospective Computer Dealers!)
If you would like to know more about becoming a SPECTRUM APPOINTED DEALER on an exclusive area basis, please contact **MIKE STERN** or **ALAN WARREN** on (0727) 66646.

Spectrum (U.K.) Ltd., Unit 6, Marlborough Trading Estate, Lattimore Road, St. Albans, Herts.



Fantastic Value for money!
DRAGON 32



Enter the DRAGON! - this really is unbelievable value at only £173 from SPECTRUM! British built and designed, it's one of the most impressive micros to appear for quite some time. Featuring as standard a 32K RAM (expandable to 64K Bytes) plus it offers extensive facilities including highly advanced colour graphics for graphs, cartoon animation etc. It's the ideal 'Family Computer' and will provide hours of fun and education for YOUR family! - see it at your nearest SPECTRUM COMPUTER CENTRE now. But just one word of warning - at this amazing price they're already selling fast so make it soon, or phone before making a journey.

Just look at this top specification

- Powerful standard 32K RAM (expandable to 64K Bytes).
- 9 Colour, 5 resolution Display.
- Extended Microsoft colour BASIC (as standard).
- Advanced sound with 5 octaves - 255 tones.
- Professional style editing, e.g. extract line, auto find reinsert.
- Professional quality keyboard.
- Centronics Paralled printer interface.
- Serious programmer/user - the BASIC on this machine is similar to that found on machines costing 3 times the price!
- Uses almost any cassette recorder.
- Standard file handling ON TAPE.

Spectrum SENSATIONAL price

**PRICE INC.
VAT £198.95**
£173.00

SOFTWARE for DRAGON 32	Graphic Animator	£6.91
CARTRIDGES	Quest	£6.91
Joysticks (pair)	Madness and the Minotaur	£6.91
Cassette lead	Selection of Games	£6.91
Beserk	Selection of Utilities	£6.91
Cosmic Invaders	Examples from Dragon	£6.91
Meteroids	Manual	£6.91
Ghost Attack	Personal Finance	£6.91
CASSETTES	Seikosha GP100A printer	£189.00
Computarvoice	for Dragon	£199.00
	Printer cable	£19.09

Above prices excluding VAT.

Great Value from Spectrum!
SEIKOSHA GP-100A
Graphic Printer



Now a top quality graphic printer at a price you can afford. The SEIKOSHA GP-100A - Terrific value at under £200 from SPECTRUM. Standard Centronics compatible interface for easy link-up with most micros. ■ Full graphics capability. ■ Printing speed 30 chars/sec. ■ Double width character output under software control. ■ Graphics, character and double width character can be intermixed on same line. ■ Paper width adjustable up to 10" - tractor feed. ■ Print position addressable by character or dot.

Spectrum LOW price £189.00 Price Inc. VAT £217.35

Also available:	Optional Interfaces for GP-100A/GP-100VC	Ex. VAT	Inc. VAT
SEIKOSHA GP-100VC	RS232C	£70.00	£80.50
(Built exclusively for VIC-20)	MZ80-A	£80.00	£99.00
ONLY £199.00 Ex. VAT	APPLE SERIAL	£45.00	£51.75
(£228.85 Inc. VAT)	APPLE GRAPHIC	£55.00	£63.75
	VIDEO GENIE	£36.00	£41.40
	Cables for BBC MICRO, ACORN, DRAGON	£19.09	£21.95

Arriving soon!
New GP250X
50cps printer
£230 Ex. VAT

**FREE
OFFER
COUPON**

To claim any of the FREE OFFERS featured in our advertisements, present this coupon at time of purchase, and your SPECTRUM dealer will give you the FREE goods relating to the purchase.

Offers extended until 15.11.82 & apply to featured free offers only.

See next page

SPECTRUM

ATARI

Spectrum's prices now lower than ever - plus super FREE offers too!

From household budgets to analysis of bond yields. From foreign languages to spelling or geography. From missile command to PACMAN - ATARI does it all, EXCELLENTLY! See the top selling ATARI range at your nearest SPECTRUM COMPUTER CENTRE - NOW! and save even more!

ATARI 400 16K RAM £173.00
(excluding programmer kit) Price inc. VAT £198.95

ATARI 800 16K RAM £434.00
(includes programmer kit) Price inc. VAT £499.10

Additional Equipment	EX. VAT	INC. VAT	EX. VAT	INC. VAT
Program Recorder	£43.00	£49.45	Conversational Italian	£34.77 £39.99
Disk Drive	£260.00	£299.00	Conversational Spanish	£34.77 £39.99
Thermal Printer	£173.00	£198.95	Hangman	£13.03 £14.99
Interface Module	£117.39	£135.00	Scram	£17.38 £19.99
Accessories			Touch Typing	£17.38 £19.99
16K Ram Pack	£56.52	£65.00	Music Composer (Cart.)	£31.30 £35.99
Paddles (Pair)	£12.17	£13.99	Home Entertainment	
Joysticks (Pair)	£12.17	£13.99	Asteroids	£26.08 £29.99
Printer Cable	£24.78	£28.50	Basketball	£21.73 £24.99
RS232C Cable	£21.74	£25.00	Blackjack (Cassette)	£13.03 £14.99
Monitor Cable	£21.74	£25.00	Caverns of Mars (Disk)	£26.08 £29.99
Thermal Paper	£3.48	£4.00	Centipede	£26.08 £29.99
Dos. 2 Master Diskettes	£19.12	£21.99	Computer Chess	£21.73 £24.99
Books and Manuals			Missile Command	£26.08 £29.99
Wiley Manual	£5.21	£5.99	Pac Man	£26.08 £29.99
Basic Reference Manual	£5.21	£5.99	Space Invaders	£26.08 £29.99
Dos. 2 Manual	£5.21	£5.99	Star Raiders	£26.08 £29.99
Operating System Listing	£10.43	£11.99	Super Breakout	£21.73 £24.99
Dos. Utilities Listing	£3.47	£3.99	Video Casel	£21.73 £24.99
Atari Home Computer Programs—Home/Office			Programming Languages & Aids	
Graphit	£13.03	£14.99	Assembler Editor	£34.77 £39.99
Statistics 1	£13.03	£14.99	Pilot (Consumer)	£52.17 £59.99
Home Study			Pilot (Educator)	£78.25 £89.99
(Cassette except where stated)			Entertainer Kit (Star Raiders, Joysticks)	£60.95 £69.99
Inv. to Programming 1	£17.38	£19.99	Programmer Kit (Basic)	£43.47 £49.99
Inv. to Programming 3	£19.99	£22.99	Cartridge and Manuals	£43.47 £49.99
Conversational French	£34.77	£39.99		
Conversational German	£34.77	£39.99		



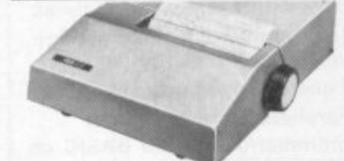
FREE! Cassette WORTH £19.95 with every ATARI 400 purchased - Use your FREE OFFER COUPON.



FREE! Cassette WORTH £19.95 with every ATARI 800 purchased - Use your FREE OFFER COUPON.



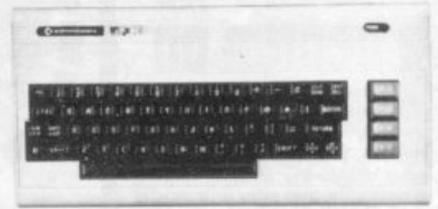
FREE! 10 FLOPPY'S WORTH £19.50 with every ATARI DISK DRIVE purchased - Use your FREE OFFER COUPON.



FREE! 8 Rolls Thermal PAPER WORTH £16.00 with every ATARI PRINTER purchased - Use your FREE OFFER COUPON.

Incredible Value from Spectrum!

VIC-20



The VIC-20 represents superb value-for-money from SPECTRUM. A truly expandable computer system which can be as simple or as complex as your needs require. Ideal as a home micro with a large number of educational & games cartridges available. Equally, with additional memory expansion, a disc drive and printer, it becomes suitable as a small business system, powerful enough for stock control, book-keeping and payroll generation

- Memory expandable to 32K
- High resolution (full PET type) graphics
- 16 Screen colours & 8 border colours
- Plugs in to your T.V. or monitor
- Add Disk Drive & Printer for impressive 170K Byte system
- Can act as an intelligent terminal for a larger computer.

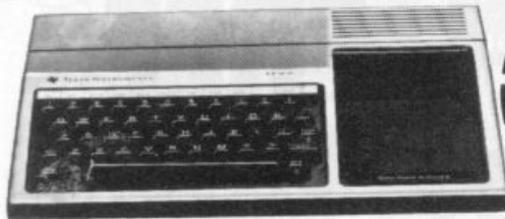
Unbelievable New LOW price £127.50 Ex. VAT (£146.63 inc. VAT)

VIC C2N	Exc. VAT	Inc. VAT	GAMES	Exc. VAT	Inc. VAT
cassette unit	£34.00	£39.10	"Avenger"	£17.35	£19.95
VIC Printer	£185.00	£212.75	"Star Battle"	£17.35	£19.95
VIC Single Floppy disk drive (5 1/4")	£320.50	£368.58	"Jelly Monsters"	£17.35	£19.95
3K RAM	£24.00	£27.60	"Super Lander"	£17.35	£19.95
8K RAM	£34.00	£39.10	"Road Race"	£17.35	£19.95
16K RAM exp. cartridge	£59.00	£67.85	"Rat Race"	£17.35	£19.95
Super exp. Hi Res cartridge	£27.50	£31.63	"Blitz" (cass.)	£4.34	£4.99
Joystick	£6.52	£7.50	BOOKS		
Games paddles	£11.74	£13.50	Learn Computer Programming with the Commodore VIC	£1.95	No VAT
Aid cart	£27.50	£31.63	VIC Revealed	£10.00	No VAT
Machine Code Basic (1)	£13.00	£14.95	VIC 20 Prog. Reference Guide	£14.95	No VAT
			VIC Computing Magazine	£0.95	No VAT

Super RABBIT Software for VIC-20
Save 50p on rec. price of the following super quality games. Inc. VAT.

Myriad	£9.49	Super Worm	£4.49
Frogger	£9.49	Rabbit Function	£4.49
Space Storm	£6.49	Charset 20	£4.49
Ski Run	£4.49	Rabbit Base	£14.49
Cosmic Battle	£4.49	Rabbit Writer	£19.49

TEXAS T199/4A



FREE! INVADER'S CARTRIDGE Worth £18.95 with every TEXAS T1/95/4 purchased - use your Free Offer Coupon.

A very expandable and comprehensive micro from TEXAS INSTRUMENTS - and now available at super LOW prices from SPECTRUM HOME COMPUTER CENTRES.

- 16K RAM (expandable to 48K)
- Built-in 14K Byte BASIC Interpreter
- 16 Bit Microprocessor
- 16 Colour High Resolution graphics
- Extensive range of solid state software command modules available from games to architectural aids.
- Optional programming languages - UCSD PASCAL, TI-LOGO & ASSEMBLER.

Spectrum LOW Price £173.00 Price inc VAT £198.95

TEXAS PERIPHERALS	EX. VAT	INC. VAT	EX. VAT	INC. VAT
Speech Synthesizer	£81.70	£93.95	Tombstone City	£19.96 £22.95
Peripheral Exp. System	£147.78	£169.95	Attack	£19.96 £22.95
Disc Cont. Card	£124.30	£142.95	Car Wars	£23.43 £26.95
Disk Drive	£234.74	£269.95	Muselman	£23.43 £26.95
RAM Exp. Card	£179.57	£206.50	Adventure & Private	£31.26 £35.95
Matrix printer	£347.78	£399.95	Education	£12.13 £13.95
Software Entertainment			Number Magic	£23.43 £26.95
TI Invaders	£16.48	£18.95	Addition/Subt. 1	£8.26 £9.50
			Teach yourself beginners BASIC	£19.96 £22.95
			Home Budget Management	



BOOKS

We stock an extensive range of books to help you. Here are just few to whet your appetite.

CP/M Handbook	£11.50
DON'T	£9.65
Programming the Z80	£11.95
Programming the 6502	£10.75
Your First Computer	£7.75
BASIC Handbook (2nd edition)	£14.95
A-Z of Computer Games	£5.60
Atari Basic	£5.95
Basic "BASIC"	£9.95
BASIC Computer Games	£6.95
BASIC Computer Programs for Business (VOL 1)	£8.55

NO VAT ON BOOKS

ACCESSORIES

	Exc. VAT	Inc. VAT
SANYO Slim 3G Cassette Recorder (for use with Nascom and Dragon)	£26.04	£29.95
CTT 3106 14" Colour TV Set	£199.96	£229.95
ACCUTRAK		
C12 Cassettes	£0.43	£0.50
Single sided, double density disks (for Commodore, Atari, Apple, Tandy etc.	£1.70	£1.95
Double sided, double density disks (for Sharp and Superbrain)	£2.87	£3.30
Single sided, double density double track disks (for Nascom and Commodore 8050)	£2.30	£2.65
Disk Bank Interlocking cases for diskettes	£3.91	£4.50
Disk head cleaner	£13.00	£14.95
Single part 11" x 9 1/2" printer paper, box of 2200 sheets	£10.39	£11.95

Incredible Value! BMC 12" Green Monitor

18 MHz band width		
Green and black display		
Spectrum LOW price £69.00 (£79.35 inc. VAT)	Ex. VAT	Inc. VAT
Prince 12" Monitor	£86.00	£98.00
Sanyo 12" SM-12H	£84.00	£96.60
Sanyo 14" SCM-14H	Colour	£350.00 £402.50



FREE!
£75 WORTH
of software
 with every MZ80A
 purchased

SHARP MZ-80A

Desk top genius! - the all-in-one SHARP MZ-80A. A personal computer designed with the serious user in mind, ready to run the moment you get it home. Built-in keyboard, CRT 9" display and cassette data storage with 48K RAM. The BASIC with extra useful additions, offers quite a powerful micro for the home or business. ■ 4K Byte ROM + 48K Byte RAM + 2K Byte Video RAM ■ ASCII profiled keyboard + numeric pad ■ 2 page Video RAM allows screen to be scrolled up or down. ■ CP/M available.

Spectrum LOW price £475.00 Price inc. V.A.T. £546.25

MZ Software from KUMA

Pakman (48K)	£8.00
Asteroids	£8.00
Frogger	£8.00
Chess	£14.00
Cribbage	£10.50
Adventure	£10.50
Tombs of Karmak	£8.00
Map of U.K.	£10.50
Music Composer	£10.50
Junior Maths	£5.50
Home Budget	£5.50
Word Pro (Cass)	£39.50
Word Pro (Disk)	£79.95
Data Base (Cass)	£29.50
Data Base (Disk)	£59.50

All KUMA prices excluding V.A.T.

SHARP PERIPHERALS FOR MZ80A

	EXC. VAT	INC. VAT
Twin floppy disk unit (5 1/4")	£590.00	£678.50
Single floppy disk unit	£400.00	£460.00
Floppy disk interface card	£100.00	£115.00
Floppy disk cable	£24.00	£27.50
Master diskette and manual	£31.00	£35.66
Expansion unit (disk drive or printer)	£100.00	£115.00

SHARP HAND HELD COMPUTERS

Pocket-sized genius at your command - we sell the well established PC1211 & the new 1500 Models.

SHARP PC1211 £65.00 Ex. VAT
 (£74.75 inc. VAT)

SHARP PC1500 £147.48 Ex. VAT
 (£169.95 inc. VAT)

PC 1500 Printer/cassette interface	£130.39	£149.95
PC 1500 4K RAM upgrade	£43.43	£49.95

Attention real computer enthusiasts!

NASCOM Special Edition



SINCLAIR ZX81

Now available from SPECTRUM COMPUTER CENTRES

SINCLAIR ZX81	£49.95
16K RAM Pack	£29.95
ZX Printer	£59.95

Cassettes available from £3.95 - please see your local SPECTRUM dealer for further details.

Spectrum LOW Price

£429.95 EX. VAT

(£494.44 inc. VAT - Prince monitor illus. extra)

NASCOM Special Edition 48K Ram Board £130.00 ex. VAT (£149.50 inc. VAT)

SAVE £15 on the PRINCE MONITOR when purchased together with the NASCOM SPECIAL EDITION

EPSON PRINTERS

FREE!
PAPER
 Worth £11.95
 with every EPSON printer purchased - see our free offer



Chosen by SPECTRUM for their reliability, the superb new top quality graphic printers from EPSON. New features include super & subscript, underlining & deletion. If you're looking for an up-market printer at a down-to-earth-price, call in and see the EPSON range at SPECTRUM.

Model	EX. VAT	INC. VAT
MX80-T3	£299.00	£343.85
MX80 F/T Type III	£335.00	£385.25
MX100 Type III	£429.00	£493.35

Please see your SPECTRUM dealer for prices of INTERFACE/CABLE options.

There's a SPECTRUM CENTRE near you ...

ALFRETON

Gordon Harwood
 69/71 High Street,
 Alfreton, Derbyshire
 Tel: 0773 832078

ASHFORD

Ashford Computer Centre
 2 Station Parade, Clarendon Rd,
 Ashford, Middlesex.
 Tel: 07842 44955

BASILDON

Godfrey's
 28-32 East Walk, Town Centre,
 Basildon, Essex.
 Tel: 0268 289379

BASINGSTOKE

Fisher's
 2/3 Market Place,
 Basingstoke, Hants.
 Tel: 0256 22079

BATH

Software Plus
 12 York Street, Bath
 Tel: 0225 61676

BIRMINGHAM

Sherwoods
 Great Western Arcade,
 Birmingham 2.
 Tel: 021 236 7211

BRADFORD

Photosave
 18 Cheapside, Bradford BD1 4JA
 West Yorkshire.
 Tel: 0274 308598

BRIGHTON

Capricorn
 1 Queens Road, Brighton, Sussex.
 Tel: 0273 29634

CAMBRIDGE

KP Ltd.,
 12a Kings Parade, Cambridge.
 Tel: 0223 68087

CANTERBURY

Kent Micro Systems
 Conquest House, 17 Palace St.,
 Canterbury, Kent
 Tel: 0227 50200

CARDIFF

Randall Cox
 18-22 High St. Arcade, Cardiff.
 Tel: 0222 31960

DERBY

C T Electronics
 The Spot, Derby.
 Tel: 0232 44760

EDINBURGH

The Silicon Centre
 6-7 Antigua St., Edinburgh,
 Scotland.
 Tel: 031 557 4546

GLASGOW

Victor Morris Ltd.,
 340 Argyle St., Glasgow G2.
 Tel: 041 221 8958

GUILDFORD

The Model Shop
 23 Swan Lane, Guildford,
 Surrey GU1 4EQ
 Tel: 0483 39115

HARROW

Camera Arts
 (Micro Computer Division)
 24 St. Ann's Rd., Harrow, Middx.
 Tel: 01-427 5489

HATFIELD

Microworld
 2 Crawford Road, Hatfield, Herts.
 Tel: 82 64137

LEEDS

Bass & Bligh
 4 Lower Briggate, Leeds,
 W Yorkshire.
 Tel: 0532 454451

LEICESTER

Youngs
 40-42 Belvoir St., Leicester.
 Tel: 0533 544774

LONDON SE9

Square Deal
 375 Footscray Road,
 New Eltham, London SE9
 Tel: 01-859 1516

LONDON N.1

ASP Micro Systems
 185 Upper St., Islington.
 Tel: 01-359 9095

LONDON W11

Electroleisure
 120 Notting Hill Gate,
 Tel: 01-221 7029

MACCLESFIELD

Camera & Computer Centre
 118 Mill Street, Macclesfield,
 Cheshire. Tel: 0625 27468

MANCHESTER

Lomax Ltd.
 8 Exchange St., St. Ann's Square,
 Manchester A2 7HL
 Tel: 061 832 6167

Mr. Micro Ltd.
 69 Partington Lane, Swinton,
 Tel: 061 7282282
 open Thurs.-Fri.-Sat. till 8 p.m.

MIDDLESBROUGH

McKenna & Brown
 190 Linthorpe Road, Middlesbrough.
 Tel: 0642 248345

NEWCASTLE-ON-TYNE

Turners
 29-31 High Friars, Eldon Square,
 Newcastle. Tel: 0632 612901
 Newcastle Camera
 & Computer Mart
 16 Northumberland, Court,
 Newcastle. Tel: 0632 327461

NOTTINGHAM

Cameo Computers
 8/9/10 Trinity Walk, Nottingham.
 Tel: 0602 42912

PAIGNTON

Devon Computers,
 81 Upper Manor Road.,
 Paignton, Devon.
 Tel: (0803) 526303

PRESTON

Wilding's
 49 Fishergate, Preston, Lancs.
 Tel: 0772 556250

READING

David Saunders Computer
 Centre
 8 Yield Hall Place, Reading, Berks.
 Tel: 0734 580719

RUGBY

The Rugby Micro Centre
 9-11 Regent Street, Rugby.
 Tel: 0788 70522

STAFFORD

Computerama,
 59 Forgate St., Stafford, Staffs.
 Tel: (0785) 41899

TEDDINGTON

"Andrews"
 49 Broad St., Teddington, Middx.
 Tel: 01-977 4716

WALLINGTON

Surrey Micro Systems Ltd.
 53 Woodcote Road, Wallington,
 Surrey.
 Tel: 01-647 5636

WATFORD

SRS Microsystems Ltd.
 94 The Parade, High Street,
 Watford, Herts.
 Tel: 0923 26602

WEST BROMWICH

Bell & Jones
 39 Queens Sq., West Bromwich.
 Tel: 021 563 0820

WIDNES

Computer City
 78 Victoria Rd., Widnes, Cheshire.
 Tel: 051 420 3333

WIGAN

Wilding Ltd.
 11 Mesnes St., Wigan, Lancs.
 Tel: 0942 44382

WOKING

Harpers
 71-73 Commercial Way, Woking,
 Surrey.
 Tel: 04862 61061

WORCESTER

David Waring Ltd.
 1 Marmion House, High Street,
 Worcester.
 Tel: 0905 27551

COMPUTER DEALERS!

(or prospective Computer Dealers!)
 If you would like to know more about becoming a SPECTRUM APPOINTED DEALER on an exclusive area basis, please contact MIKE STERN or ALAN WARREN on (0727) 66646
 Spectrum (U.K.) Ltd. Unit 6, Marlborough Trading Estate, Lattimore Road, St. Albans, Herts.

MAIL ORDER

When it comes to MAIL ORDER our service is FAST! with SECURICOR DELIVERY to anywhere in the British Isles. - Ask your nearest SPECTRUM dealer for further details at time of ordering.

Up to £1000 INSTANT CREDIT with a SPECTRUM CHARGECARD

With a SPECTRUM CHARGECARD you choose the credit limit to suit YOU. e.g. a monthly payment of £10 gives you £200 credit. Ask your nearest SPECTRUM COMPUTER CENTRE for written details on how to apply for your SPECTRUM CHARGECARD - NOW!
 (Typical APR 30.6%)

V.A.T.

You will see that we quote our prices both including VAT and excluding VAT - no hidden 15% to suddenly up-lift your bill but also making our prices easier to compare with our competitors.

NEW PRODUCTS NEW PRODUCTS NEW PRODUCTS NEW PRODUCTS GAMES NEWS

SOMETHING FISHY IS GOING ON . . .

FISHING, ROULETTE

Angling is one of the most popular pastimes in this country. Now you can take up fishing without having to sit in the rain for hours, thanks to Calisto Software.

Cast your rod into the sea at the end of the pier and see how many fish you can catch on the end of your hook.

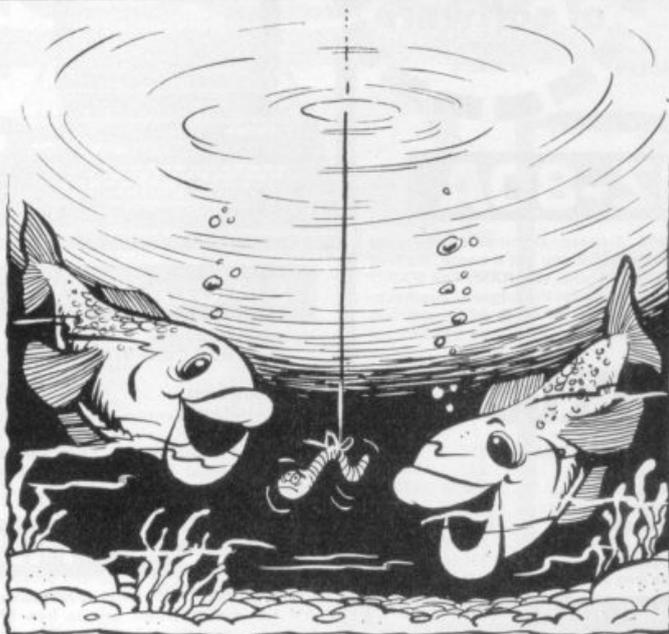
This is the simple aim of the computerised angler in Fishing — the latest game for the ZX81 from Calisto.

Side two of this cassette features a computer version of the popular casino game Roulette. The wheel is displayed on the screen — though it does not spin.

Instead the ball moves around the wheel stopping at random on one of the numbers on the wheel's perimeter.

Each player is given £1,000 to start — the game then being played according to the normal rules of Roulette. The game allows up to four people to gamble.

Roulette and Fishing are available from Harrogate based Calisto Software, at £2.50 including postage and packing.



BEWARE THE BUNKERS!

Score a hole in one without leaving your armchair in this latest computerised golf game.

This one features authentic golf course obstacles such as bunkers, trees, and of course the dreaded "rough". The course itself is represented on the screen in 3D and is randomly selected.

TX3 Golf is one of a new range of cassette-based games for the Texas Instruments 99/4a. Others

TX3 GOLF

in this range feature a version of the popular arcade game Battlezone, a chess program, and Four-in-a-Row, a computer version of the Connect Four game in which you must join up four counters in a faster time than your opponent.

The games are available from TX Software of Harlow, Essex at £5.00 inclusive.

THESE FINANCIAL TIMES

AIRLINE, AUTOCHF, PRINT SHOP

Move over Freddy Laker, Charles Forte, and Rupert Murdoch as computer buffs enter the world of high finance in three new business simulations which re-create the world of airlines, printing, and hotel management.

Airline offers you the chance to play Freddy Laker for an afternoon as you decide the number of aircraft to operate, whether to buy or charter, whether to enter into a loan or a fuel contract and the levels of staffing and maintenance.

As if this were not enough to worry the would-be international airline tycoon there are also tax demands, strikes, cancelled flights, hijacks, and crashes to be taken into consideration.

Autochef casts you as the managing director of a catering

company. The forward purchasing of foodstuffs and wines must be carefully considered involving the exchange of vast sums of money. And you'd better make the right decisions for there is an angry organised group of shareholders itching to oust you from the managing director's office.

Print Shop is the last of these three business game programs. In it you have to decide the number of staff to employ, the amount of money to be tied up in paper, and the type of paper to be purchased.

Airline, Autochef, and Print Shop run on a ZX81 in 16K or on a Sinclair Spectrum. The games cost £4.75 each or £12 for three and can be obtained from London-based Case Computer Simulations.

BATTLE FOR THE MOONS OF JUPITER

MOONBASE 10

Join in the fierce battle for the moons of Jupiter! The battles are based on three well known Atari arcade games.

The game has seven different skill levels which effect the distance you have to travel to reach the moons and the speed of the approaches.

The aliens you have to do battle with in this game are alien attack ships which are worth 100 points.

Space mines are only worth 10 points but you must be careful not to crash into them as this can end you the game.

For each 1,000 points you score you will receive a reserve ship.

These are carried over from battle to battle, and appear just to the right of the score during the battle.

There are also invisible alien scout ships to contend with and if you survive the preliminary onslaughts there is ultimately the alien robot commander to be dealt with.

One interesting feature of this game is the accompanying sound commentary.

This comes on cassette with the programme and consists of side A which is a long narration to be used with the game the first time it is played and side B which is considerably shorter to be used thereafter.

Moonbase 10 runs on an Atari 400 or 800 from cassette or disc and is available from West Midlands based Softcell. At £24.95.

Also new from Softcell this month is an adventure game in which you play the part of a ghost.

This ghost has the haunting task of seeking out treasure.

This treasure is hidden in 30 rooms of a haunted house — so only ghosts with high spirits need apply!

This is a real time game played using a joystick.

It costs £19.95 and runs on Atari 400 and 800.



Illustration: Terry Rogers

THERE IT WAS, IN THE NET!

SOCCER

Can't kick a ball to save your life? Never mind — you can still score the winner for your favourite team with a little imagination and this latest soccer simulation game.

Using a joystick you can move your player forward bringing the ball into your opponents half. Shoot by depressing the fire button on the joystick.

To tackle you simply place yourself in the front of your opponent, or intercept passes — just as in a real game.

The game features a rolling display of football field, including goals, line-markings, a clock to keep the time, and 22 players in black and white strip.

You can play against a friend,

MONSTERS, ELVES AND TREASURES

XANADU ADVENTURE

A new two player adventure game is the latest novel idea for the BBC machine.

It's based on the well-known fantasy role-playing game Dungeons and Dragons and includes many of the features Dungeon fans will have come to expect in a good underground adventure.

Just like the "real-life" version there are nasties down in them there dungeons.

In this version you can choose to team up with your companion to do battle with the evil assortment of elves, dwarfs and monsters that attempt to thwart you in your bid to win the treasure and escape from the caves.

You can also choose to play against another person — attempting to beat him to the glittering prizes hidden in the dank, dark caves.

Xanadu Adventure is available from Berkshire based Hopesoft at £7.75 inclusive.



or take on the computer.

You can also team up with a friend to tackle the computer's squad — just in case it proves to be a tough opponent!

Soccer runs on Atari 400 or an 800 and is one of a new range of games from Thorn EMI, the giant electronics company, who have now entered the microcomputer software field.

STARSCRAMBLE

OMEGA MISSION

Omega Mission places you at the controls of a Starfighter thundering through space at breakneck speed.

Your mission is to destroy four waves of attacking aliens which fly at you from right to left as you navigate your ship over rocky mountain terrain, through tunnels and caves.

The first attack wave is a barrage of ground to air missiles which fly straight up towards you from the planet's surface. If you survive the missiles you fly into a cave where a storm of fireballs fly at you at great speed.

You cannot shoot these fireballs so the key to survival at this stage is to dodge.

The third stage features the alien craft themselves, followed by swarming mutants. The final test is a test of flying skill as you navigate a narrow tunnel to complete the Omega Mission.

After each mission you receive a bonus score and are then sent out on a new harder mission. The game features colour graphics and has sound effects. It also records the high score and name of player.

Omega Mission is based on

Soccer is just one of nineteen games that Thorn EMI are producing for the Atari 400 and 800.

There are also two programs available for the Commodore VIC 20 — River Rescue and Vic Music Composer.

The Thorn EMI range will be widely available in the months leading up to Christmas.

TOUCHDOWN AMONG THE ZOMBIES...

MOONLANDER

Moonlander challenges you to land your craft on the uncertain terrain of an inhospitable planet.

Points are scored by successfully touching down — higher points being earned for landing on the narrow plateaux.

This version of Moonlander runs on a BBC Model B and is available from East-London based Software For All at £6.45 plus £1 postage and packing.

Another new BBC game from the same stable features a version of the well known computer game Zombies.

In Zombie Island you are chased around your island by a nasty bunch of Zombies. Your only escape is to make them fall into the numerous potholes that litter the island.

Row of Four is a computer version of the popular Connect Four game in which you have to make a straight line of four counters before your opponent can. In this case your opponent is the BBC Model B — and a very canny opponent too.

Row of Four and Zombie Island run on the BBC Model B. Both games cost £6.45 plus £1 postage and packing.



Illustrations: Terry Rogers

NEW PRODUCTS NEW PRODUCTS NEW PRODUCT GAMES NEWS

SINISTER SERPENTS SLITHER IN

SERPENTINE

Snakes have taken over planet Earth! Your mission is to make the planet safe again for human habitation.

You control a good snake who chases the evil snakes through a randomly created maze.

In order to eat the evil snakes you must first become larger than they are. To do this you gobble up all the eggs which have been laid by the nasty serpents.

JAWS WITH BITE!

SHARK ATTACK

You are thrown to the sharks by a bunch of bloodthirsty pirates short on a bit of mid-ocean entertainment.

To give you a sporting chance of survival they provide you with an automatic net with which you must cover the visible ocean surface in an attempt to trap the sharks.

As if sharks were not enough to worry about there are also a number of giant octopi swimming about on the look-out for food. These sometimes provide a diversion for the sharks who will bite clean through one if it crosses their path.

Shark Attack is one of a new range of games for the VIC-20 from Slough-based Romik Software.

Also new on the bright yellow Romik label this month is a Scramble-type game entitled

You can also grow fat on the occasional frog which hops about the screen. There is another good reason why you should eat the frogs — they also eat the eggs in the maze thus depriving you of the essential nourishment which will enable you to grow large enough to take on the other snakes.

If you cannot out-grow your opponents there is another way to tackle the surly serpents. Sneak up behind them and nibble at their tails!

Serpentine is the latest game from South Croydon based Spider Software for the Apple 48K. The game comes on disc at £19.95.

Martian Raider and a Multisound Synthesizer which turns your VIC into a music centre.

All three games run on the unexpanded VIC and cost £9.99 each.

You'll be able to play anything from space themes to the latest pop hits with a little practice!

ILLUMINATING EXPERIENCE IN A MAZE

SPECTORS

You'll be fumbling around in the dark in this latest — but novel — twist in the maze game theme.

Your little man must illuminate the pitch black maze with light bulbs. He is pursued by ghosts



who chase him through the maze. There are also a number of generators dotted around the maze which, when your little man touches them, turn on the light bulbs and enable him to eat the ghosts for a few seconds.

A new maze is presented when the current one has been completely filled with light bulbs.

Spectrum Sectors is the latest game from Liverpool based Bug-Byte for the Sinclair Spectrum, and it costs £5.00 inclusive.

DOWNPOUR OF AN ALIEN KIND

CLOUDBURST

Watch out for aliens jumping out of the clouds for they are not as friendly as they look.

Their aim is to colonise our planet, enslave its inhabitants, and savagely stamp out all resistance.

You must kill the evil little beasts before they land. In order to do this you will need a swift finger on the fire button, an accurate shot, and skilful manipulation of your gun — which is dome-mounted and can move through 45 degrees.

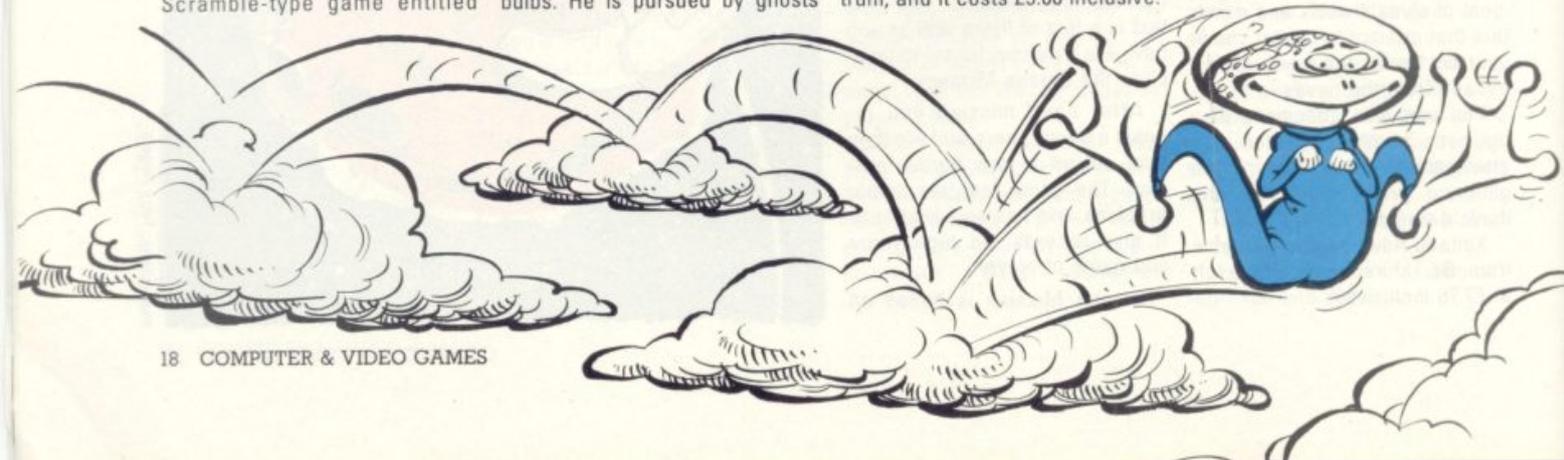
This facility is essential to your planets survival as you need to be able to shoot sideways as well as upwards to kill the aliens that have already landed and are making towards you.

During their stealthy approach the aliens contaminated some of the rain clouds causing them to discharge intermittent downpours of radioactive rain.

They also brought with them an assortment of man eating spiders and giant insects.

This game may well remind the player of that ancient intergalactic proverb: "All that jumps from the clouds may not be a cute little alien with a big smile on his face".

Cloudburst is one of the new range of games from Audigenic for the VIC-20. The game comes on cartridge and plugs into the back of your Vic. It is available from the Reading based firm at £19.99.



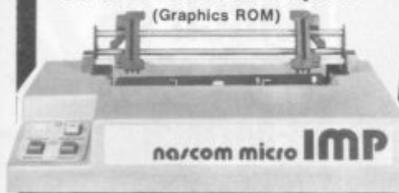
NASCOM

Special Offer from SRS!

We have the last of the makers stocks of the

NASCOM IMP

Serial Printer with imprint
(Graphics ROM)



GREAT VALUE!
ONLY
£199.95
Ex. VAT

(Previous price before being discontinued £325 + VAT)

Apple C.O.R.P.

Come & see the complete APPLE II system with C.O.R.P. program generator. It's incredible — now anyone can write what they require and C.O.R.P. will work out the program for you — call into our new store at Watford and see it for yourself.

We are pleased to advise our customers that we are members of the SPECTRUM COMPUTER GROUP and can supply all the items featured in SPECTRUM'S ads in THIS issue.

spectrum



SRS MICROSYSTEMS

94 The Parade, High Street, Watford, Herts.
Telephone (0923) 26602

You'll value our experience, you'll value our prices, free Securicor delivery or post on orders over £50. Access & Barclaycard welcome. Hire purchase and part exchange available E. & O.E.

GALAXY VIDEO

OFFER A
FREE £10 VOUCHER WITH EACH
COMPUTER BOUGHT

ATARI 400 16K RAM	£198.00
ATARI 410 16K RAM & BASIC	£240.00
ATARI 800 16K RAM & BASIC	£498.00
ATARI 410 RECORDER	£44.95
ATARI 810 DISK	£298.00
VIC 20 5K RAM	£168.00
TEXAS TI99/4A 16K RAM	£198.00
DRAGON 32 32K RAM	£199.00

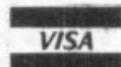
**FREE DELIVERY ON
PURCHASES OVER
£50**

PLUS wide range of programs for all above, plus **BUG BYTE**. We also stock Atari VCS, Mattel, Activision, Imagic and Parker.

HP can be arranged. Barclaycard and Access and mail order. Come in for a demonstration!



GALAXY VIDEO
60 HIGHSTREET, MAIDSTONE, KENT.
TELEPHONE: (0622) 679265



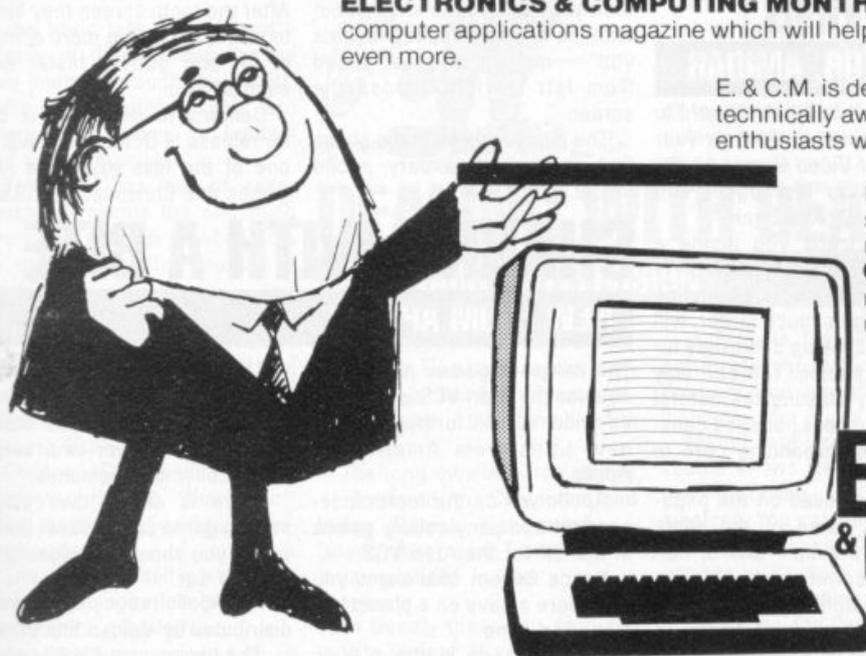
TAKING THE LID OFF

ELECTRONICS & COMPUTING MONTHLY is Britain's FIRST electronics and computer applications magazine which will help you enjoy your personal computer even more.

E. & C.M. is designed for the thousands of technically aware electronics and computing enthusiasts who 'like to get the lid off their micro's!

New computer projects, superior software and educational articles make **ELECTRONICS & COMPUTING MONTHLY** required reading for serious home computer users.

Look inside the November issue, it's at your newsagent now.



Electronics & Computing

MONTHLY

FIGHTING THE EVIL ZYLONS

STAR RAIDERS

Star Raiders puts you at the controls of an Atari Federation Starship hurtling through space at twice the speed of light.

The view from the cockpit is of deepest space with asteroids and stars streaking past you, in this version of the popular Atari computer game.

Your mission is to destroy all Zylon warships on sight.

Zylon fighters and cruisers can be destroyed by your photon torpedoes once they fly into your screen mounted sights.

But once you have shot down the defending star-fighters your mission becomes slightly more difficult.

You must destroy the Zylon headquarters. This is called the Basestar — and is well protected from attacking forces.

The Basestar is a little more difficult to destroy as it is protected by shields forcing you to risk the lives of your crew in an attempt to fly in and attack at close range.

The Starship is equipped with a number of sophisticated flight and battle information controls. The attack computer display shows you the position of the advancing enemy fleet.

The computer also keeps a running total of the number of Zylons downed — and those remaining.

Damage control informs you on the state of your own craft and the amount of energy you have left to carry on your attack on the enemy fleet.

The attack computer controls the sights — glowing red when a photon torpedo is trained accurately on an enemy target.

The game features a number of difficulty levels and a sophisticated scoring system which is based on the remaining energy when you have successfully destroyed all the Zylon invaders.

Star Raiders runs on an Atari VCS and will be in the shops from November at £29.95.



STOP THE ATOM PLANT GROWING REACTOR, AMIDAR

Atari owners can look forward to three new titles in the new year from Parker Video Games — the manufacturers of Frogger and The Empire Strikes Back.

Reactor traps you inside a nuclear reactor. Your mission is to stop the core from expanding which, if it gets much larger, will explode — spelling doomsday for millions of people. You can only stop this by blasting the control rods with nuclear particles causing the ever expanding core to shrink.

Amidar is based on the popular arcade game of the same name. It is a simple task of collecting coconuts and painting lines. But watch out for the patrol guards — if you get boxed in you'll have to use your jump button to escape.

Super Cobra is a graphically

impressive version of the chopper attack game in which you must destroy the enemy base. You fly through a maze bombing the fuel dumps.

If you get beyond this stage then you will have to shoot it out with the UFOs that spiral towards you — moving at great speed from left to right across the screen.

The games will be in the shops from the end of January, priced at £29.95.

SHARKS WITH A BITE NEW FROM APOLLO

The range of games now available for the Atari VCS is about to be widened still further with six new titles from America by Apollo.

Apollo will be the fourth independent company selling games in the UK for the Atari VCS.

Space Cavern challenges you to explore a cave on a planet lost in space time.

Space Chase is the classic galactic battle where you shoot down rows of alien space craft.

MARCH OF THE DEADLY DEMONS . . .

DEMONS TO DIAMONDS

Demons to Diamonds challenges you to shoot down an army of trog-like demons who are marching towards you in this latest shooting gallery simulation game for the Atari VCS.

One or two players can play the game at the same time using Atari paddles to control your gun base.

Each player has to shoot only at a certain colour demons. If you accidentally hit one of your opponent's demons the little chap turns into a skull and starts taking pot shots at you.

When you hit one of your own demons it turns into a diamond and bounces from left to right across the screen advancing towards you before suddenly disappearing. Diamonds are worth extra bonus points if you can shoot one.

If you manage to shoot down eight screens the shooting skulls will begin to appear at random. After the tenth screen they begin to move, becoming more difficult to hit and getting faster with each screen.

Demons to Diamonds is due for release in October and will be one of the less expensive new games this Christmas at £18.95.

Shark Attack is Apollo's answer to Pacman. In this development of the maze theme you control a diver who swims along collecting diamonds.

There is also a two player squash game called Skeet Run in which you shoot clay pigeons on your TV set.

The Apollo range of games are distributed by Vulcan Electronics.

The games cost £24.95 except for Skeet Run which is a little cheaper at £19.95.



BECOME A WHIRLYBIRD WIZARD!

CHOPPER COMMAND

Chopper Command is the latest addition to the Activision range imported into this country by Computer Games Limited.

The game is well known in the States where the manufacturers took out whole pages in games magazines to advertise the cassette.

The basic task is to defend a convoy of medical supplies as they journey through the desert.

On your journey you are attacked by enemy jet fighters and guided missiles.

You have the aid of radar which represents the oncoming aircraft as a series of white dots on the horizon and you are a black dot.

You must constantly keep an eye on the radar so that you are well positioned to pick off the enemy aircraft before they can penetrate your defences and get at those vital medical supplies.

Chopper Command has impressive graphics, the desert being represented as deep glowing orange.

The chopper itself is a detailed simulation in yellow with the trucks black silhouettes.

Chopper Command runs on an Atari V.C.S. and will be in the shops at £24.95 in late October.

FIND THE ULTIMATE ANSWER . . .

RIDDLE OF THE SPHINX

Riddle of the Sphinx offers you a unique video games challenge, combining an adventure format puzzle with a reaction firing test.

If you discover the meaning of the riddle you could be the first person to do so. Although it has been released in the U.S. no-one has yet solved it.

On your journey you will have to do battle with fierce tribesmen armed with spears and knives. These battles not only put you in mortal peril they also force you to use up your precious water.

As your water runs out you slow down until — unless you find an oasis — you will die of thirst.

You move your desert traveller with the joystick, left and right as the scenery of the desert scrolls down past you.

The aim of the game is to collect as many diamonds and caskets of treasure as you pursue your apparently nomadic trail through the desert in the ultimate pursuit of the answer to the Riddle of the Sphinx.

You also encounter some good characters on your journey — among them a beautiful maiden.

Can this be a clue to the Riddle of the Sphinx? The game is one of the Imagic range, distributed in the UK by Adam Imports and will be in the shops before Christmas at £27.95. It runs on an Atari VCS.



Illustrations: Terry Rogers

DICE CALL THE TUNE

BACKGAMMON, DRAUGHTS

Backgammon and Draughts are the two new titles offered in time for Christmas for the Voltmace Database TV games centre.

The Backgammon cassette features a number of games at different levels of difficulty. The first teaches you how to play the game in easy to understand stages.

The dice are rolled automatically by the machine and change colour from blue to red to indicate which player's turn it is — or to indicate that it is the computers turn if you are playing alone.

The Draughts cassette also features several different versions.

You can play against a friend or take on the computer at one of three different skill levels.

For people who like to do things backwards the game will also allow you to play a reverse version of draughts in which the idea of the game is to get rid of all your men before your opponent.

Backgammon and Draughts will be available at Database dealers from October at £19.95 each.



DEALING WITH DEADLY DISCS

NEW FROM INTELLIVISION

Mattel are about to attack the Christmas TV games centre market with a number of new releases for the Intellivision machine.

The long awaited Tron games — featured in **Computer and Video Games** last month — Deadly Discs and Tron Maze-a-Tron are due in the shops in October.

In Deadly Discs you do battle with a variety of computer controlled adversaries — armed only with an electronic frisbee.

In Maze-A-Tron you have to penetrate the Master Control Program. But beware the nasty monsters sent out to thwart you.

Mattel are also offering a choice of two free games when you purchase an Intellivision machine. You can have a copy of Lock 'n' Chase — Mattel's answer to Pacman or their soccer simulation game.

Dungeons and Dragons will be in the shops from November and is a version of the popular role playing fantasy game in which

you have to find your way around a maze of caverns and tunnels and win treasure.

Also new from Intellivision is card playing simulation on cassette. Royal Dealer offers a choice of four different games. You can choose to play against one, two, or three different computerised opponents. The game does not just display the different hands but actually shows you your opponents sitting around a table. The game also acts as a score keeper.

Intellivision cartridges can be obtained from your local Mattel dealer at between £19 and £24.

The new Dragon 32. So well designed, you'll even understand this ad.

If you're already a computer expert, may we refer you to the box of technical specifications displayed opposite.

If you're not, may we refer you to the new Dragon 32 Family Computer. A computer so easy to understand, you won't understand why all the others seem so difficult.

And the new Dragon 32 costs under £200.

32K RAM FOR UNDER £200?*

When you're comparing computers, the first thing you need to know is the size of the memory. In plain English, the Dragon has approximately 32 thousand units of Random Access Memory. (32K RAM for those who prefer to be blinded by science.) This means that the Dragon's memory is at least twice as powerful as its competitors.

With a memory this powerful, the amount of information the Dragon can store is literally vast. But the Dragon doesn't just make it easy to store information. It makes it easy to use, too.

USER-FRIENDLY?

You may have heard of the term 'user-friendly.' Reverting to plain English once more, this means simply that the computer will go out of its way to understand you, rather than vice-versa.

The Dragon 32 is so user-friendly, it practically licks your hand.

You tap (literally) its vast resources through a beautifully-designed keyboard that's as easy to use as a typewriter.

On this keyboard, you type in a language which is surprisingly close to the English you talk every day. The Dragon 32 will receive your order. Understand it. Send it to the appropriate section of its massive brain. And then display the appropriate information on your screen. All before you can say 'gobbledygook.'



*TV not included in price.

SPECIFICATIONS
6809E MICROPROCESSOR. Pet, Apple, Atari 400, BBC Micro, and VIC 20 still have the less powerful 6502.
32K RAM (as standard). At least twice the power of similarly priced machines. Expandable to 64K RAM.
EXTENDED MICROSOFT COLOUR BASIC (as standard). Featuring: ADVANCED GRAPHICS (set, line, circle, paint, print, draw, rotate and print using). ADVANCED SOUND 5 octaves, 255 tones. AUTOMATIC CASSETTE RECORDER CONTROL. FULL EDITING with INSERT and DELETE.
9 COLOUR, 5 RESOLUTION DISPLAY.
USE WITH ANY U.H.F TV and/or separate P.A.L. monitor.
PROFESSIONAL QUALITY KEYBOARD. Typewriter feel. Guaranteed for 20 million depressions.
PRINTER (Centronics parallel).
JOYSTICK CONTROL PORTS.

FIRE YOUR IMAGINATION.

Learning how to use the Dragon 32 won't cause you to experience any problems. Learning what you can use it for will cause you to experience something entirely different.

Delight. Surprise. Fascination. And challenge.

The Dragon offers a range of some of the most popular computer games in the world. From those celebrated space battles to mind-boggling adventures in seemingly unfathomable dungeons and caves.

As if by magic, a simple typed message will command the Dragon to create your own drawings. Then it will colour and paint them in 9 colours.

And it's clever enough to create virtually any image you want - circles and arcs as well as straight lines.

The Dragon will also play and compose music with you, with a range of 5 octaves. And it works with any UHF TV or PAL monitor.

LEARNING THROUGH PLAYING.

All of this makes the Dragon the ideal machine to build your children's interest in the world of computers as they become increasingly more vital. School-children already enjoy using computers.

The Dragon is the first computer specifically for the family - so by enjoying yourselves at home, you and your children can soon become expert enough to create your own programs.

PRODUCT	DRAGON 32	SINGULAR SPECTRUM	ACORN ATOM	VIC 20	TI 99/4A	BBC MICRO-V.
FEATURE						
PRICE	£199	£125	£175	£190	£199	£300
STANDARD RAM SIZE	32K	16K	8K	5K	16K	16K
STANDARD AVAILABLE RAM FOR HIGH RESOLUTION GRAPHICS	26K	9K	N/A	N/A	14K	3K
EXTENDED MICROSOFT BASIC AS STANDARD	YES	NO	NO	NO	NO	NO
PROFESSIONAL-TYPE KEYBOARD	YES	NO	YES	YES	YES	YES

BRILLIANTLY SIMPLE GUIDE.

The Dragon is living proof that you don't have to be an expert in computerspeak to be an expert in computers. It comes with the easiest-to-understand instruction manual ever written for a home computer.

Every step, every explanation, is made clear - even if you're a beginner. In minutes, it will show you how to write a simple program. Within hours, you'll be fascinated. And from then on, you'll continue to be astounded by the new world which the Dragon's power and versatility will open up to you.

See the new Dragon 32 in your High Street. At under £200, it's not just the first family computer. It also has all the features an expert could wish for.

Except perhaps the jargon.

DRAGON 32 The first family computer.

To: Jean Webster, Dragon Data Ltd, Queensway, Swansea Industrial Estate, Swansea, Glamorgan SA5 4EH.
Tel: 0792 580651.

Please send me further information about the Dragon 32.

Name

Address

CV

A member of the Mettoy Group of Companies.

It is ironic that one of mankind's most practical and logical 20th Century tools should provide so many opportunities for fantastic and historic escapism. Many computer games indulge us in our quests for myths and legends on exotic planets and more romantic eras. We asked Mark Blundell of computer moderated gaming company, Mitre Wargames, to explain how to map out computer controlled worlds and times as the fabric for a fantasy game.

BUILDING A COMPUTER WORLD

BY MARK BLUNDELL

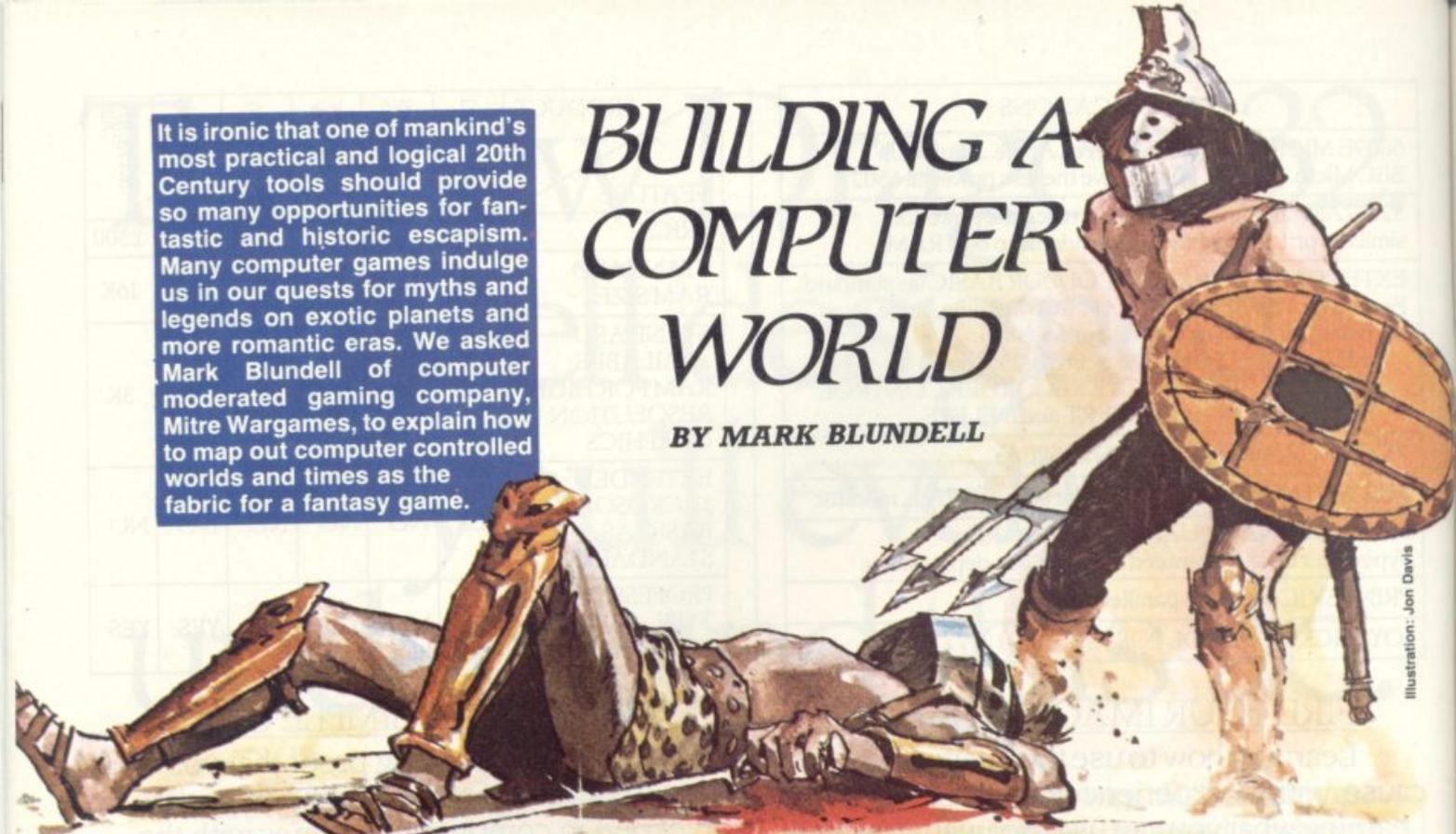


Illustration: Jon Davis

A hot, dusty afternoon. The crowd was impatient, chanting and jeering, when suddenly there was hush: two tough, wiry figures strode into the arena, armed and ready for combat.

The tension broke, and wild cheers rang out — some for one, some for the other. Who will triumph in this deadly tussle of strength, wits and fortune? The Gladiator combat has begun...

You may remember reading about computer-moderated play-by-mail games in May's issue of *Computer & Video Games*.

A new addition to this field is *Gladiator* which is particularly close to our hearts, being not only British, but also entirely our own creation. I have set down here the background to the game, for those of you who are interested in play-by-mail (P.B.M.) games or who are thinking of creating one of your own.

One advantage of computer moderated games is that a large number of players can have their moves processed quickly and cheaply. It can also cater for complicated interaction between rival players without deluging them with extensive rules or requiring detailed analysis of a player's movements.

Lastly the computer acts as an unbiased and unmovable authority on the interpretation of the rules and how they are carried out. The biggest drawback is lack of flexibility as the programmer is unlikely to predict every possible develop-

ment of the game he has created.

When we first developed *Gladiator* we tried to produce a game which made the most of the computer's strengths.

Having established the need for the game, we looked for a suitable subject, one which readily lent itself to computerisation. Many ideas were considered before we decided on the excitement of combat in the ancient arena as the ideal choice. In the system we have developed for *Gladiator* there are a limited number of variables, all interacting to produce results — the prime requisite for a computer-moderated game.

Gladiator meshes in very well with one of our existing games, *The Tribes of Crane*, so that players from there provide a basic nucleus for the game, giving a full number of gladiators eager for combat from the very start.

For a game set in the sword-to-sword combat of the arena, we clearly needed a blow-by-blow description of the fight and of the moments when the telling strokes were made. To generate this, we would need to input a number of variables supplied by the player, and let the computer "play" with them according to a suitable program to generate the result. Variables such as these are an essential ingredient of any computer-moderated game.

In the arena we decided that

there would be three broad categories of variable: the ability of the gladiator; his tactics; and luck. We allocated these groupings to the three types of variable we wanted to input into the program.

First, there were variables which were constant for each individual gladiator in all of his fights: his experience, special skills, and so on.

Second, factors that varied for each gladiator, fight by fight — choices of tactics, special weapons or special plans. Finally, there are variables generated by the computer itself — the inevitable random element.

As all of our other games are role-playing games, where the player assumes the persona of a tribal chief or planet ruler, we naturally felt that the character of the *Gladiator* should be important. The whole of a player's first turn is spent in creating his fighter.

The player has a number of points which he can allocate to the various attributes of the warrior, like strength, speed and intelligence.

This choice is crucial as each attribute will have a different effect on each of the different kinds of stroke available to the gladiator in all his fights.

Tactics are devised by the player for each individual fight in which his gladiator participates. There are six basic strokes from which to choose,

and the wise gladiator will concentrate on those where his natural abilities are most powerful.

The opponent's previous fights will be studied, in order to plan the best tactics against him. 30 consecutive strokes are chosen on the turn sheet, and these are processed in order by the computer, simultaneously with the strokes of the opponent.

The gladiator's basic details — his main attributes and special abilities — are input when the gladiator is first set up, and stored on a floppy disc. Whenever a turn for that gladiator is processed, the tactics he has chosen are input and the attributes recalled from the disc.

These attributes are then used to modify the percentage chance of scoring a hit with the tactics chosen. This modification system is the core of the program. Graphs were drawn to show the shape of the effect which we wished each attribute to have as its strength (the points allocated to it by the player) varied; and then functions were devised to achieve the desired patterns.

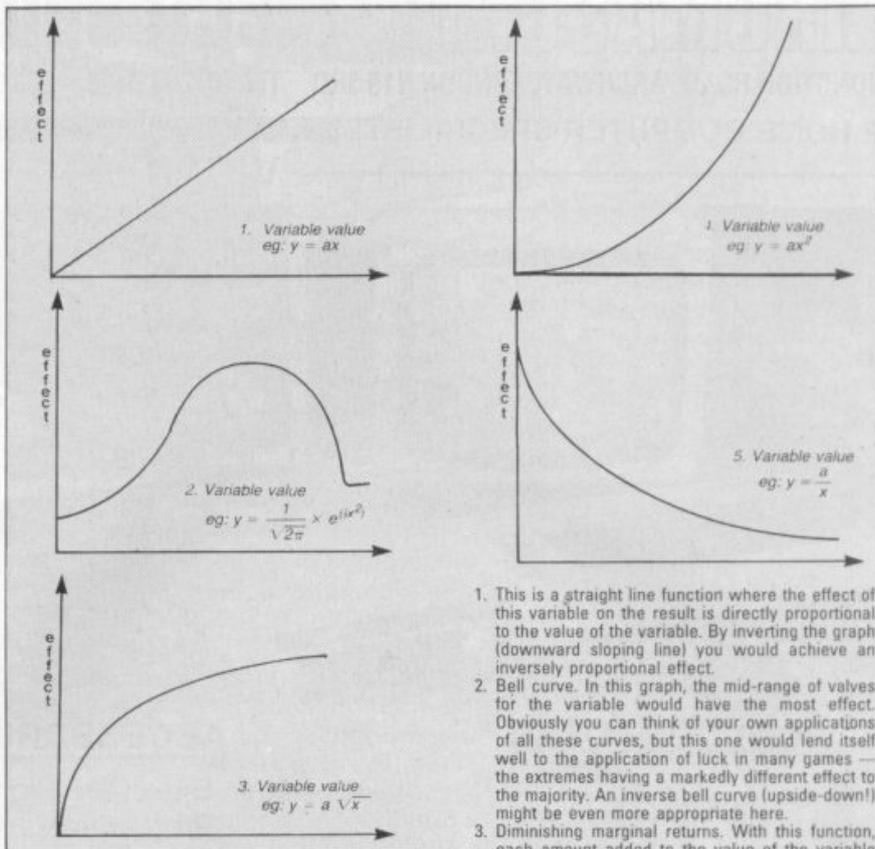
The gladiator's attributes are compared with those of his opponent to determine the chance of hitting on any particular stroke for each gladiator. This involves cross-referencing the two strokes with each other, as there is a matrix for the chances which different strokes have against one another.

Random numbers are then generated by the computer and compared to the modified base percentage chance of a hit to see if one has actually been achieved. This is the luck element.

If you decide to devise your own game, the functions and algorithms which are the core of any game program, should have considerable thought devoted to them.

The way in which you want each variable to affect the result is crucial. I have shown some examples of functions (above) but there are obviously many others, as well as other variations of these, which can be devised to give an infinite range of effects. You may need to talk to a friendly mathematician to turn the graph or diagram into an algorithm the computer can use.

One last important consideration is the gradient or slope of these functions. These will determine precisely how much each change in value of the variable alters the effect it has on the result. These are crucial to play-balance and the only



way to achieve a good balance is through rigorous play-testing.

It may sound dry stuff but this is the crux of the game and the most exciting part of seeing your creation come to life is seeing how the algorithms respond to a set of circumstances and then tuning them to achieve believable results.

Don't make the mistake of choosing an all-powerful tactic which will win no matter what, players will quickly find it. Instead produce a matrix where the tactics entered by either side are compared and the results taken into account when finalising the outcome.

A simple matrix of the sort used in World Cup Manager (*C&VG June*) is also illustrated above.

To add to the personality and excitement of the game various wrinkles and tweaks should be added to the basic algorithms. In Gladiator, for example, the combatants may elect to begin with a spear cast before closing in or can fight to the death instead of just until first blood is drawn.

In the army chieftain type of P.B.M. it is possible to account for such things as lowering morale following a defeat or a long route march.

In individual games like Gladiator exhaustion during a fight is catered for, as the combat draws on the fighters become more vulnerable

1. This is a straight line function where the effect of this variable on the result is directly proportional to the value of the variable. By inverting the graph (downward sloping line) you would achieve an inversely proportional effect.
2. Bell curve. In this graph, the mid-range of values for the variable would have the most effect. Obviously you can think of your own applications of all these curves, but this one would lend itself well to the application of luck in many games — the extremes having a markedly different effect to the majority. An inverse bell curve (upside-down!) might be even more appropriate here.
3. Diminishing marginal returns. With this function, each amount added to the value of the variable has less effect than the previous one. A useful function in the allocation of scarce resources if you feel they should be evenly spread between variables.
4. Increasing marginal returns. This function is the inverse 3. Here each increase in the value of the variable produces a greater effect than the previous one. Here you would be encouraging a greater divergence of values on variables, and more varied results.
5. This graph shows the mirror image of 4. Here each increase in the variable produces reduction in its effect on the game, with each fall producing a lesser decrease than the previous one.

ATTACK TACTICS

	Fast	Early	Slow
DEFENCE TATICS	Break	Cross	Build-up
Shadow Attackers	15%	30%	5%
Intercept Passes	30%	5%	15%
Use a sweeper	5%	15%	30%

6. A simple matrix from World Cup Manager where the percentages indicate how team tactics influence a scoring chance in this particular situation. So playing a sweeper proves the best defence against a fast break.

and less effective. Can they summon up those extra reserves of strength to deliver that crucial blow.

Often disregarded by the amateur who gets bogged down in computer code is the presentation of the game. Writing up games rules in an easy-to-follow, and imaginative way is part-and-parcel of producing a good game. If you are asking players to fit into a world of your making then you must bring that world to life for them.

Don't skimp over the rules you had to compromise your ideals on, every part of the game should be fitted into the context of the world and the rules and customs by which it works.

Mitre Wargames is based at Lothlorien, Stockdale, Heelands in Bucks.

CHROMASONIC electronics

48 JUNCTION ROAD, ARCHWAY, LONDON N19 5RD TEL 01-263 9493 263 9495 TELEX 22568

THE HOME COMPUTER SPECIALISTS

VIC20



VIC20 COMPUTER

NEW LOW PRICE

£147.75

FREE games cartridge supplied with every VIC20 purchased

VIC CASSETTE DECK

£34.00

Free cassette with 6 programs supplied

VIC PRINTER

£185.00

80 Characters per line, 30 Characters per sec., Tractor Feed Dot matrix printer.

VIC SINGLE FLOPPY DISK

OUR PRICE **£335.00**

174K Byte Storage Direct Interface to VIC Direct Compatibility with printer

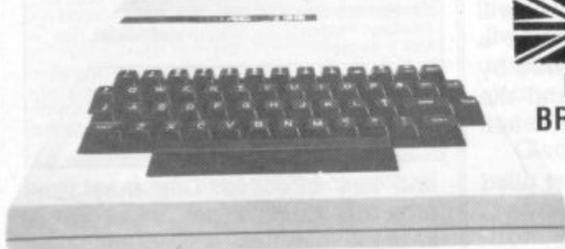
ACCESSORIES FOR YOUR VIC20

- Super Expander High Resolution Cartridge **£27.50**
- Programmers Aid Cartridge **£27.50**
- Machine code Monitor Cartridge **£25.00**
- 8K RAM Cartridge **£34.00**
- 16K RAM Cartridge **£59.00**

TONS OF SOFTWARE

For a copy of our VIC list containing everything you need for the VIC computer, just send us your name and address.

DRAGON 32



IT'S BRITISH

- ★ 9 Colours ★ 32K RAM memory as standard, expandable to 64K
- ★ Extended Microsoft colour basic as standard ★ Typewriter Keyboard ★ 6809E CPU ★ Advanced sound feature ★ 32 Columns x 16 Lines

FREE 'Basic' training manual supplied

OUR PRICE

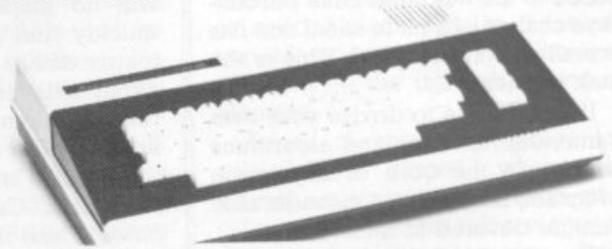
£173

SPECIAL OFFER
GENIE I OR II
£249.00
+ VAT

COLOUR GENIE

EG 2000

PAL VERSION



- ★ 8 Colours ★ 16K RAM standard, expandable to 32K ★ Extended Microsoft colour basic standard ★ Typewriter Keyboard ★ CPU: Z80A/2.2MHZ
- ★ 3 Sound Channels
- ★ 40 Columns x 24 Lines
- ★ Serial and Parallel I/O Ports

OUR PRICE

£173

CUT HERE
I am interested in a home computer, please send me further details

VIC20 Dragon Colour Genie

Name.....
Address.....
CVG.....



TERMS OF BUSINESS: Please add 15% VAT to all prices. Delivery charged at Cost Access and Barclaycard orders welcome



CHESS



A common myth — particularly among non-players — is that grandmasters look at every possible variation for many moves ahead. A little calculation reveals that this must be false.

Suppose each side had 10 legal moves at every turn, then to look ahead three moves for each side would involve considering a million positions. A grandmaster may well need to look ahead at least 6 or 7 moves for each side during the course of a game and cannot possibly process all the necessary positions in the time allowed.

In any case there is no evidence that they even attempt to do so.

There is a famous remark attributed to the grandmaster Reti. When asked how many moves he saw ahead, Reti is alleged to have replied: "only one move — the right one".

The Dutch psychologist Adriaan de Groot made a study of what factors determined chess skill in the 1930s and 1940s and published his findings in a classic work *Thought and Choice in Chess*. To do justice to this book would require many articles, but a few examples will give the flavour of the work.

In one experiment, de Groot showed a series of unfamiliar positions to chess players at all levels of skill from world championship level (Alekhine, Keres and Euwe were all included) to club players.

Each player's task was to choose a move and think out loud while doing so.

De Groot recorded their verbal statements and used them to estimate how much searching each player carried out in finding a move. Figure 1 shows one of de Groot's positions, with White to play. You may like to try it yourself before reading on.

The results cast an interesting light on grandmaster skill particularly in relation to the nearest group of lesser players, designated as "experts".

There were five grandmasters tested and four of them chose the correct move in Figure 1. None of the five experts tested picked it.

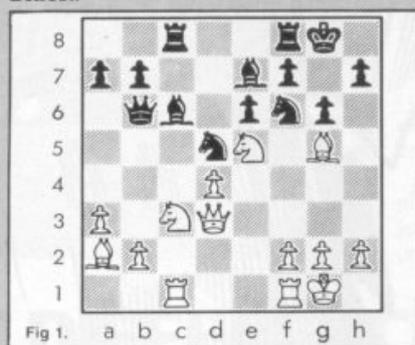
Why can't a computer think like a man? Even the best chess-playing machines searching huge trees of variations have still not reached master standard and only a few are good enough to trouble the strong amateur human player.

Might it not be better to approach the problem another way — how do grandmasters think?

All the grandmasters mentioned the correct move at some point in their analysis, but only 2 of the 5 "experts" did.

Measurements of time taken to make a decision, number of moves considered etc. did not convincingly differentiate the two groups, with one exception: the "value" they estimated for the chosen move where the grandmasters were much more accurate.

Revealing the average depth of search for both grandmaster and "expert" on Figure 1 was much less than some might have expected, a relatively humble seven ply — four moves for White and three for Black.



The "millions" of variations supposedly explored had also shrunk to an average of 35 moves in total. It seems clear that the grandmasters were able to *perceive* some feature of Figure 1 which the experts could not, even though they were able to analyse just as well in every measurable way.

In case you have not yet found the correct move, it is BxN(Q5).

A second experiment reinforced and clarified the importance of perception in chess. This time de Groot again permitted his subjects to look at a position again permitted his subjects to look at a position

from an unfamiliar game, but only for a few seconds.

The task was then to recall the position, for example by setting it up on an empty board.

The results of this experiment were intriguing, grandmasters and masters recalled approximately 93% of pieces correctly, experts recalled 72% and lower-level players recalled about 51%.

However, when the same experiment was repeated with randomised — possibly illegal — positions of pieces, the grandmasters' advantage vanished.

All the subjects performed equally badly, recalling only 3 or 4 pieces correctly.

It is reasonable to deduce that on the former task (recalling "genuine" positions), the grandmasters were recalling not individual disjoint piece positions, but clusters of pieces or significant patterns.

To illustrate this, consider Figure 1 again — although it was not, in fact, one of the positions used in the second experiment.

A cursory inspection shows a King-side castled formation for both sides, Queen Rooks opposed on an open file, two knights on "Bishop 3", an isolated Queen Pawn on Q4 supporting a White Knight on K5 and blockaded by a Black Knight on Q4.

There is a White Bishop on KN5 pinning the Knight on Black's KB3 which is defended by a Bishop on K2. Black has a *fianchettoed* Bishop pawn formation (KB2, KN3, KR2) although his King's Bishop is out of place.

These are all features which occur in innumerable positions, but would not be recognised by the beginner — or the computer.

Where does all this leave us? Grandmasters seem to analyse no better than experts, but recognise more features of a position which somehow prompt them to find good moves.

How many features are there altogether? If we could identify them and put them into a program, would we have a "grandmaster program"? I will return to this topic next month.

BY MAX BRAMER

MAL FUNCTION

SNAG JNR

SCREAMING FOUL UP

T. HITCH

IS THERE ANYBODY THERE?



HALLOWEEN!

JUST PAST THE WITCHING HOUR ON OCTOBER 31ST



HUH!

KNOCK!



ARE YOU IN THE COMPUTER UNCLE STAN? KNOCK ONCE FOR YES...

KNOCK!



YOU ARE IN THE COMPUTER AUNTIE FLO ALWAYS SAID YOU'D WANTED TO GET INTO NEW TECHNOLOGY...



IT'S ABOUT THAT NEST EGG YOU HAD HIDDEN AWAY .. WELL I COULD REALLY DO WITH SOME DISC DRIVES..

TAP!

SHRIEK!!!



CHOMP!

KEY LIFTED OPEN!



THROB!

STOMP!

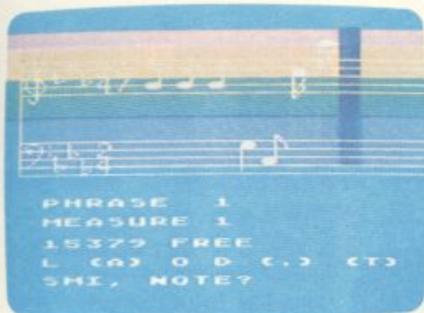
PACMAN



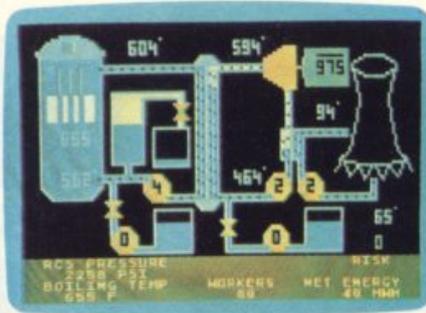
THANKS A LOT BOYS, WE COULDN'T HAVE STOOD ONE MORE TURN AROUND THAT MAZE!

HEE! HEE! HEE!

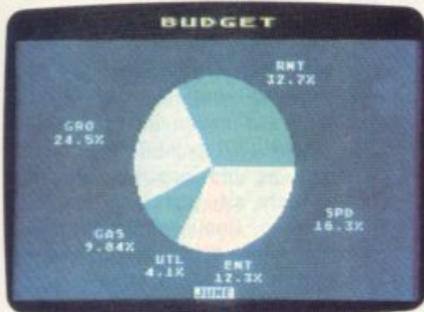
WORST CASE OF PACMAN FINGER I'VE EVER SEEN!



Music Composer



Scram



Graph-it



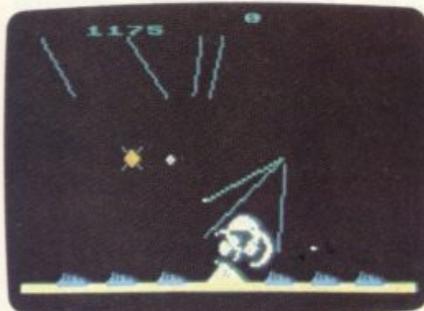
Intro to BASIC 1



Star Raiders



European Countries



Missile Command



Basketball

3.7 million reasons why the Atari Home Computer is something to see. The display screen used with our computers is composed of 192 horizontal lines, each containing 320 dots. Delivering colour and luminosity instructions to each dot for a second requires 3.7 million cycles...a lot of work for the normal 6502 processor.

That's why the Atari computer has equipped its 6502 with its own electronic assistant. It's called ANTIC, and it handles all the display work, leaving the 6502 free to handle the rest. What this means to you is uncompromisingly spectacular display capabilities without loss of computer power needed to carry out the demands of your program.

That's a quality you just don't find in ordinary home computers. And it's one of the reasons some computer experts say that Atari computers are so far ahead of their time.

There's more...which is what you'd expect from Atari Language. The Atari Home Computer uses several programming languages to give the user maximum control of its extraordinary capabilities. PILOT, Microsoft BASIC and Atari BASIC are understood and spoken by the Atari computer. You'll also find our Assembler Editor cartridge indispensable for machine language programming.

Sound. An Atari computer has four sound generators, or voices, activated by a separate microchip. This leaves the principal microprocessor chips free to perform other tasks. And you can take full advantage of this capability which is designed for easy programming.

Change. Atari Home Computers have been designed to make change and expansion easy. The Atari computer has a modular operating system that can be easily replaced as new technology develops. If you need it, memory expansion requires no more than inserting additional RAM modules.* And the Atari ROM cartridge system also makes it easy to change languages. In short, your Atari computer won't become obsolete by future developments...because it already incorporates the future.

Sharing. To learn more about the amazing capabilities of Atari Home Computers, either visit your local dealer or fill in the coupon below.

THE GRAPHIC DIFFERENCE BETWEEN ATARI® COMPUTERS AND ALL THE OTHERS.

*Atari 800™ computer only.



Please send me FREE a brochure, price list and the address of my nearest stockist.

Name _____

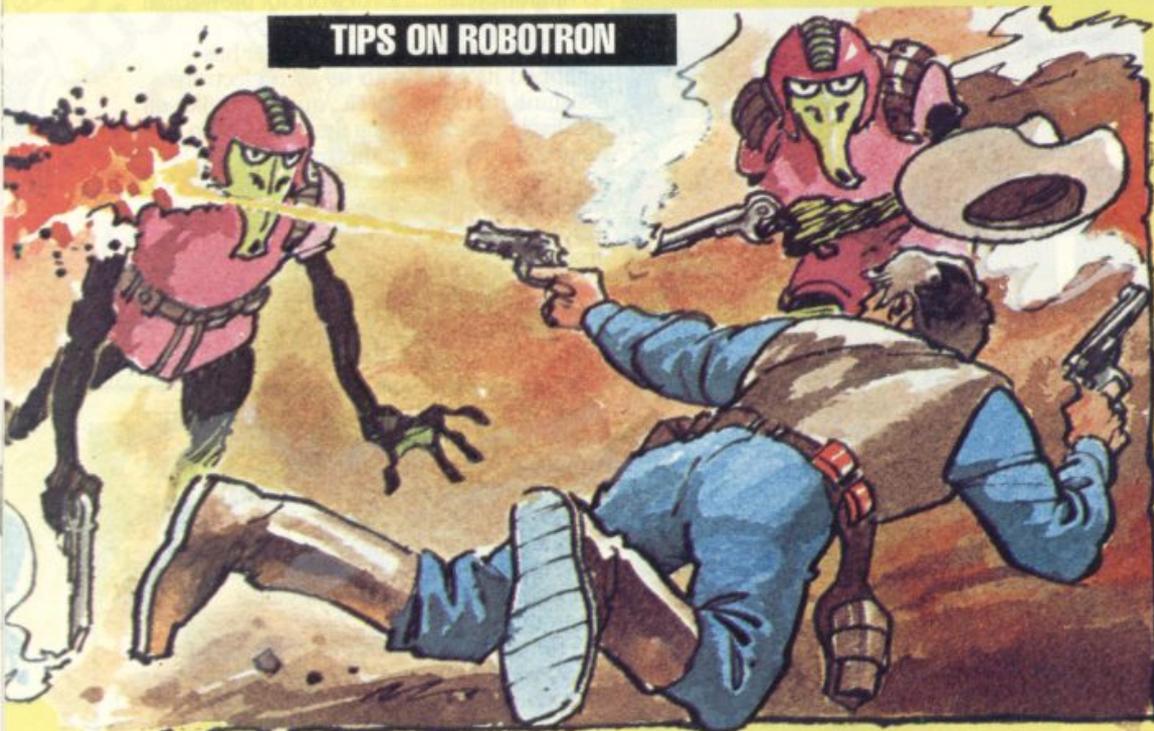
Address _____

CVG3 _____

Atari International (UK) Inc.
Windsor Hse., 185-195 Ealing
Road, Alperton, Wembley,
Middlesex.



TIPS ON ROBOTRON



Arcade games don't come any more forbidding than Robotron. To the uninitiated, the screen appears as a chaotic whirr of activity... add the unfamiliar two joystick control and the odds seem impossible.

The game is the invention of former Williams' game designer Eugene Jarvis, who was responsible for Defender.

Robotron sets you down in a screen full of rampaging robots with the task of saving the man, woman and child clones. These clones are the way to large scores, the first one you save is worth 1,000 points, the second 2,000 and so on up to 5,000.

The early walls are deceptively easy and should be used to become acclimatised to the controls. The left joystick moves the player in eight directions, the right enables the player to fire in eight directions. Practise moving and firing diagonally.

Wave one introduces you to the Grunt, your first robotic foe. Grunts (100 points) are the cannon fodder in Robotron they wander around but cannot fire and you should ensure that the two clones on this screen are rescued before you destroy the last Grunt. Finishing off all the Grunts and the wave.

Wave two brings on the indestructible Hulks which can be halted by a hit but not killed. The

A BRAIN WAVE OF A GAME

Spheroids (1,000 points) are the main priority on this wave. They lay Enforcers (200 points) which look rather like fire hydrants and spray out fire at you. Stay out of the way of the Hulks, blast the Spheroids and Enforcers, then finish off the Grunts and scoop up the humanoid clones before the Hulks kill them.

The third and fourth (and sixth and eighth) waves feature the

ARCADE MISS IS A HIT

Ms Pacman, the first lady of the American arcades, is to make her debut in the U.K.

We featured this female of the carnivorous maze species in an article on the arcade industry's assault on women players.

Most British distributors have fought shy of introducing this lady to our shores, but now a "conversion" kit is out and don't be too surprised if the Pacman in your local pub or arcade develops curling eye-lashes and takes to wearing a bow.

Apart from these understandable additions to her appearance, Ms Pacman will also feature four mazes for the newcomer to try his hand at. Three of

same foes but there are inevitably more of them and they become more aggressive. Spheroids often start in corners and are vulnerable to the player who has mastered diagonal fire from the centre of the screen.

Wave five is known as the Brainwave. The Brains are particularly dangerous as they can turn your clones against you and fire deadly cruise missiles which track your man.

First priority is to eliminate the single Spheroid and then blast the Brains quickly for 500 points each. Cruise missiles can be run

from when there is more than one of them. They will chase you but soon fall into an easily blastable line behind you, turn and fire.

When Brains find a clone they jump them up and down and turn them into deadly Progs. These are then fired at you and you have to react quickly to escape.

Wave seven introduces the Tanks (300 points). These start life as blue spirals, Quarks, which sit passively on the screen. Don't be misled, these should be blasted as quickly as possible. You won't get all the Quarks but try to single out those which are developing for quick attention. Fully formed Tanks will fire cannonballs at you, which can rebound off walls to get you from behind.

Wave nine is given over to Grunts, blast your way quickly through to a wall and then tackle the Enforcers.

Brains reappear on the 10th, 15th and 20th wave and wave 22 brings in a deadly combination of Tanks and Enforcers and after wave 40 it starts up all over again.

It is possible to blast your way out of very tight corners by using the old Asteroids technique of moving and firing towards the enemy. Don't let the corner-loving Enforcers trap you in one and keep the Hulks away from your main source of points, the clones.

Different operators set different bonus life levels so shop around for five lives and a bonus every 12,000 to learn on.

MS PACMAN

these have an additional two side exits.

Dots still score 10 points each with energizers adding 50 to the total. As with the usual Pacman, Ms Pacman munches 200 points on the first ghost, 400 for the second and so on.

When she is caught, Ms Pacman dramatically swoons and falls... and the clichés don't quite stop there, the between screen displays feature Pacman chases the new Ms across the screen, then she chases him and finally the delivery of the Pac-baby.



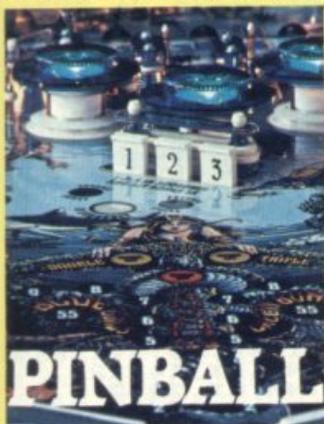
The ghosts are still as you remember them, except that one of these has now undergone a sex-change operation and is affectionately known as Sue.

THE LOST ARC OF THE COSMOS

The search for cosmic treasures takes place in Space Dungeon, a new game which is being tried out at a few locations in Britain.

Space Dungeon uses the Robotron design: a two joystick control for moving around the screen and eight-way fire.

You play the part of a raider who can penetrate the cosmos to discover its riches. A radar screen helps to plan your tactics and manoeuvres as you try to evade the guards and other



Can you become a pinball Mastermind? That's the challenge issued by the latest machine from Bally — called Spectrum.

You have to crack the colour code set up by the pin's built-in computer brain while you play. You must hit targets to light up coloured lights in the correct order. If you crack the table's code — it can choose from 256 combinations — you win a big bonus. If you manage to get your ball into one of the three kick-out holes featured on the playfield the machine will give you a clue — indicating which target lights you should aim for.

A novel feature of this particular pin is that the ball is fired onto the playfield using the right-hand flipper button.

It's a table that will keep you guessing.

Also new from the Bally stable this month is Speakeasy — a return to good old fashioned pinball concepts. It has a card game theme — traditional in pinball — and includes Add-a-Ball and Subtract-a-Ball features. It also has a roulette wheel on the playfield which spins each time you lose a ball, giving bonuses.

SPACE DUNGEON

thieves to grab the treasures and follow the arrows to the Bonus Room.

Points for collected treasure are scored only after a level of the dungeon is completely explored. Each level, of a possible 99, has 16 treasures and 36 rooms. The deeper the dungeon, the player strikes, the more valuable the treasure but the greater the danger.

The main rival for the treasures is the Thief who will steal away your bounty. A direct hit will make him drop it. Watch out

OUTLINE

DON'T STEP OUT OF LINE

Try to outwit the Outline machine. You can never win but you can achieve a good draw.

Outline is a chase game on a series of changing grids. You control a drawing marker which runs along the lines of the grid, responding to a simple joystick control. Behind you comes the chaser leaving his own marking across the grid pattern.

You can keep him at a distance by employing a gap button to prevent him catching you. Like Amidar, the screen colours-in every square successfully surrounded by your lines.

When the chaser is left behind a gap he must retrace his tracks and find another route to get to your marker or wait until the gap closes again.

If he doesn't catch you and the screen is filled in, you can progress to a new grid pattern. You can start at different levels of difficulty and it is possible to have more than one chaser after you.

In the later stages you will find the machine talking to you and the chasers are equipped with missiles to fire after you.

One trap a lot of beginners fall into is, being cut off at a corner between two of their own gap barriers. A mistakenly pushed gap button leaves you helpless while the chaser waits patiently for the gap barrier to clear.

for the hovering Spore Case, a hit on this will result in a frenzy of deadly Spores attacking you.

If you lose a life, your treasure is shown on the radar screen and can be returned to later.

The treasures are: iron crosses, copper pieces, silver stars, a golden fleece and a platinum ark. Among the dangers are an Executioner, the Enforcer, Death Squares, Guards, Piker Ships and a mysterious creature called a Corner Zapper.

Like Tempest, Space Dungeon lets you enter the game at a level suited to your skills, you can inflict untold damage on the easy levels or go for a more dangerous level with the increased rewards it brings — but, of course, more risks.

The graphics in the game are not realistic but have a symbolic design and the signs are that Space Dungeon is proving popular enough for more widespread distribution soon.



Illustration: Terry Rogers

RECORD BREAKERS

A whole host of new machines are making an appearance on Record Breakers for the first time.

We have also received a good deal of correspondence about an older machine, Defender from people who regularly score over a million. The reason Defender

was not included is that some players can now continue playing for as long as the arcades remain open.

The Battle Zone and Missile Command games are also going this way and I am closing the file on these.

TEMPEST
495,481
Richard Holt

SCRAMBLE
871,460
R. Cotton

GORF
886,030
Chris Murray

FROGGER
87,050
Danny Blackmoor

DONKEY KONG
428,300
John Bull

DIG DUG
591,430
Stephen Broadbent

QIX
263,820
Sarbjit Singh

CRUSH ROLLER
471,530
Alan Dowler

PACMAN
1,050,900
Tim Haywood

CENTIPEDE
305,000
Chris Caton

HYPERBALL
1,448,060
Nick Starkings

PHEONIX
409,630
John Danvers



Illustration: Dorian Cross

```

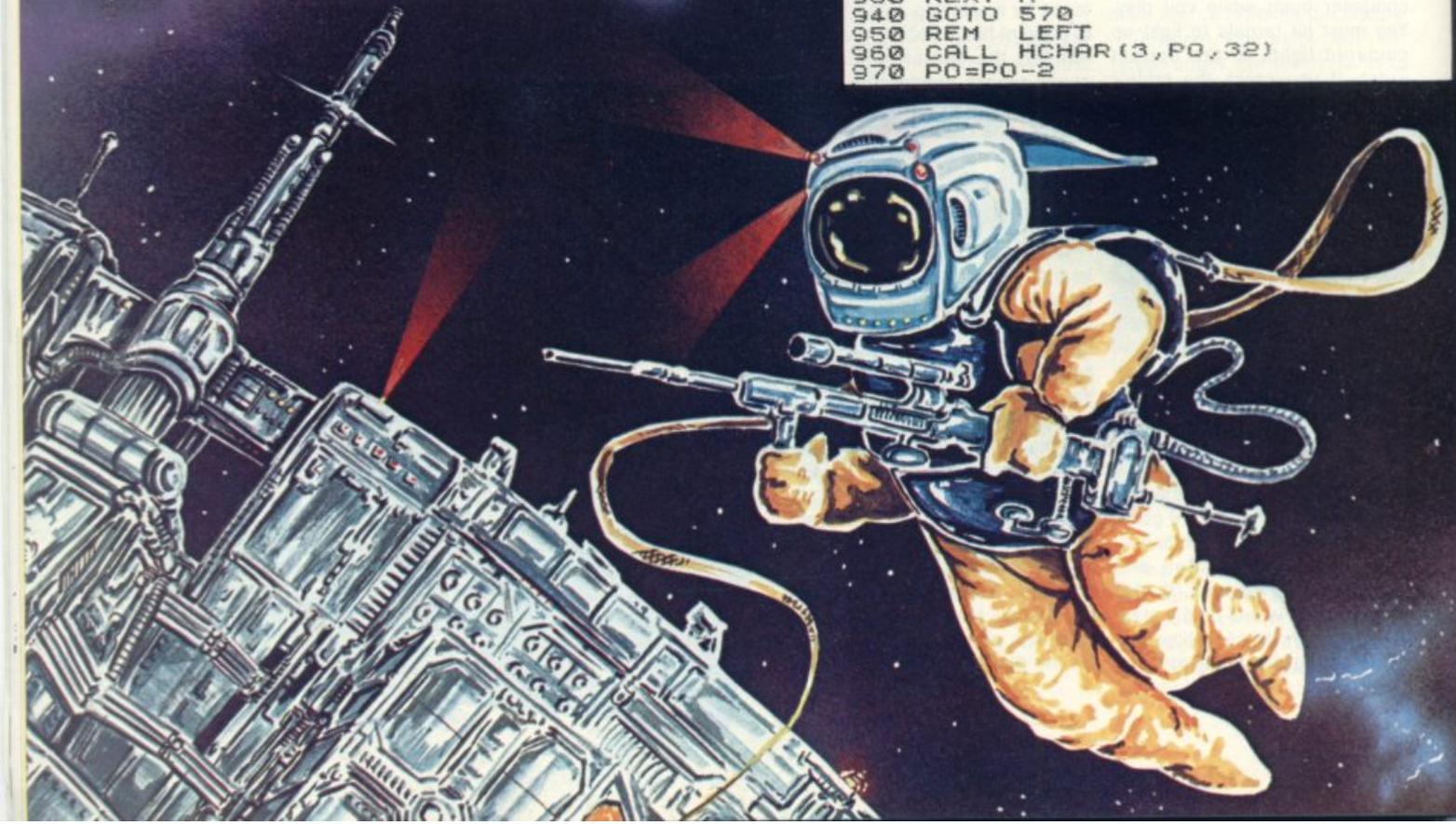
100 CALL SCREEN(2)
110 CALL CLEAR
120 REM ****SPACE LASER****
130 REM *BY GM PROGRAMS*
140 REM *****
150 RANDOMIZE
160 SD=1000
170 XV=0
180 LAS=3
190 FUEL=32
200 AO=500
210 KS="BRASS=" & STR$(LAS)
220 FOR Y=1 TO LEN(K$)
230 CALL HCHAR(1,22+Y,ASC(SEG$(K$,Y,1)))
240 CALL SOUND(1,-3,0)
250 NEXT Y
260 FOR CHAN=1 TO 8
270 CALL COLOR(CHAN,7,1)
280 NEXT CHAN
290 CALL HCHAR(24,1,152,32)
300 UB=INT(RND*14)*2+4
310 X=32
320 CV=INT(RND*16)+5
330 CALL HCHAR(CV,UB,136)
340 FOR A=1 TO 30
350 CALL HCHAR(RND*20+1,RND*30+1,120)
360 NEXT A
370 CX=INT(RND*28)+4
380 NM=23
390 PO=INT(RND*13)*2+5

```

```

400 CALL CHAR(96,"7E7E3C3C18180000")
410 CALL CHAR(104,"1010101010101010")
420 CALL CHAR(112,"0000163066301800")
430 CALL CHAR(136,"EEEEEEEEEEEEEEEEE")
440 CALL CHAR(120,"1")
450 CALL CHAR(128,"FE1EFE1EFE1EF1E1E")
460 CALL CHAR(144,"F3F4500CA5E3F207")
470 CALL CHAR(152,"FFFFFFFFFFFFFFF")
480 CALL COLOR(9,14,1)
490 CALL COLOR(15,7,11)
500 CALL COLOR(16,2,2)
510 CALL COLOR(14,11,1)
520 CALL COLOR(10,10,1)
530 CALL COLOR(13,7,1)
540 CALL COLOR(11,6,1)
550 CALL HCHAR(24,1,128,32)
560 CALL HCHAR(3,PO,96)
570 CALL HCHAR(NM,CX,32)
580 NM=NM-1
590 IF INT(RND*2)=1 THEN 1030 ELSE 1050
600 IF NM<=1 THEN 1070
610 IF CX<=2 THEN 1250
620 IF CX>=30 THEN 1270
630 CALL HCHAR(NM,CX,112)
640 F=INT(RND*16)+1
650 CALL COLOR(12,F,1)
660 CALL KEY(0,K,S)
670 IF K=32 THEN 710
680 IF K=83 THEN 950
690 IF K=68 THEN 990
700 GOTO 570
710 IF NM<=2 THEN 1070
720 CALL UCHAR(4,PO,104,NM-3)
730 CALL SOUND(-100,4000,0)
740 X=X-2
750 IF X=10 THEN 1710
760 CALL UCHAR(4,PO,32,NM-5)
780 CALL HCHAR(24,1,152,32-X)
785 IF X=0 THEN 2080
790 IF CX=PO THEN 820
800 IF PO=UB THEN 1460
810 GOTO 570
820 CALL SOUND(1000,-5,1,110,5)
830 CALL HCHAR(NM,CX,144,2)
840 CALL HCHAR(NM,CX,32,2)
850 CALL HCHAR(NM+1,CX,144,2)
860 CALL HCHAR(NM+1,CX,32,2)
870 CX=INT(RND*28)+4
880 NM=23
890 SC=5C+28.86
900 CS="SCORE=" & STR$(SC)
910 FOR M=1 TO LEN(C$)
920 CALL HCHAR(1,2+M,ASC(SEG$(C$,M,1)))
930 NEXT M
940 GOTO 570
950 REM LEFT
960 CALL HCHAR(3,PO,32)
970 PO=PO-2

```



SPACE LASER

```

980 GOTO 560
990 REM RIGHT
1000 CALL HCHAR(3,PO,32)
1010 PO=PO+2
1020 GOTO 560
1030 CX=CX+INT (RND*3)
1040 GOTO 600
1050 CX=CX-INT (RND*3)
1060 GOTO 600
1070 XU=XU+1
1080 IF XU<3 THEN 1790
1090 CALL SOUND(100,110,0)
1100 V$=" G A M E O V E R"
1110 FOR A=1 TO LEN (V$)
1120 CALL SOUND(100,294,0)
1130 CALL HCHAR(12,3+A,ASC(SEG$(V$,A,1)))
1140 CALL SOUND(100,330,0)
1150 NEXT A
1160 CALL SOUND(1100,110,0,4000,2)
1170 BNS="YOUR SCORE IS" & STR$(SC)
1180 FOR A=1 TO LEN (BNS)
1190 CALL HCHAR(16,6+A,ASC(SEG$(BNS,A,1)))
1200 NEXT A
1210 IF X=0 THEN 1670
1220 IF SC>=533.83 THEN 1380
1230 GOTO 1290
1240 STOP
1250 CX=CX+1
1260 GOTO 620
1270 CX=CX-1
1280 GOTO 620
1290 PRINT " P L A Y A G A I
N"
1300 CALL KEY(0,K1,S1)
1310 KL=KL+1
1320 IF KL=500 THEN 1240
ELSE 1340
1330 IF S1=0 THEN 1300
1340 IF K1=32 THEN 1350 ELSE 1300
1350 SC=0
1355 KL=0
1360 GOTO 100
1370 STOP
1380 PRINT " ** BONUS GAME
**"
1390 CALL CHAR(112,"183C7EFF183C
5A999")
1400 CALL SOUND(100,262,0)
1410 CALL SOUND(100,524,0)
1420 CALL SOUND(100,392,0)
1430 CALL SOUND(100,440,0)
1440 CALL SOUND(100,349,0)
1450 CALL SOUND(1000,110,0,-5,0,
4000,0,500,0)
1460 SC=0
1470 GOTO 100
1480 CALL SOUND(1000,-1,0)
1490 X=32
1500 FUEL=FUEL-1
1510 CALL HCHAR(24,FUEL,128)
1520 AO=AO+10
1530 CALL SOUND(-50,AO,0)
1540 IF FUEL=1 THEN 1550 ELSE 1500
1550 SC=SC+167.45
1560 FOR DOWN=CV TO 20
1570 CALL HCHAR(DOWN,VB,136)
1580 CALL SOUND(1,SD,0)
1590 SD=SD-50

```

```

1600 CALL HCHAR(DOWN,VB,32)
1610 NEXT DOWN
1620 VB=0
1630 CALL CHAR(112,"FF186C7EFFFF
5A999")
1640 CALL CHAR(96,"AFFF7EFFFF818
18119")
1650 CALL CHAR(104,"818181818181
8181")
1660 GOTO 980
1670 CALL SOUND(1000,500,0)
1680 CALL SOUND(1000,1000,0)
1690 PRINT " * OUT OF FUEL *
"
1700 GOTO 1290
1710 FOR O=6 TO 16
1720 CALL COLOR(13,0,0)
1730 CALL SOUND(1,-1,0)
1740 CALL SOUND(1,-2,0)
1750 NEXT O
1760 CALL COLOR(13,7,1)
1770 GOTO 770
1780 STOP
1790 CALL HCHAR(NM,CX,32)
1800 CALL VCHAR(4,PO,32,NM)
1810 IF XU>2 THEN 1090
1820 NM=23
1830 FOR SO=1000 TO 900 STEP -5
1840 CALL SOUND(-SO,SO,0)
1850 NEXT SO
1860 W=32
1870 JK=500
1880 CALL HCHAR(24,W,128)
1890 CALL SOUND(-50,JK,0)
1900 JK=JK+10
1910 W=W-1
1920 IF W=0 THEN 1930 ELSE 1880
1930 X=32
1940 LAS=LAS-1
1950 KS="BASES=" & STR$(LAS)
1960 FOR Y=1 TO LEN (K$)
1970 CALL HCHAR(1,Y+22,ASC(SEG$(K$,Y,1)))
1980 NEXT Y
1990 CALL SOUND(10,-3,0)
2000 GOTO 660
2010 STOP
2020 W=32
2030 CALL HCHAR(24,W,128)
2040 W=W-1
2050 IF W=0 THEN 2060 ELSE 2030
2060 X=32
2070 GOTO 670
2080 IF XU<3 THEN 2090 ELSE 1100
2090 XU=XU+1
2100 GOTO 1790
2110 END

```

RUNS ON A T.I. 99/4 OR 99/4A

Space Laser is Invaders with a difference. You are the attacker, controlling a laser firing base at the top of the screen while aliens come at you from their planet below.

You are moving gradually down toward the planet's surface and have to blast the aliens as they move to defend their home.

You move your base using the cursor keys to intercept the aliens who move in a zig-zag pattern across the screen. The space key fires your laser.

Once you hit the planet — unless you've used all your three lives — you get more fuel and another chance to zap the aliens. There is a bonus game feature built in and your score is shown continuously.

BY GM PROGRAMS

T-SHIRTS



Want to look tough? Well, when you wear a Computer and Video Games T-shirt no-one is going to kick sand in your face! There are three designs to choose from. One is discreet little number with the C&VG logo on the front in delicate shades of red and black. The Bugs feature large on our other two offerings. One features Snag Junior in glorious bright blue with the words "Watch out-there's a Bug about" writ large. Screaming Foul Up has managed to find his way onto our third shirt in brilliant yellow and green with the slogan "There's no polite word for something that bugs!"

The T-shirts come in four sizes, Extra Small, Small, medium and large, and cost £2.65 plus 30p for post and packing. Cheques and or PO's (not cash) should be sent to: Computer and Video Games T-shirt Offer, 10-12 Victoria Road, Northampton.

COMPUTER & VIDEO GAMES T-SHIRT OFFER

Name
 Address
 Tel

Tick Size Reg. ES S M L Tick Design Reg. 1. "watch out" 2. "There's no polite word" 3. "Logo"

T-shirts cost £2.65 plus 30p p&p. Cheques/P.O.s payable to Computer & Video Games T-shirt offer.
 OFFER APPLIES U.K. only.

Please return to: Computer & Video Games T-shirt offer, 10-12 Victoria Road, Northampton. PLEASE ALLOW UP TO 28 DAYS FOR DELIVERY.



BACK ISSUES

Look what you've been missing! Games programs for your favourite machine,

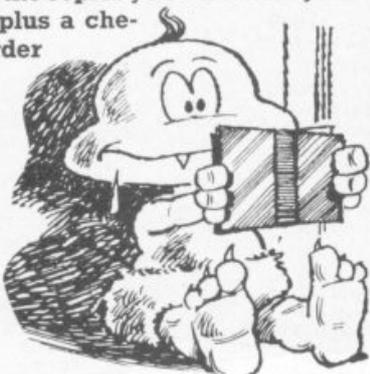
news and reviews of those games tapes you've always wanted to know about, plus special features on the latest trends in the exciting world of computers and gaming.

If you would like to catch up on what's been going on in the pages of Computer and Video Games over the past months why not send off for some back issues? It's easy to do.

Just send details of the copies you want with your name and address, plus a cheque or postal order

made payable to Computer & Video Games to C&VG Back Issues, Competition House, Fardon Rd., Market Harborough, Leicestershire.

Each issue costs £1 including post and packing.



EASIBINDERS

Quick, neat and easy!



It's so easy and tidy with the Easi-binder binder to file your copies away. Each binder is designed to hold 12 issues and is attractively bound and blocked with the COMPUTER & VIDEO GAMES logo. Price U.K. £4.25 including postage, packing and V.A.T. Overseas orders add 25p per binder.

Nat. Giro No. 5157552. Please allow 3/4 weeks for fulfilment of order. Payment by ACCESS/BARCLAYCARD/VISA. Send coupon below detailing credit card no. and signature. Why not place your order now? Send the completed coupon below with remittance payable to:-

Easibind Ltd., 4 Uxbridge St., London, W8 7SZ.

Order Form COMPUTER & VIDEO GAMES

I enclose P.O./cheque value for binders
 Years required BLOCK LETTERS PLEASE
 Name
 Address
 Date Registration No. 307469.

ICE CREAM VENDOR



```
4 HOME
10 VTAB 10: PRINT TAB( 10)*****
11 PRINT TAB( 10)** ICE CREAM **
12 PRINT TAB( 10)** VENDORS **
13 PRINT TAB( 10)** G.W.GALLAGHER **
14 PRINT TAB( 10)** 1980 **
15 PRINT TAB( 10)*****
16 PRINT TAB( 10)*****
17 PRINT TAB( 10)*****
18 PRINT TAB( 10)*****
19 PRINT TAB( 10)*****
20 FOR I = 1 TO 2000: NEXT I
70 DIM RS(4),RC(4),RH(4),RL(4)
75 DIM GA(4),GD(4),GE(4)
80 DIM CST(4),TAK(4),PRO(4),A(4),C(4)
90 DIM D(4),S(4),E(4),L(4)
92 DIM PA(4),PB(4),PE(4),PD(4)
95 GOTO 2100
100 PRINT "PRESS SPACE BAR WHEN YOU ARE READY TO CONTINUE"
110 GET AS: IF AS = "" THEN GOTO 110
120 RETURN
200 FOR I = 1 TO V: IF A(I) - 9 < 1 THEN P(A) = 1: GOTO 240
210 IF A(I) - 9 < 3 THEN PA(1) = .7: GOTO 240
220 IF A(I) - 9 < 6 THEN PA(1) = .5: GOTO 240
230 IF A(I) - 9 < 10 THEN PA(1) = .25: GOTO 240
```

RUNS ON AN APPLE
OR A PET IN GK
BY G. W. GALLAGHER

Illustration: Terry Rogers

```

235 PA(I) = 0
240 NEXT I
250 RETURN
400 FOR I = 1 TO V: IF D(I) - 10 < 1 THEN PD(I) = 1: GOTO 440
410 IF D(I) - 10 < 3 THEN PD(I) = .7: GOTO 440
420 IF D(I) - 10 < 6 THEN PD(I) = .5: GOTO 440
430 IF D(I) - 10 < 10 THEN PD(I) = .25: GOTO 440
435 PD(I) = 0
440 NEXT I
450 RETURN
500 FOR I = 1 TO V: IF E(I) - 5 < 1 THEN PE(I) = 1: GOTO 540
510 IF E(I) - 5 < 3 THEN PE(I) = .7: GOTO 540
520 IF E(I) - 5 < 6 THEN PE(I) = .5: GOTO 540
530 IF E(I) - 5 < 10 THEN PE(I) = .25: GOTO 540
535 PE(I) = 0
540 NEXT I
550 RETURN
600 X(K) = INT (X(K) * 100) / 100: RETURN
700 HOME: RETURN
800 PRINT "YOU HAVE OVERSPENT.TRY AGAIN ": PRINT: RETURN
1500 ON W GOTO 1505,1510,1520,1530,1540
1505 BS = "SUNNY TEMP 28C":MKT = 1000: GOTO 1550
1510 BS = "SUNNY TEMP 23C":MKT = 700: GOTO 1550
1520 BS = "CLOUDY BUT DRY TEMP 20C":MKT = 500: GOTO 1550
1530 BS = "SHOWERY TEMP 15C":MKT = 300: GOTO 1550
1540 BS = "RAIN TEMP 10C":MKT = 100
1550 IF DAY = 6 OR DAY = 7 THEN MKT = MKT * 2
1560 RETURN
1700 IF DAY = 1 THEN AS = "MONDAY"
1710 IF DAY = 2 THEN AS = "TUESDAY"
1720 IF DAY = 3 THEN AS = "WEDNESDAY"
1730 IF DAY = 4 THEN AS = "THURSDAY"
1740 IF DAY = 5 THEN AS = "FRIDAY"
1750 IF DAY = 6 THEN AS = "SATURDAY"
1760 IF DAY = 7 THEN AS = "SUNDAY"
1770 RETURN
2100 GOSUB 700
2105 PRINT "YOU ARE THE OWNER OF AN ICE-CREAM VAN": PRINT
2110 PRINT "TRADING ON THE SEA FRONT AT": PRINT
2120 PRINT "DALY-BY THE SEA": PRINT: PRINT
2130 PRINT "EACH MORNING YOU BUY YOUR STOCK AT THE": PRINT
2140 PRINT "DEPOT,ESTIMATING YOUR LIKELY SALES"
2150 PRINT: PRINT: GOSUB 100
2160 GOSUB 700
2170 PRINT "YOU SELL 3 DIFFERENT PRODUCTS": PRINT
2180 PRINT "1. CONES WITH SOFT ICE-CREAM FILLING": PRINT
2190 PRINT "THE CONES COST YOU 3 PENCE EACH": PRINT
2200 PRINT "AND THE FILLING 6 PENCE PER CONE": PRINT
2210 PRINT "2. CHOC-ICES WHICH COST YOU 10 PENCE": PRINT
2220 PRINT "EACH": PRINT
2225 PRINT "3. ICE-LOLLIES WHICH COST YOU 5 PENCE": PRINT
2226 PRINT "EACH"
2230 PRINT: PRINT: GOSUB 100
2240 GOSUB 700
2245 PRINT "THERE MAY BE 1,2,3 OR 4 VANS TRADING": PRINT: PRINT
2250 PRINT "IN THE AREA": PRINT: PRINT
2270 PRINT "HOW MANY VANS DO YOU CHOOSE"
2275 INPUT V: IF V > 4 THEN GOTO 2270
2280 IF INT (V) < V THEN GOTO 2270
2290 DAY = 0: FOR I = 1 TO 4:X(I) = 100:SS(I) = 0:SC(I) = 0:SH(I)
= 0:SL NEXT I
2300 FOR D = 1 TO 7
2305 DAY = DAY + 1
2315 W = INT (RND (1) * 5) + 1: GOSUB 1500
2320 FOR K = 1 TO V
2323 GOSUB 1700
2326 GOSUB 700
2328 Q = X(K)
2330 PRINT "VAN":K;" ";AS: PRINT
2340 PRINT "WEATHER FORECAST":BS: PRINT
2350 PRINT "CASH IN HAND ";X(K);" POUNDS": PRINT
2360 PRINT "HOW MANY CONTAINERS OF SOFT ICE-CREAM": PRINT
2370 PRINT "DO YOU WISH TO BUY AT 6 POUNDS EACH": PRINT
2380 PRINT "(1 CONTAINER PROVIDES 100 PORTIONS": PRINT
2390 INPUT S(K): IF S(K) * 6 < = X(K) THEN GOTO 2397
2395 GOSUB 800: GOTO 2390
2397 X(K) = X(K) - S(K) * 6: GOSUB 600
2398 PRINT "CASH IN HAND "X(K);" POUNDS": PRINT
2400 PRINT "HOW MANY CONES AT 3 PENCE EACH": PRINT
2410 INPUT C(K): IF C(K) * .03 < = X(K) THEN GOTO 2417
2415 GOSUB 800: PRINT: GOTO 2410
2417 X(K) = X(K) - C(K) * .03: GOSUB 600
2419 PRINT "CASH IN HAND ";X(K);" POUNDS": PRINT
2420 PRINT "HOW MANY CHOC-ICES AT 10 PENCE EACH": PRINT

```

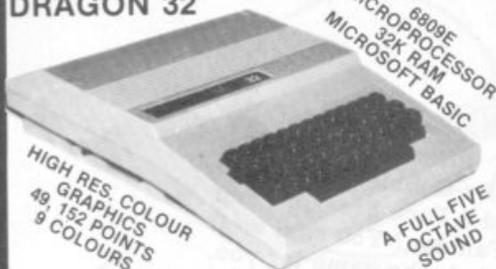
Can you tell the difference between a Lolly-Gobble-Choc-Bomb and a Face-Freezin' Fruit Fantasy? You can! Well this is the game for you. But you'll have to be a real cool customer to become a top ice-cream vendor at Microville-by-the-Sea. Up to four players can take part in this buying and selling game.

Each player runs a van selling ices and lollies at our favourite seaside resort. You are in charge for just seven days and each morning you must buy up stock — keeping a careful eye on the weather forecast as the number of customers you get will obviously vary according to the variable sunshine factor — and if it's a weekday or weekend.

So check out your chimes and start praying for a heatwave! The program will work for both Apple II and Pet, the only difference in the listing being line 700 which is a subroutine for clearing the screen. To be absolutely fool-proof the Pet programmer would need to ensure that pressing **READY** by mistake would not break the run.



DRAGON 32



HIGH RES. COLOUR
GRAPHICS
49, 152 POINTS
9 COLOURS

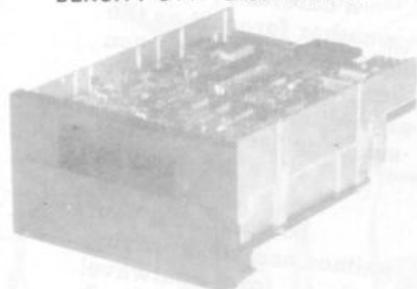
6809E
MICROPROCESSOR
32K RAM
MICROSOFT BASIC
A FULL FIVE
OCTAVE
SOUND

A NEW BRITISH MADE COMPUTER

This is a powerful new microcomputer specially designed for the family and small business use. It has 32K Bytes of RAM (expandable to 64K). 16K Byte MICROSOFT COLOUR BASIC. High res. colour graphic and very good sound features. It has full size professional keyboard and comes complete with power supply and a built-in centronic parallel printer interface. It has a cassette interface and a slot for games cartridges. A floppy disk interface and DOS will be available shortly. Manufacturers 1 year warranty on DRAGON 32.—

DRAGON 32 MICROCOMPUTER £165 + VAT + £4 carr.
SOFTWARE ON CASSETTES. £6 + VAT + £1 carr. each
GAMES CARTRIDGE TYPE 'S' ...£18 + VAT + £1 carr.
GAMES CARTRIDGE TYPE 'D' ...£15 + VAT + £1 carr.
30 CPS PARALLEL PRINTER £179 + VAT + £4.50 carr.
PRINTER CABLE£12 + VAT + £1.00 carr.

TOSHIBA DOUBLE SIDED/DOUBLE DENSITY 5 1/4" DISK DRIVES



These are high quality, very reliable, industry standard disk drives. These can be used as single sided/single density, double sided/single density or double sided/double density depending on the host computer disk interface. Compatible with most micro-computers e.g. VIDEO GENIE, ATOM, TRS 80, BBC COMPUTER, SUPER BRAIN, NASCOM etc etc. If used as double sided/double density then the storage capacity is 3.5 MAGABITS/DRIVE (unformatted), track density is 48 TPI and can daisy chain up to 4 drives. 90 day warranty.

ONE DISK DRIVE ONLY£169 + VAT + £2.50 carr.
TWO DISK DRIVES£329 + VAT + £4.50 carr.
SINGLE BOXED WITH POWER SUPPLY
£199 + VAT + £4.50 carr.
DUAL BOXED WITH POWER SUPPLY
£369 + VAT + £6.00 carr.
2 DRIVE CABLE£15 + VAT + £1.00 carr.

SINGLE SIDED 5 1/4" DISK DRIVE

These have same hardware interface as Toshiba Drives but can only be used as single sided/single density mode giving a storage capacity of 100K bytes.

ONE DISK DRIVE ONLY£99 + VAT + £2.50 carr.
TWO DISK DRIVES£195 + VAT + £4.50 carr.
SINGLE BOXED WITH POWER SUPPLY
£129 + VAT + £4.50 carr.
DUAL BOXED WITH POWER SUPPLY
£235 + VAT + £6.00 carr.

PROFESSIONAL MONITORS AND TV'S

SANYO SM 12H — 12 inch green monitor with 18 MHz bandwidth. Ideal for high resolution graphics.
SM 12H£89 + VAT + £4.50 carr.
BMC 12A — Green monitor with 12 inch screen and 15 MHz bandwidth.
BMC 12A£69 + VAT + £4.50 carr.
TV 3106 — 14 inch colour television receiver.
TV 3106£199 + VAT + £6.00 carr.
SMC 14H — 14 inch extremely high res. colour monitor RGB separate or composite sync.
SMC 14H£375 + VAT + £6.00 carr.

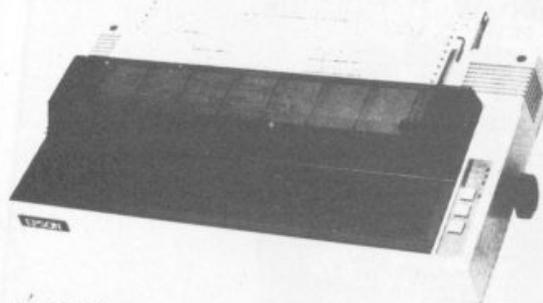
BBC MICROCOMPUTER

BBC Microcomputer Model B£339 + VAT + £4.00 carr.
Model B + Econet interface£375 + VAT + £4.00 carr.
Model B + Disk interface£399 + VAT + £4.00 carr.
Model B + Econet + Disk interfaces £432 + VAT + £4.00 carr.
Single disk drive with power supply£129 + VAT + £4.00 carr.
TELETEXT receiver£139 + VAT + £2.50 carr.
PRESTEL receiver£88 + VAT + £2.50 carr.
Parallel printer cable£12 + VAT + £1.00 carr.
Games Paddles (per pair)£11 + VAT + £1.00 carr.

SOFTWARE FOR BBC COMPUTER

Desk Diary (Two programmes)£9 + VAT + £1.00 carr.
Algebraic manipulation package£9 + VAT + £1.00 carr.
BBC Peeko Computer£9 + VAT + £1.00 carr.
BBC FORTH language£14.50 + VAT + £1.00 carr.
BBC LISP language£14.50 + VAT + £1.00 carr.
BBC word processing package£65 + VAT + £2.00 carr.

NEW EPSON TYPE 3 PRINTERS



MX80 T-3

80 column, 80 CPS, super and subscripts, auto underlining, tractor feed, 32 print fonts, Bi-directional printing, logic seeking, 9x9 matrix, high res. graphics, centronic parallel interface.

Price Only£299 + VAT + £4.50 carr.

MX80 F/T-3

As above but with tractor or friction paper feed.

Price£325 + VAT + £4.50 carr.

MX100-3

136 columns, 100 CPS, all other features of MX80 plus true decoders, adjustable paper width up to 15 inches, friction or tractor feed, centronic parallel interface.

Price£429 + VAT + £6.00 carr.

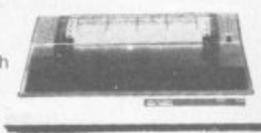
MX82 Price£319 + VAT + £4.50 carr.

MX82 F/T Price£349 + VAT + £4.50 carr.

RIBBON FOR MX80£6.00 + VAT + £1.00 carr.

RIBBON FOR MX100£10.00 + VAT + £1.50 carr.

SEIKOSHA GP-100A GRAPHIC PRINTER



Features: Graphics, double width char., standard char., speed 30 CPS, selectable line spacing, adjustable paper width up to 10 inches, 80 columns, centronics parallel interface.

Price £179 + VAT + £4.50 carr. 90 day warranty

ACORN COMPATIBLE COMPUTER BUS HARDWARE

*CUBIT (EUROCARD SIZE)

6502 Based single board computer with 4K RAM, A SOCKET FOR 4K PROM, 20 I/O lines available via 26 way ribbon cable connector, PROM and RAM addresses are switch selectable, a 64 way DIN connector for connection on to ACORN STANDARD computer bus.

Cubit Price£69 + VAT + £1.00 carr.

*CUMOT

This is Motorola 6802 based version of CUBIT.

Cumot Price£69 + VAT + £1.00 carr.

*CUNINE

This is Motorola 6809 based version of CUBIT.

Cunine Price£79 + VAT + £1.00 carr.

*CUBAN (EUROCARD SIZE)

16 channels A TO D (8 bit each) 1 channel D TO A 8 bits, two 8 bits digital I/O ports with four control lines.

Cuban Price£99 + VAT + £1.00 carr.

SILENT ALARM/POCKET PAGER

This is an individually coded 4 WATTS Radio transmitter and pocket pager receiver. The alarm system has connectors for door contacts and vibration sensors. 2 vibration sensors are included. It has a range of 2 miles. Ideal for protection of vehicle or property. Power requirements for transmitter is 12V dc. Not licensible in UK.

PRICE £78 + VAT + £2.95 carr.



CASIO CALCULATORS



FX-702P the casio pocket computer/calculator, basic programmer, 55 scientific functions, up to 1,680 program steps.

Special Price£65 + VAT + £1 carr.
FX-602P programmable calculator, 50 scientific function and 512 programme steps.

Price£56 + VAT + £1 carr.

FA-2 cassette interface for FX-702 and FX-602.

Price£16 + VAT + £1 carr.

FX-100 college scientific calculator.

Price£12 + VAT + £1 carr.

FX-7 school scientific calculator.

Price£8 + VAT + £1 carr.

MG-880 musical calculator with game and memory functions.

Price£9 + VAT + £1 carr.

MG-888 calculator with 3 games and memory functions.

Price£9 + VAT + £1 carr.

MG-777 calculator with clock, 3 games and memory functions.

Price£12 + VAT + £1 carr.

LC-311 calculator with memory functions.

Price£4 + VAT + 50p carr.

SL-701B solar forward calculator with percentage and memory functions.

Price£6.50 + VAT + 50p carr.

CASIO AX-250 ANALOG AND DIGITAL WATCH

Dual time, 12 or 24 hour option, count down timer with memory function, chronograph with lap time, optional hourly time signal, daily alarm, 3 optional melodies or ordinary bleeper, Calendar display, lithium battery. Stainless steel bracelet.

The Best Selling Watch.

Price£19 + VAT + 50p carr.



CASIO WATCHES

WS70 50 meter water resistant alarm/chrono/dual time/timer/stainless steel.

Price£17 + VAT + 75p carr.

M321 12 melody alarm/chrono/timer — multi alarm tunes for birthday — Christmas and daily.

Price£15 + VAT + 75p carr.

CA851 Calculator/alarm/chrono/game.

Price£22 + VAT + 75p carr.

F85 gents alarm/chrono/dual time/5 year battery/black resin case.

Price£6.50 + VAT + 75p carr.

L7 ladies 5 function watch/5 year battery life/black resin case.

Price£4 + VAT + 75p carr.

AO101 classical analog quartz watch with one line digital display. Alarm/chrono/time signal/chrome.

Price£29 + VAT + £1 carr.

Lithium batteries TYPE BR2016 and BR2320.

Price£1 + VAT + 25p carr.

OKI MICROLINE PRINTERS



90 day warranty

on all Microline printers

MICROLINE 80

Features: 80 columns, 80 CPS, friction and pin feed. Unidirectional block graphics, Centronics parallel interface.

PRICE £219 + VAT + £4.50 carr.

MICROLINE 82A

Features: 80 columns, 80 CPS, friction and pin feed, bidirectional printing, parallel and serial (1200 bauds) interface.

PRICE £329 + VAT + £4.50 carr.

MICROLINE 83A

Details as 82A but 120 CPS and includes tractor up to 15 inches width.

PRICE £489 + VAT + £6.00 carr.

MICROLINE 84

132 column, 200 CPS, NLQ, friction and tractor, parallel interface, 400 CPS skip speed, high resolution and block graphics.

Price£769 + VAT + £8 carr.

*TRACTOR ADAPTOR FOR 80/82A

£49 + VAT + £2.50 carr.

*RS 232 INTERFACE FOR 80

£95 + VAT + £2.50 carr.

AKHTER INSTRUMENTS LTD.

DEPT CVG UNIT 19, ARLINGHYDE ESTATE, SOUTH ROAD, HARLOW, ESSEX. UK. CM20 2BZ
TEL: HARLOW (0279) 412639 TELEX: 995801 — A18

ORDERING INFORMATION

Please add 15% VAT to all price. All orders which accompany a cheque or cash are carriage free. Please add carriage for all other orders as specified on each item WE ACCEPT VISA AND ACCESS

ICE CREAM VENDOR

```

2430 INPUT CH(K): IF CH(K) * .1 < = X(K) THEN GOTO 2438
2435 GOSUB 800: PRINT : GOTO 2430
2438 X(K) = X(K) - CH(K) * .1: GOSUB 600
2439 PRINT "CASH IN HAND ";X(K);" POUNDS": PRINT
2440 PRINT "HOW MANY LOLLIES AT 5 PENCE EACH": PRINT
2450 INPUT L(K): IF L(K) * .05 < = X(K) THEN GOTO 2458
2455 GOSUB 800: PRINT : GOTO 2450
2458 X(K) = X(K) - L(K) * .05: GOSUB 600
2459 PRINT "CASH IN HAND ";X(K);" POUNDS": PRINT
2470 PRINT : PRINT : PRINT "DO YOU WISH TO CHANGE ANYTHING"
2472 PRINT : PRINT : PRINT "DO YOU WISH TO CHANGE ANYTHING"
2477 PRINT "TYPE YES OR NO"
2475 INPUT A$: IF A$ = "NO" THEN GOTO 2482
2478 IF A$ = "YES" THEN X(K) = Q: GOTO 2326
2480 GOTO 2470
2482 GOSUB 700
2485 SS(K) = SS(K) + S(K) * 100
2490 SC(K) = SC(K) + C(K):SH(K) = SH(K) + CH(K)
2495 SL(K) = SL(K) + L(K)
2500 PRINT "WHAT IS YOUR SELLING PRICE FOR AN": PRINT
2505 PRINT "ICE-CREAM CONE IN PENCE": PRINT
2510 INPUT A(K)
2540 PRINT "WHAT IS YOUR SELLING PRICE FOR A": PRINT
2545 PRINT "CHOC-ICE IN PENCE": PRINT
2550 INPUT D(K)
2560 PRINT "WHAT IS YOUR SELLING PRICE FOR A": PRINT
2565 PRINT "LOLLY IN PENCE": PRINT
2570 INPUT E(K)
2572 PRINT : PRINT : PRINT "DO YOU WISH TO CHANGE ANYTHING"
2573 PRINT "TYPE YES OR NO"
2574 INPUT A$: IF A$ = "YES" THEN GOTO 2500
2576 IF A$ = "NO" THEN GOTO 2580
2578 GOTO 2574
2580 GOSUB 200
2590 GOSUB 400
2600 GOSUB 500
2700 GA(K) = PA(K) * MKT: IF GA(K) > SS(K) THEN GA(K) = SS(K)
2705 IF GA(K) > SC(K) AND SS(K) > SC(K) THEN GA(K) = SC(K)
2710 GE(K) = PE(K) * MKT: IF GE(K) > SL(K) THEN GE(K) = SL(K)
2715 GD(K) = PD(K) * MKT: IF GD(K) > SH(K) THEN GD(K) = SH(K)
2720 RS(K) = SS(K) - GA(K):RC(K) = SC(K) - GA(K)
2730 RH(K) = SH(K) - GD(K)
2740 RL(K) = SL(K) - GE(K)
2750 X(K) = X(K) + (GA(K) * A(K) + GD(K) * D(K) + GE(K) * E(K)) / 100
2760 GOSUB 600
2800 GOSUB 400
2950 NEXT K
3000 FOR K = 1 TO V
3005 GOSUB 1700
3010 GOSUB 700
3015 PRINT "VAN";K;" ";A$: PRINT
3020 PRINT "TRADING POSITION AT THE END OF THE DAY": PRINT
3030 PRINT TAB( 10);"STOCK"; TAB( 20);"STOCK"; TAB( 30);"STOCK": PRINT
3040 PRINT TAB( 10);"A.M."; TAB( 20);"SOLD"; TAB( 30);"LEFT": PRINT
3050 PRINT "ICE"
3060 PRINT "CREAM"; TAB( 10);SS(K); TAB( 20);GA(K); TAB( 30);RS(K)
3070 PRINT "PORTIONS": PRINT
3080 PRINT "CONES"; TAB( 10);SC(K); TAB( 20);GA(K); TAB( 30);RC(K): PRINT
3090 PRINT "CHOC-ICES"; TAB( 10);SH(K); TAB( 20);GD(K); TAB( 30);RH(K): PRINT
3100 PRINT "LOLLIES"; TAB( 10);SL(K); TAB( 20);GE(K); TAB( 30);RL(K): PRINT
3200 PRINT "CASH IN HAND ";X(K);" POUNDS"
3210 PRINT : PRINT : GOSUB 100
3220 SS(K) = RS(K)
3230 SC(K) = RC(K)
3240 SH(K) = RH(K)
3250 SL(K) = RL(K)
3260 NEXT K
3270 NEXT D
5000 GOSUB 700
5010 PRINT TAB( 15);"SUMMARY": PRINT : PRINT
5020 PRINT TAB( 10);"VAN"; TAB( 18);"CASH IN HAND"; TAB( 31);"PROFIT":
PRINT
5030 FOR K = 1 TO V
5035 PRINT TAB( 11);K; TAB( 22);X(K); TAB( 32);X(K) - 100
5040 NEXT K
5050 GOSUB 9500
6000 END

```

Illustration: Terry Rogers





RUNS ON A VIC-20 IN 3.5K

Well guv, there we were sitting in the old jam jar when everything went reels of cotton. The blag was going well and the boys was just about to leg it when the Old Bill turns up. Not yer ordinary rozzers though. These geezers fort they was angels. Swooping out of the sky in a bloomin' helicopter! It was enough to give you a real turn. The boys was throwing the swag in the back of the motor and I gave it some wellie and steamed off and that's when I ran into you guv. . . ."

This is a game of skill and chance. You are a bank robber and your gang is throwing their ill gotten gains down at the getaway car. You have

THE CRO BLAG

```

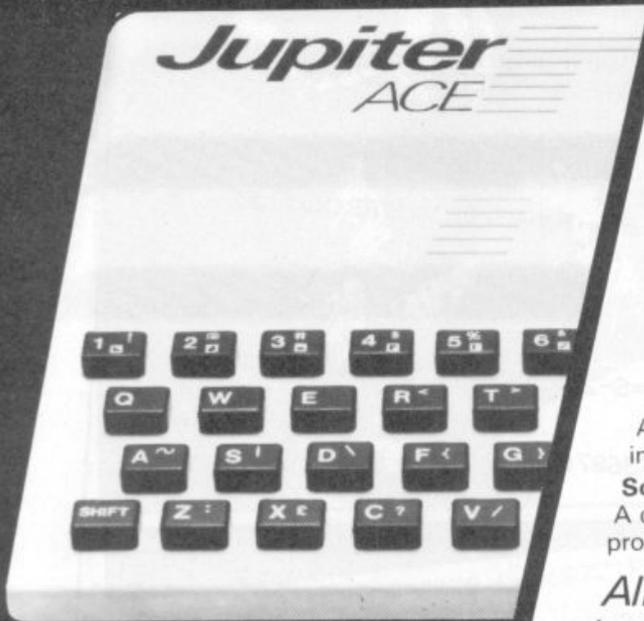
1 POKE36879,188:C=36878:L=36877:PRINT"J":H=0:R=36875:U$="XXXXXXXXXXXX":F=38728
2 DEFFNA(U)=INT(U*RND(0))
3 M=250:POKEC,10:POKER,175:GOSUB12
4 POKER,167:GOSUB12
5 POKER,159:GOSUB12
6 POKER,151:GOSUB12
7 POKER,147:GOSUB12
8 POKER,191:GOSUB12
9 POKER,0:M=50:GOSUB12
10 POKER,191:M=250:GOSUB12
11 POKEC,0:POKER,0:GOTO13
12 FORE=1TOM:NEXT:RETURN
13 S=0:J=3:X=0
14 REM SET UP SCREEN
15 FORA=7680T07723:POKEA,156:POKEA+F,5:NEXTA:FORB=8142T08185:POKEB,156:POKEB+F,
5:NEXTB
16 FORG=1T0100:PRINT"XXXX"
17 PRINT"XXXXCATCH THE GOODS"
18 PRINT"XXXX BY HOWARD EVANS 1982.":NEXTG
19 PRINT"XXXXPRESS XXX FOR"
20 PRINT"XXXXINSTRUCTIONS OR"
21 PRINT"XXXXANY OTHER KEY TO"
22 PRINT"XXXXCONTINUE"
23 REM INPUT ANSWER
24 POKE198,0
25 GETA$:IFA$=""THEN25
26 IFA$<"Q"THENPRINT"J":GOTO42
27 REM INSTRUCTIONS:PRINT"XXXXYOU ARE A BANK ROBBER"
28 PRINT"AND YOUR ACCOMPLICES"
29 PRINT"XXXXARE THROWING THE GOODS"
30 PRINT"DOWN TO YOU."
31 PRINT"XXXXYOU HAVE TO MOVE THE"
32 PRINT"XXXXMAN AT THE BASE OF THE"
33 PRINT"XXXXSCREEN,(TO CATCH THE"
34 PRINT"XXXXGOODS),BY PRESSING:--"
35 PRINT"XXXX TO MOVE RIGHT &"
36 PRINT"XXXX TO MOVE LEFT"

```

Illustrations: Jon Davis

Jupiter

ACE



only
£89.95

All inclusive price

For £89.95 you receive your Jupiter Ace, a mains adaptor, all the leads needed to connect to most cassette recorders and T.V.s (colour or black and white), a software catalogue and a manual.

The manual is a complete introduction to the world of personal computing and a course in FORTH programming on the Ace.

Even if you are a complete newcomer to computers, the manual will guide you step by step from first principles to confident programming.

The price includes postage, packing and V.A.T.

The Jupiter Ace is backed by a full 12 month warranty.

The Jupiter Ace is available only by mail order.

Please allow up to 28 days for delivery.

Send cheque or postal order with the form to:—
JUPITER CANTAB, 20 FOXHOLLOW
BAR HILL, CAMBRIDGE CB3 8EP

The Jupiter Ace uses FORTH

The Jupiter Ace personal computer runs in FORTH, an easily understood language, typically four times as compact and ten times as fast as BASIC. Before the Ace all personal computers used BASIC and FORTH was only available to a privileged few. The Jupiter Ace also features a full-size moving-key keyboard, high-resolution graphics, sound, floating point arithmetic, a fast and reliable cassette interface and 3K of RAM.

Available soon

Plug-on parallel printer interface.

For around £20.00 this will connect your Jupiter Ace to anything from high-speed dot matrix to letter-quality daisy wheel printers.

Plug-on 16K Memory Expansion

For around £30.00 you will increase the memory of your Jupiter Ace to 19K giving you instant access to enormous amounts of information.

Software

A catalogue will be sent with every machine, and includes, initially, programs for education and entertainment.

Technical Information

Hardware

Z80A running at 3.25 MHz.
8K bytes ROM
3K bytes RAM

Keyboard 40 Moving-key keyboard with auto repeat on every key and Caps Lock.

Screen Memory mapped 32 column x 24 line flicker-free display with upper and lower case ascii character set.

Graphics Chunky graphics (64 x 46 pixels) may be plotted, unplotted or over-plotted (XOR operation). Also, the entire character set (128 characters and their video inverses) may be redefined allowing intricate shapes to be drawn with a resolution equivalent to 256 x 192 pixels.

Sound Internal loudspeaker may be programmed to operate over the entire audio spectrum.

Cassette Programs and data in the compact dictionary format may be saved, verified, loaded and merged. Blocks of memory can be saved, verified, loaded and relocated. All tape files are named. Running at 1500 baud, the Ace will connect to most portable tape recorders.

Expansion Port Contains D.C. power rails and full Z80 Address, data and control signals. May be used to connect extra memory and other peripherals. IN and OUT words allow port-based peripherals to be addressed.

Data Structures Integer, Floating point and String data may be held as constants, variables or arrays with multiple dimensions and mixed data types. There are no restrictions on names.

Control Structures IF-ELSE-THEN, DO-LOOP DO-+LOOP, BEGIN-WHILE-REPEAT, BEGIN-UNTIL, all may be mixed and nested to any depth.

The Jupiter Ace closely follows the FORTH 79 standard with extensions for floating point, sound and cassette. It has a unique and remarkable editor that allows you to list and alter words that have been previously compiled into the dictionary. This avoids the need to store screens of source, allowing the dictionary itself to be saved on cassette. Comprehensive error checking removes the worry of accidentally crashing your programs.

Designed by Jupiter Cantab

Computer Designers Steven Vickers and Richard Altwasser played a major role in creating the ZX Spectrum and then formed Jupiter Cantab to develop advanced ideas in personal computing. The Ace is the result, another all-British computer to lead the world.

ORDER NOW!

Please send me:—

JUPITER ACE MICROCOMPUTER(S) @ £89.95.

Name. Mr/Mrs/Miss _____

Address _____

CVG

An exciting new Commodore peripheral



Own or use a Pet or a Vic?
Fed up with being ignored by all the traditional monthly magazines?

Fed up with listings, which are too simple or simply do not work?

You need *Commodore Computing*, the new monthly magazine. *Commodore Computing* is published by Nick Hampshire, author of *The Pet Revealed*, *Pet Graphics*, *A Library of Subroutines* and *The Vic Revealed*.

Each issue is packed with advanced

advice on how to make the most of your computer, whether you use a Pet or a Vic.

Each issue covers a host of applications – software, hardware, machine code, games, business use – whatever it is you'll find it in *Commodore Computing*.

If you want to learn more about your computer, take out a subscription to *Commodore Computing*.

That's the only way to get it, and get it straight.

Send £12.50 for 1 year's subscription (10 issues) to:

Commodore Computing,
Magsub, Oakfield House, Perrymount Road, Haywards Heath, Sussex RH16 3DH

URANIUM CORE

It's the 21st Century and man can travel all over the galaxy, has learnt the secret of virtual immortality and how to use an electro-static toothbrush in a weightless environment.

But things haven't changed that much, there's still a fuel crisis going on... and the present state of the interstellar recession... well, who knows where you'll stand one millenia to the next?

The Klingons have put up the price of uranium rods again and here you

are stranded on planet with a great stack of the fuel which the known galaxy is crying out for and no easy way to get it on board your ship.

The problem lies in the dreaded anti-matter rods which are mixed in with the uranium, a false move and you could see the whole lot disappear into limbo. If you could just master these paddle controls...

The instructions are included with this simulated computer reconstruction of the dilemma. Good loading.



Illustration: Jon Davis

RUNS ON AN ATARI 400 IN 16K

BY MARTIN STIBY

```

0 REM NUMBERS      by Martin Stiby
1 REM WARNING:::::THIS USES PADDLES
10 DIM A$(5):PRINT " }Do you really want
instructions ";:INPUT A$:IF A$(1,1)="N"
THEN 90
15 PRINT " You are collecting up uranium
rods":PRINT " for your space ship.They a
re to be"
20 PRINT " found in bundles of 1-9, and a
re":PRINT " GREEN in colour.":PRINT " Unf
ortunately, there are anti-matter"
25 PRINT " bundles in the same area.These
are":PRINT " BLUE, and will obliterate a
n equal"
30 PRINT " number of green rods.":PRINT "
Your time remaining and score are":PRIN
T " shown at the bottom."
35 PRINT " BE WARNED: Occasionally your
screen":PRINT " will malfunction. Press t
he button on"
40 PRINT " paddle 0 to repair the problem
!":PRINT " Paddle 0 is horizon
tal movement"
45 PRINT " Paddle 1 is vertical movemen
t.":PRINT :PRINT
50 POKE 764,255:PRINT "          any key, pl
ease"
60 IF PEEK(764)=255 THEN 86
90 POKE 764,255:PRINT "CHANGING CHARACTE
R SET - 10 secs."
95 C=5216:FOR A=57440 TO 57856:B=PEEK(A)
:POKE C,B:C=C+1:NEXT A:FOR A=5120 TO 521
0:READ B:POKE A,B:NEXT A
100 GRAPHICS 1:SETCOLOR 0,12,6:SETCOLOR
0,0,14:POKE 752,1:TIME=500:PRINT "TIME
SCORE"
500 A=1:B=20:C=9:D=33:E=0.5:F=32:G=0.9:H
=756:I=226:K=5:L=0:M=1:P2=11.5:N=138:O=2
0:S=228:SCORE=0:POKE H,0
1000 SOUND 0,50,2,10:X=INT(RND(A)*B):Y=I

```

```

NT(RND(A)*B):Z=INT(RND(A)*C):IF RND(A)>E
THEN Z=Z+128
1010 COLOR Z+0:PLOT X,Y:X=INT(RND(A)*B):
Y=INT(RND(A)*B):COLOR F:PLOT X,Y:IF RND(
A)>6 THEN POKE H,I:SOUND 1,10,8,8
1020 SOUND 0,0,0,0:FOR J=A TO K:GOSUB 15
20:SOUND 0,0,0,0:NEXT J:IF TIME=0 THEN 2
000
1030 GOTO 1000
1500 P=S-PADDDLE(L):Q=PADDLE(M):P1=INT(P/
P2):Q1=INT(Q/P2):LOCATE P1,Q1,R:IF R=F 0
R R=N THEN 1700
1600 R=R-0+1:IF R>C THEN SOUND 0,10,10,1
5:R=R-128:SCORE=SCORE-R:GOTO 1700
1610 SOUND 0,20,10,15:SCORE=SCORE+R
1700 IF N=138 THEN N=139:GOTO 1710
1705 N=138
1710 COLOR F:PLOT P3,Q3:COLOR N:PLOT P1,
Q1:P3=P1:Q3=Q1:IF PTRIG(L)=0 THEN POKE H
,I:SCORE=SCORE-A:SOUND 1,0,0,0
1720 TIME=TIME-A:PRINT TIME,SCORE;" " :R
ETURN
2000 POKE H,0:SOUND 1,0,0,0:PRINT :PRINT
:PRINT "WANT ANOTHER BASH ";:INPUT A$:I
F A$(1,1)="Y" THEN 100
2010 GRAPHICS 0:POKE H,224:POKE 752,0:EN
D
4000 DATA 0,0,0,0,0,0,0,0
4001 DATA 0,2,4,8,16,32,64,0
4002 DATA 0,126,0,64,32,16,8,0
4003 DATA 0,126,0,30,112,0,126,0
4004 DATA 0,36,72,18,36,72,18,4
4005 DATA 84,84,84,0,254,0,254,0
4006 DATA 0,82,82,0,42,42,42,0
4007 DATA 220,0,112,0,108,0,238,0
4008 DATA 0,170,170,0,162, 170,138,0
4009 DATA 0,219,0,108,0,170,170,0
4010 DATA 0,24,60,66,66,66,66,0
4011 DATA 0,24,60,66,66,36,24,0

```

CHRISTMAS ONCE A YEAR. GAMES ONCE IN A



ACTIVISION®

video game cartridges for use with
the Atari® Video Computer System® *

STARMASTER™

You are cruising through an empty part of the galaxy, but squadrons of enemy starfighters are threatening your four friendly starbases. You call up your Galactic Chart and plot a course to intercept. Warping through hyperspace en route you avoid deadly showers of meteorites. Now your gunsight is flashing and the enemy is near. You destroy them with your laser cannon but your computer read-out tells you that their fire has destroyed your shields and drained your energy

reserves.

Again you call up the Galactic Chart and plot a course to your starbase. You dock, and your damage is repaired, your energy banks replenished. Back you go to re-engage the enemy.

Now you have some idea of the astonishing realism and excitement of this Space Odyssey.

CHOPPER COMMAND™

A convoy of trucks is ferrying vital medical supplies through the arid desert. You are flying escort in your helicopter gunship.

Suddenly a flight of enemy machines shows up on your long range scanner and you head in to attack with your laser cannon. They reply with deadly multi-warhead missiles. You start with two choppers in reserve, and add another for each 10,000 points scored, up to a maximum of six.

S COMES BUT S AS GREAT AS THESE A LIFETIME.



You'll need to move very fast to destroy this enemy, for the more you shoot down, the faster they get. So even though your chopper is really manoeuvrable (a touch on the joystick sends it into an instantaneous 180° turn) you'll find the opposing helicopters and jets very difficult to defeat. It's by no means easy. It requires lots of strategy and lightning reflexes and that's why 'Chopper Command' is destined to become one of the all-time video game classics.

STARMASTER® and COPPER COMMAND®, just two of the great ACTIVISION® range of video game cartridges for use with the Atari® Video Computer System.™ Each and every ACTIVISION® cartridge features an outstanding game concept and the quality of the graphics just has to be seen to be believed. So get along to your local video game stockist and see the range demonstrated.

*Atari® and Video Computer System™ are trademarks of Atari, Inc.



To: CGL Activision Fun Club, FREEPOST, Loughton, Essex IG10 1BR. (No stamp required). Tel: Kathy Leonard on 0628-72448/32839.

THE PURCHASE OF YOUR NEXT CARTRIDGE WHEN YOU JOIN THE ACTIVISION FUN CLUB. Free membership. Discount tokens. Regular magazine. A host of competitions to enter and events in which to participate. Complete the coupon below.

Please register me as a member of the Activision Fun Club. I understand that membership is entirely free and entitles me to a 50p cash rebate token, a free regular magazine and the opportunity to participate in special Activision competitions.

First Name(s) _____
 Surname _____
 Age (tick one) 11 or under 12-17 18-25 26 or over
 Address _____
 Postcode _____

'Bringing leisure to life'



RUNS ON AN ATOM IN 12K

```

3REM MONSTER
1REM MARKUS JAKOBSSON
2REM ÅLSTORP 5:57
3REM S-24021 LÖDDEKÖPINGE
4REM SWEDEN
5REM
20DIMLL9,M768,L2;P.#21;H=0
30P=#3B10;U=#B002;T=#3B00
35?T=0;T?1=0;T?2=0;T?3=0
40C
50:LL0 LDX00;LDY00
60:LL1 LDR#82>.Y;STAC#80,X>
70INY;LDR#80;CLC;ADC#20;STA#80
80LDR#81;ADC00;STA#81
90:LL2 CPY08;BNELL1
    
```

BY MARCUS JACOBSSON



It is the year 2017. You are the sole survivor of a scientific research mission which came to grief on the recently discovered planet Xirec. Your ship crashed on one of Xirec's many small moons en route to the Andromeda research colony.

You were left behind to guard the ship when your nine fellow astronauts decided to go down to the surface of the planet. They did not return. You discovered that the moon was inhabited by creatures called Gnoofs who at first seemed friendly — but later caught you and transformed you into a monster.

Your only hope is the antidote. This will reverse the transformation and give you a chance to complete repairs to your ship and escape the infested moon.

The only problem is that the antidote is contained in the Gnoofs themselves. You have to eat as many as you can before you will return to human shape. Consuming the Gnoofs is difficult — and there are four types of these unsavoury creatures. The Megonaires, a four legged spider-like being, the Xymers, a rare breed of Gnoof and the best tasting, the Tyrolites, very poisonous and eventually deadly if you eat too many and the Imposarios who are invisible but have the ability to transform into any of the above types of Gnoof.

The best Gnoofs to eat are the Xymers, but they are hard to find, the Megonaires are plentiful but will not speed

your transformation a great deal. If you devour more than three Tyrolites — it's goodbye cruel universe. Imposarios are tricky creatures one minute they can look like harmless Megonaires, then they'll suddenly become a poisonous Tyrolite.

Megonaires score one point toward your transformation, Xymers are worth 10. When you reach a multiple of 100 you'll feel better and get a bonus. Instead of using a knife and fork to eat the Gnoofs the controls are '[' for up and '?' for down.

And remember — don't forget the indigestion tablets!

MONSTER

```

100RTS
110:LL3 JSR#FE71;STY#21C;RTS
120:LL4 LDX00
130:LL5 LDR L;STA U
140AND#48;ADC#48;ASLA;ASLA;ROLL+2;ROLL+1;ROLL;INX;BNE LL5
150RTS
160J;P.#6
170F.A=0T0768;A?M=0;N.
180!#2800=#F6FC763C;!#2804=#003C7EFC
200!#2808=#FFF763C;!#280C=#003C7EFF
220F.A=0T07;A?#2810=0;N.
230!#2818=#10280000;!#281C=#00000028
250!#2820=#38100000;!#2824=#00001010
270!#2828=#7E7E1818;!#282C=#18181818
280!#2830=#7E3C1800;!#2834=#00183C7E
290!#2838=#3C180000;!#283C=#00000018
295GOS.z
300F.A=0T07;A?#2840=0;N.
310?#2843=#18;?#2844=#18
320?#83=#28;Z=0;F=99;S=0
330GOS.9;CLEAR4
335GOS.h
337GOS.l;GOS.b;?#82=7
338GOS.k
340LI.LL0
    
```

```

350GOS.d;IFW=1;W=0;?#80=0;CLEAR4;F=99;G.335
360?#82=0;?#81=?#81-1
370LI.LL0
380GOS.c
390?#82=#10
400?#81=?#81-1
410LI.LL0;?#81=?#81-1;?#80=?#80+1;?#82=8;IF?#80>
30;GOS.b
420GOS.a
430G.340
440b?#80=1;?#81=A.R.%8+#89;R.
450E.
460a
470LI.LL3
480IF?#21C=1;?#81=?#81-1;IF?#81<#84;?#81=#84
490IF?#21C=31;?#81=?#81+1;IF?#81>#97;?#81=#97
500?#21C=0
510R.
520c0=?#80;P=?#81
530G=1;?#82=#18
540F.A=1T02
550C=A.R.%25;D=A.R.%20
    
```

560E=C+(D*32);E?M=G;C=C+6
 570D=D+#84;?#80=C;?#81=D
 580LI.LL0
 590IFA.R.%(15-K)<>3;?#82=#20;G=2
 591N.
 595IFA.R.%(10=3;GOS.J
 600?#80=0;?#81=P
 610R.
 620dIFS<99 A. K>2;WAIT;IFK>7;F.A=1T06;WAIT;N.
 630Q=?#80;R=?#81;R=R-#85;Q=Q-6
 640A=Q+(R*32);IFA?M=1;A?M=0;S=S+1;GOS.e
 650IFA?M=2;A?M=0;Z=Z+1;GOS.f
 655IFA?M=3;S=S+10;GOS.i
 660R.
 670e
 680F.A=0T02;A?L=A.R.%(100;N.;LI.LL4;IFF<S;F=F+100;GOS.m;G.700
 690GOS.h
 700R.
 710f



720F.A=1T010;LI.LL4;N.
 730?#81=?#81-1
 740?#82=#30;LI.LL0
 750?#81=?#81-1;F.A=1T060;WAIT;N.;?#82=#38;LI.LL0;
 ?#81=?#81-1
 760F.A=1T060;WAIT;N.;?#82=#40;LI.LL0;F.A=1T040;
 WAIT;N.
 770?#81=?#81-1;?#82=#10;LI.LL0
 780?#81=#81;?#80=#1E-Z
 790?#82=#28
 800LI.LL0;GOS.b
 810IFZ>2;F.A=1T0768;A?M=0;N.;GOS.k;W=1;G.830
 820F.A=1T060;WAIT;N.
 830R.
 840g
 850!#2848=#44444438;!#284C=#38444444
 860F.A=0T07;A?#2850=8;N.;?#2851=#18
 870!#2858=#0402423C;!#285C=#7E402018
 890!#2860=#0C02423C;!#2864=#3C420202
 910!#2868=#40202010;!#286C=#08067C48
 930!#2870=#7C40407E;!#2874=#38440202
 950!#2878=#38402010;!#287C=#384482C4
 970!#2880=#0404027E;!#2884=#10100838
 990!#2888=#3C42423C;!#288C=#3C424242

1000!#2890=#44444438;!#2894=#3008043C
 1011!#2898=#38380000;!#289C=#00000038
 1020R.
 1030hV=S;I=0;O=?#80;P=?#81;?#80=5
 1040D0 T?I=V%10;V=V/10;I=I+1;U.V=0
 1050?#81=#81
 1060F.A=0T03;?#82=(T?A)*8+#48
 1065LI.LL0;?#81=?#81-1;?#80=?#80-1;N.
 1070?#80=0;?#81=P;R.
 1080J
 1090C=A.R.%(25;D=A.R.%(20
 1100E=C+(D*32);E?M=3;C=C+6;D=D+#84;?#80=C;?#81=D;?#82=#98
 1110LI.LL0;R.
 1120iF.A=0T03;A?L=A.R.%(10;LI.LL4;N.;GOS.h;IFS>F;F=F+100;GOS.m
 1121R.
 1125kIFS>H;H=S
 1126GOS.l
 1130S=0;F.A=0T03;A?T=0;N.
 1140IFZ>0;Z=0;F.A=1T030;LI.LL4;N.;LI.#FFE3
 1150R.
 1160!#80=#A;V=H;I=0;GOS.1040
 1170R.
 1180mF.A=1T020;LI.LL4;WAIT;N.
 1185?#81=?#81-1;?#82=#10;LI.LL0
 1190?#80=#18;F.A=1T03;?#81=#81;LI.LL0;?#80=?#80+1
 1195N.;?#80=1;?#81=A.R.%(8+#89
 1200Z=0;R.
 1210zP.#12"
 1220P." MONSTER"" "DIFFICULTY 1 HARD"
 2 MEDIUM"



1230P." 3 EASY"
 1240P." 4 LEARN""
 1250IN."WHICH LEVEL DO YOU WANT"
 1260IFK>40R K<1;P.#11;LI.#FE22;G.1250
 1265K=K*2
 1270R.

INTEREST FREE

on Atari, VIC20, Commodore 64 and

If your order contains over £120 worth of computer hardware apply now for interest free credit by telephoning: Mail-order: (0702) 552911. London Shop: 01-748 0926. Birmingham Shop: 021-356 7292. Southend Shop: 0702 554000 or write to P.O. Box 3, Rayleigh, Essex SS6 8LR.

You pay 10% down, then 10% per month for a further nine months (to nearest penny). Example: VIC20 Colour Computer. Cash Price £169.99. Credit terms: £16.99 down then £17 per month for nine months: Total £169.99. Credit quotations on request.

THE NEW COMMODORE 64

The incredible new computer from Commodore comes with 64K RAM fitted! Plus 16 colours, hi-res graphics, 320 x 200 pixels, 40 columns by 25 lines, Z80 micro processor can be added — that means you can run CP/M software, 8 independently movable Sprites with collision detection, and a sound generator with 3 voices, 4 waveforms, envelope and filter to rival some dedicated music synthesisers. And all this at the most incredible price ever. (AF56L) Only £339.00

DRAGON 32



The amazing new British computer with a full-travel standard keyboard, a 16-bit microprocessor, 32K RAM fitted (expandable to 64K and later to 256K!), 9 colours, hi-res graphics and Microsoft extended colour BASIC (the very best BASIC to learn with). It can be used with virtually any ordinary cassette recorder, it has a printer interface (Centronics-type), joysticks are available and it's incredible value for money. (AF57M) Only £199.50

THE AMAZING ATARI COMPUTERS

4 Consoles Available:

- Atari 400 with 16K RAM (AF36P) £249.95
- Atari 400 with 48K RAM (AF37S) £319.00
- Atari 800 with 16K RAM (AF02C) £499.00
- Atari 800 with 48K RAM (AF55K) £590.00

* All above with BASIC & handbooks

- Other hardware:
- Cassette Recorder (AF28F) £50.00
 - Disk Drive (AF06G) £299.95
 - Thermal Printer (AF04E) £265.00
 - Epson MX80T Mk III (AF38R) £399.95
 - Epson MX80F/T Mk III (AF40T) £447.35
 - Printer Interface for 400 (AF41U) £59.95
 - Printer Interface for 800 (AF42V) £59.95
 - Interface Module (AF29G) £135.00
 - Versawriter (AF43W) £199.95
 - 16K RAM Module (AF08J) £55.00
 - 48K RAM Module for 400 (AF44X) £125.35
 - 48K Upgrade for 400 (AF45Y) £75.00
 - Floppy Disk (YX87U) £2.50
 - Le Stick (AC45Y) £24.95
 - Joystick Controllers (Pair) (AC37S) £13.95
 - Paddle Controllers (Pair) (AC30H) £13.95

For full details ask for our hardware leaflet (XH54J) SAE appreciated

JOIN THE U.K. ATARI COMPUTER OWNERS' CLUB

An independent users' group. Four issues of the club magazine for only £3.00! Address your subscription to Ron. Issue 1 of the club magazine featured a tutorial on character set redefinition and contained a collection of demonstration and games programs and lots more. Issue 2 featured a tutorial on player/misile graphics, an article about graphics on computers, a selection of members' contributions to the program library and much more.



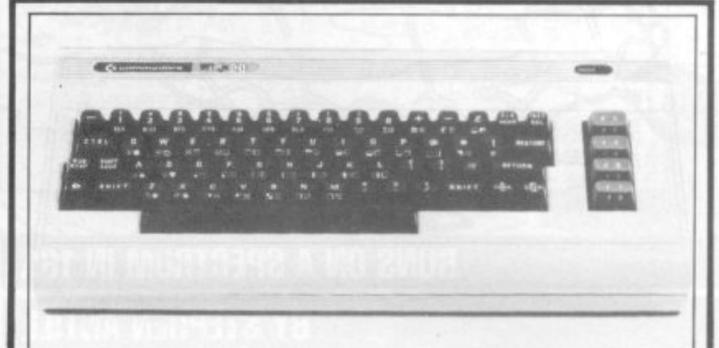
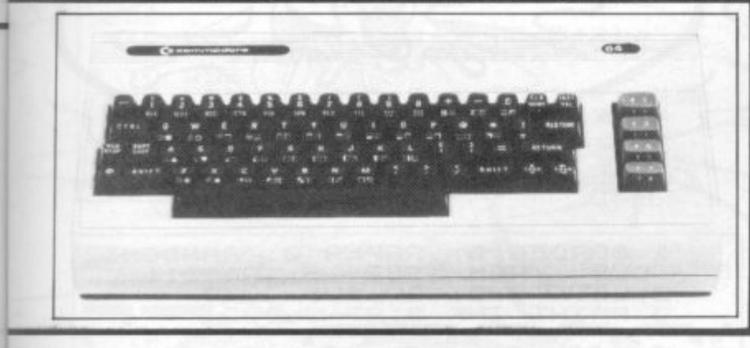
THE FINEST SELECTION OF ATARI SOFTWARE

- | | | | |
|--|---|---|--|
| <p>Teach-Yourself Programs</p> <ul style="list-style-type: none"> Conversational French -5C-16K-YG44X £39.95 Conversational German -5C-16K-YG45Y £39.95 Conversational Spanish -5C-16K-YG46A £39.95 Conversational Italian -5C-16K-YG47B £39.95 Touch Typing -2C-16K-YG49D £15.95 States & Capitals -1C-16K-YG56L £9.95 Euro. Countries & Capitals -1C-16K-YG57M £9.95 Kids 1 (3 Programs) -1C-16K-BG00A £9.95 Kids 1 (3 Programs) -1D-24K-BG01B £9.95 Kids 2 (3 Programs) -1C-16K-BG02C £9.95 Kids 2 (3 Programs) -1D-24K-BG03D £9.95 <p>Learn Programming</p> <ul style="list-style-type: none"> Invitation To Programming 1 -1C-8K-YG43W £15.95 Invitation To Programming 2 -2C-8K-BG07X £22.95 Invitation To Programming 3 -2C-8K-BG08Y £22.95 Basics Of Animation -1C-16K-BQ57M £11.95 Basics Of Animation -1D-24K-BQ58N £11.95 Player Missile Graphics -1C-32K-BQ59P £18.95 Player Missile Graphics -1D-32K-BQ60Q £18.95 Display Lists -1C-16K-BQ51F £11.95 Display Lists -1D-24K-BQ52G £11.95 Horiz./Vert. Scrolling -1C-16K-BQ53H £11.95 Horiz./Vert. Scrolling -1D-24K-BQ54J £11.95 | <p>Page Flipping</p> <ul style="list-style-type: none"> -1C-16K-BQ55K £11.95 -1D-24K-BQ56L £11.95 <p>Sounds & Music</p> <ul style="list-style-type: none"> -1C-16K-BG04E £11.95 -1D-24K-BG05F £11.95 -3C-32K-BG06G £59.95 -3D-32K-BG07H £59.95 <p>Tricky Tutorials</p> <ul style="list-style-type: none"> -3D-32K-BG07H £59.95 <p>Business Programs</p> <ul style="list-style-type: none"> Viscalc -1D-32K-YL39N £119.95 Atari Word Processor -1C&3D-48K-YG42V £99.95 Text Wizard -1D-32K-BQ99H £69.95 Mini Word Processor -1C-32K-BG08J £11.95 Mini Word Processor -1D-32K-BG09K £11.95 Calculator -1D-24K-YG50E £16.95 Graph-It -2C-16K-YG51F £13.95 Statistics -1C-16K-YG52G £13.95 Personal Financial Management -3D-32K-BQ65V £49.00 Mortgage & Loan Analysis -1C-16K-BQ66W £13.95 Bob's Business -1C-32K-BG11M £9.95 Bob's Business -1D-32K-BG12N £9.95 <p>Adventure Games</p> <ul style="list-style-type: none"> Galactic Empire -1C-32K-BQ14Q £14.95 Rescue At Rigel -1C-32K-BQ21X £22.45 | <ul style="list-style-type: none"> Rescue At Rigel -1D-32K-BQ80B £22.45 Datstones Of Ryn -1C-32K-BQ22Y £14.95 Datstones Of Ryn -1D-32K-BQ82D £14.95 Star Warrior -1C-32K-BQ24B £28.95 Star Warrior -1D-32K-BQ79L £28.95 Invasion Orion -1C-24K-BQ23A £18.95 Invasion Orion -1D-32K-BQ81C £18.95 Star Trek 3.5 -1C-32K-BQ15R £14.95 Star Trek 3.5 -1D-40K-BQ26D £18.95 Crush, Crumble & Chomp -1C-32K-BQ83E £22.45 Crush, Crumble & Chomp -1D-32K-BQ84F £22.45 Mission Asteroid -1D-40K-BQ91V £17.19 Wizard & The Princess -1D-40K-BQ25C £21.79 Ulysses & The Golden Fleece -2D-40K-BQ92A £20.64 Zork I -1D-32K-BQ94C £29.95 Zork II -1D-32K-BQ95D £29.95 Ali Baba & The 40 Thieves -1D-32K-BQ78K £27.95 Temple Of Apsah (Part 1) -1C-32K-BQ85G £28.95 Temple Of Apsah (Part 1) -1D-32K-BQ86T £28.95 Upper Reaches Of Apsah (Part 2) -1C-32K-BQ87U £14.95 Upper Reaches Of Apsah (Part 2) -1D-32K-BQ88V £14.95 Curse Of Ra (Part 3) -1C-32K-BQ89W £14.95 | <ul style="list-style-type: none"> Curse Of Ra (Part 3) -1D-32K-BQ90X £14.95 Analog Adventure -1D-32K-BQ33L £16.95 Adventure Land -1C-24K-BQ00A £14.95 Pirates Adventure -1C-24K-BQ01B £14.95 Mission Impossible -1C-24K-BQ02C £14.95 Woods Castle -1C-24K-BQ03D £14.95 The Count -1C-24K-BQ04E £14.95 Strange Odyssey -1C-24K-BQ05F £14.95 Mystery Fun House -1C-24K-BQ06G £14.95 Pyramid Of Doom -1C-24K-BQ07H £14.95 Ghost Town -1C-24K-BQ08J £14.95 Savage Island I -1C-24K-BQ09K £14.95 Savage Island II -1C-24K-BQ10L £14.95 Golden Voyage -1C-24K-BQ11M £14.95 Softporn Adventure -1D-40K-BQ93B £20.64 Deadline -2D-32K-BQ96E £34.95 The Shattered Alliance -1D-48K-BQ98G £29.95 The Battle Of Shiloh -1C-40K-BQ63T £29.95 The Battle Of Shiloh -1D-40K-BQ97F £29.95 Energy Czar -1C-16K-YG53H £9.95 Kingdom -1C-8K-YG55K £9.95 Space Shuttle Module 1 -1D-32K-BQ65V £19.95 <p>Arcade Games</p> <ul style="list-style-type: none"> Star Raiders -1E-8K-YG66W £29.95 |
|--|---|---|--|

CREDIT

Dragon 32 computer hardware

(Subject to approval which can take up to 48 hours) (APR = 0%)



ATARI SOFTWARE continued

- | | | | |
|---------------------------|-------------------------|--|---------------------------|
| Asteroids | -1E-8K-YG60Q £29.95 | Blackjack | -1C-8K-YG62S £9.95 |
| Space Invaders | -1E-8K-YG70M £29.95 | Hangman | -1C-8K-YG54J £9.95 |
| Missile Command | -1E-8K-YG64U £29.95 | Super Cubes & Tilt | -1C-16K-BQ48C £14.95 |
| Caverns of Mars | -1D-16K-BQ69A £24.90 | Humpty Dumpty & Jack & Jill | -1C-16K-BQ38R £19.95 |
| K. Razy Shoot Out | -1E-8K-BQ63T £29.95 | Hickory Dickory Dock & Baa Baa Black Sheep | -1C-16K-BQ39N £19.95 |
| K. Razy Knitters | -1E-8K-BG51F £29.95 | British Heritage Jigsaw Puzzles | -2C-16K-BQ40T £19.95 |
| K-Star Patrol | -1E-8K-BG52G £29.95 | European Scene Jigsaw Puzzles | -2C-16K-BQ41U £19.95 |
| Pathfinder | -1D-32K-BG33L £27.95 | Video Ease! | -1E-8K-BQ72P £24.50 |
| Crossfire | -1C-16K-BG22Y £20.64 | Micro Painter | -1D-48K-BG56L £29.95 |
| Crossfire | -1D-32K-BG23A £20.64 | Music Programs | |
| Protector | -1C-32K-BG24B £21.80 | Music Composer | -1E-8K-YG48C £35.95 |
| Protector | -1D-32K-BG25C £21.80 | Movie Themes | -1C-8K-BQ34M £9.95 |
| Threshold | -1D-40K-BG18U £27.54 | Computer Languages | |
| Deluxe Invaders | -1D-16K-BG34M £29.95 | Assembler | -1C-16K-YL32K £19.95 |
| Galactic Chase | -1C-16K-BQ62S £18.95 | Assembler Editor | -1E-8K-YG58P £39.95 |
| Galactic Chase | -1D-16K-BQ61R £19.95 | Macro Assembler | -1D-32K-BQ73Q £39.95 |
| Race In Space | -1C-16K-BQ35Q £14.95 | Basic A+ | -1D-48K-BQ31J £49.95 |
| Race In Space | -1D-16K-BG20W £16.95 | Basic A+ & Operating System A+ | -1D-48K-BQ32K £99.50 |
| Space Chase | -1C-16K-BG42V £10.95 | Microsoft Basic | -1D-32K-BQ74R £59.95 |
| Space Chase | -1D-24K-BG43W £12.95 | Pilot (Educator) | -1E & 2C-16K-BQ75S £79.95 |
| Centipede | -1E-16K-BQ70M £29.95 | Pilot (Consumer) | -1E-8K-YG69A £54.00 |
| Angle Worms | -1C-8K-BG50E £10.95 | QS Forth | -1D-24K-YL29G £49.95 |
| Lunar Lander | -1C-24K-BQ16S £10.95 | Tiny-C | -1D-48K-BG62S £64.95 |
| Lunar Lander | -1D-24K-BG49D £14.95 | Inter-Lisp/65 | -1D-48K-BG61R £87.00 |
| Jumbo Jet Lander | Available November | Utilities | |
| Submarine Commander | Available November | Programming Aids Package 1 | -1C-16K-BG60Q £ 9.95 |
| Rasterblaster | -1D-32K-BG35Q £22.95 | 6502 Disassembler | -1C-8K-YL30H £9.95 |
| Shooting Gallery | -1C-16K-BQ36P £14.95 | 6502 Disassembler | -1D-8K-YL31J £12.95 |
| Shooting Gallery | -1D-16K-BG19V £16.95 | Atari World | -1D-40K-BQ27E £43.95 |
| Shooting Arcade | -1C-16K-BG15S £24.95 | 3D Supergraphics | -1C-40K-BQ29G £29.95 |
| Shooting Arcade | -1D-16K-BG16S £24.95 | 3D Supergraphics | -1D-40K-BQ28F £29.95 |
| Super Breakout | -1E-8K-YG67X £24.50 | File-It 2 | -1D-48K-BG10L £34.95 |
| Dodge Racer | -1C-16K-BG29G £19.95 | Friemanager 800 | -1D-40K-BG58P £72.80 |
| Dodge Racer | -1D-24K-BG30H £19.95 | K.DOS | -1D-32K-BQ76H £49.95 |
| Matchracer | -1C-16K-BG31J £23.95 | Disk Manager | -1D-32K-BG58N £21.80 |
| Mouseattack | -1D-16K-BG32K £23.95 | Disk Detective | -1D-16K-BG57M £24.95 |
| Jawbreaker | -1D-32K-BQ77J £22.95 | Operating System A+ | -1D-32K-BQ30H £49.95 |
| Jawbreaker | -1C-16K-BG17T £20.64 | Telelink | -1E-8K-YG59P £21.50 |
| Jawbreaker | -1D-32K-BQ26D £20.64 | The Next Step | -1D-32K-BG64U £27.54 |
| Ghost Hunter | -1C-16K-BQ64U £19.95 | Books | |
| Pac-Man | -1E-8K-BQ71N £29.95 | Master Memory Map | -XH57M £4.00 |
| Pacific Coast Highway | -1C-16K-BG13P £24.95 | De Re Atari | -WG56L £16.95 |
| Pacific Coast Highway | -1D-16K-BG14Q £24.95 | Operating System User's Manual & Hardware Manual | -WA46A £16.95 |
| Chicken | -1C-16K-BG27E £21.80 | Atari Basic-Learning By Using Games For The Atari | -WG55K £5.24 |
| Chicken | -1D-16K-BG28F £21.80 | Atari Basic | -WG05F £6.80 |
| Tumble Bugs | -1D-24K-BG46A £24.95 | Atari Sound & Graphics | -WA39N £8.25 |
| Bug Attack | -1C-24K-BG36P £23.95 | Your Atari Computer | -WA40T £13.45 |
| Bug Attack | -1D-40K-BG37S £23.95 | 6502 Assembly Language Subroutines | -WA05F £12.45 |
| Canyon Climber | -1C-16K-BG44X £24.95 | Advanced 6502 Interfacing | -WA41U £11.45 |
| Canyon Climber | -1D-16K-BG45Y £24.95 | Beyond Games (6502) | -WA45Y £13.00 |
| Mountain Shoot | -1C-16K-BQ12N £10.95 | Computers For People | -WA00A £8.25 |
| Haunted Hill | -1C-16K-BG38R £16.95 | Analog The Magazine For Atari (6 issues) Annual Subscription | -GG24B £9.00 |
| Haunted Hill | -1D-16K-BG39N £19.95 | Send sae now for our new software leaflet with details of all the above programs. | |
| Time Bomb | -1C-16K-BQ40T £10.95 | Order As XH52G - Issue 3. | |
| Time Bomb | -1D-24K-BG41U £12.95 | Key: C = Cassette D = Disk E = Cartridge | |
| Time Bomb | -1C-16K-YL34M £9.95 | 2C = 2 Cassettes etc. 8K, 16K shows minimum memory requirement. | |
| Time Bomb | -1D-32K-YL35Q £12.95 | | |
| Thunder Island | -1C-16K-BQ37S £10.95 | | |
| Home Game Programs | | | |
| Soram | -1C-16/24K-YG58N £17.50 | | |
| Basketball | -1E-8K-YG61R £24.50 | | |
| Cypher Bowl | -1C-16K-BQ20W £29.50 | | |
| Sunday Golf | -1C-16K-BQ13P £10.95 | | |
| Darts | -1C-16K-BQ42V £19.95 | | |
| Tournament & 8-Ball Pool | -1C-16K-BQ45Y £19.95 | | |
| Shooker & Billiards | -1C-16K-BQ44X £19.95 | | |
| Ricochet | -1C-16K-BG47B £14.95 | | |
| Ricochet | -1D-32K-BG48C £14.95 | | |
| Computer Chess | -1E-8K-YG63T £24.50 | | |
| Fast Gammon | -1C-8K-YL32L £16.95 | | |
| Gomoku | -1C-16K-BQ18U £14.95 | | |
| Gomoku | -1D-16K-BG55K £19.95 | | |
| Revers: | -1C-16K-BQ19V £14.95 | | |
| Revers: | -1D-16K-BG54J £19.95 | | |
| Cribbage & Dominoes | -1C-16K-BQ43W £14.95 | | |
| Poker Solitaire | -1C-16K-BQ17T £10.95 | | |
| Poker Solitaire | -1D-16K-BG53H £14.95 | | |

VIC20 COLOUR COMPUTER

- | | | | |
|---|-----------------|--|----------------|
| Hardware | | | |
| VIC20 Console | (AF47B) £169.99 | Simplicat Cassette (+16K) | (AC93B) £19.95 |
| C2N Cassette Unit | (AF48C) £44.95 | VIC Stock Control Cassette (+8K) | (AC94C) £19.95 |
| VIC Printer | (AF49C) £20.00 | VIC File Disk (+16K) | (AC95D) £24.95 |
| VIC Disk Drive | (AF50E) £36.00 | VIC Writer Disk (+8K) | (AC96E) £24.95 |
| 3K RAM Cartridge | (AF51F) £29.95 | VIC Writer Cassette (+8K) | (AC97F) £19.95 |
| 8K RAM Cartridge | (AF52G) £44.95 | Education (CSE & GCE 'O' Level Revision) | |
| 16K RAM Cartridge | (AF53H) £74.95 | All cassette based and require at least 8K expansion memory. | |
| Joysticks and Paddles | | English Language | (AC98G) £9.99 |
| Single Joystick | (AC53H) £7.50 | Mathematics 1 | (AC99H) £9.99 |
| Pair of Joysticks | (AC37S) £13.95 | Mathematics 2 | (BC00A) £9.99 |
| Le Stick | (AC45Y) £24.95 | Biology | (BC01B) £9.99 |
| Pair of Paddles | (AC3DH) £13.95 | Chemistry | (BC02C) £9.99 |
| Programming Aid Cartridges | | Physics | (BC03D) £9.95 |
| Super Expander 3K RAM and Hi-res graphics | (AC54J) £34.95 | Computer Studies | (BC04E) £9.99 |
| Programming Aid: Additional commands, function key programming etc. | (AC55K) £34.95 | Geography | (BC05F) £9.99 |
| Machine Code Monitor | (AC56L) £34.95 | History | (BC06G) £9.99 |
| Software (all 3K unless stated) | | Arithmetic for 9 to 11 year olds | (BC07H) £9.99 |
| Introduction to BASIC Cassettes | | Reading for 9 to 11 year olds | (BC08J) £9.99 |
| Part 1 | (AC57M) £14.95 | General Knowledge for 9 to 11 year olds | (BC09K) £9.99 |
| Part 2 | (AC58N) £14.95 | Spelling for 9 to 11 year olds | (BC10L) £9.99 |
| Game Programs | | Home Programs | |
| Avenger Cartridge | (AC59P) £19.95 | All cassette based and require at least 8K expansion memory. | |
| Star Battle Cartridge | (AC60Q) £19.95 | Quizmaster | (BC11M) £9.99 |
| Super Slot Cartridge | (AC61R) £19.95 | Know Your Own IQ | (BC12N) £9.99 |
| Jelly Monsters Cartridge | (AC62S) £19.95 | Junior IQ | (BC13P) £9.99 |
| Alien Cartridge | (AC63T) £19.95 | Know Your Own Personality | (BC14Q) £9.99 |
| Super Lander Cartridge | (AC64U) £19.95 | The Robert Carrer Family Menu Planner | (BC15R) £9.99 |
| Road Race Cartridge | (AC65V) £19.95 | VIC Money Manager | (BC16S) £9.99 |
| Rat Race Cartridge | (AC66W) £19.95 | VIC Road User & Highway Code | (BC17T) £9.99 |
| Blitz Cassette | (AC67X) £4.99 | Garden Planner | (BC18U) £9.99 |
| Mole Attack Cartridge | (AC68Y) £24.95 | Interior Designer | (BC19V) £9.99 |
| Adventureland Cartridge | (AC68Y) £24.95 | BBC 'Ask The Family' | (BC20W) £9.99 |
| Pirate Cove Cartridge | (AC69Z) £24.95 | BBC 'Mastermind' | (BC21X) £9.99 |
| Mission Impossible Cartridge | (AC67U) £24.95 | 'Mastermind' additional General Knowledge | |
| Voodoo Castle Cartridge | (AC68V) £24.95 | Data 1 | (BC22Y) £2.50 |
| The Count Cartridge | (AC69W) £24.95 | Data 2 | (BC23A) £2.50 |
| Sargon 2 Chess Cartridge | (AC77J) £24.95 | Data 3 | (BC24B) £2.50 |
| Golf Cartridge | (AC90X) £24.95 | Data 4 | (BC25C) £2.50 |
| Omega Race Cartridge | (AC91Y) £24.95 | 'Mastermind' additional Specialist Knowledge | |
| Another VIC in The Wall Cassette | (AC78K) £7.00 | Wine & Food | (BC26D) £2.50 |
| VIC Panic Cassette | (AC79L) £7.00 | Music | (BC27E) £2.50 |
| Cosmids Cassette | (AC80M) £7.00 | Sport & Games | (BC28F) £2.50 |
| Backgammon Cassette (+3K) | (AC81C) £7.00 | Films & TV | (BC29G) £2.50 |
| VIC Men Cassette | (AC82D) £7.00 | Books About VIC | |
| VIC Asteroids Cassette | (AC83E) £7.00 | Learn Programming on the VIC | (WA31J) £2.50 |
| Business Programs | | VIC Revealed | (WA32K) £10.00 |
| Simplicat Disk (+16K) | (AC92A) £24.95 | VIC Programmers Reference Guide | (WA33L) £9.95 |
| | | VIC Graphics | (WA48C) £10.00 |

MAPPLIN

Maplin Electronic Supplies Ltd., P.O. Box 3, Rayleigh, Essex. Tel: Southend (0702) 552911/554155.
 Demonstrations at our shops NOW. See the computers in action at 159-161 King St., Hammersmith W6. Tel: 01-748 0926
 284 London Road, Westcliff-on-Sea, Essex. Tel: (0702) 554000
 Lynton Square, Perry Barr, Birmingham. Tel: (021) 356 7292.

Note: Order codes shown in brackets. Prices correct at time of going to press. (Errors excluded).


```

10 REM --- SUPER LANDER! ---
20 REM
30 REM
40 REM [ Written by P.Nicholls.
01-08-82. ]
50 REM
60 REM
70 REM ### COPY ME!!
I WANT TO TRAVEL!! ###
80 REM
90 REM

```



**RUNS ON A BBC MODEL B
OR EXPANDED MODEL A
BY PHILLIP NICHOLLS**

```

100 DIMLEM$(4),ME$(4),ML$(9)
110 PROCmessage
120 PROClander
130 MODE1
140 !&FE00=&10200A
150 PROCinstructions
160 PROCsetvariables
170 PROCsetscreen
180 TIME=0
190 PROCupdate
200 PROCkeycheck
210 PROCcalculations
220 PROCcheckvalues
230 PROCnoises
240 PROClemstring
250 PROCfuel
260 PROCcheckland:IF OK=1:GOTO360
270 PROChitote
280 IFCH=1:GOTO300
290 GOTO190
300 SOUND1,0,0,0
310 FORI=1 TO 180:MOVESH,SV:GCOLORND(5)-1,RND(4)-1
320 DRAWSH+RND(300)-150,SV+RND(300)-150
330 SOUND0,-12+(I/15),RND(3)+3,1
340 YDU19,RND(4)-1,RND(8)-1,0,0,0:NEXT
350 M#=ME$(ABS(VV) MOD 5):GOTO450
360 IF VV<-10 OR AN<>0 GOTO 300
370 RESTORE:FORI=1 TO 22
380 READM1,M2
390 SOUND1,-8,M1+48,M2*3:SOUND2,-5,M1+96,M2*3:SOUND3,-4,M1+144,M2*3
400 SOUND&1001,0,0,0
410 NEXT
420 DATA 20,1,20,2,40,1,60,1,40,1,60,1,40,1,30,1,30,2,50,1,70,4
430 DATA 80,1,60,1,40,1,80,1,60,1,40,1,60,1,80,1,100,2,80,1,100,6

```

Illustration: Dorian Cross

SUPER LANDER

```

440 M#=ML$(ABS(VV) MOD 10)
450 NOW=TIME:REPEAT UNTILTIME=NOW+300
460 VDU20,19,1,4,0,0,0:COLOUR129:CLS
470 *FX15,0
480 PRINTTAB(6,10);"THAT WAS ";M#;"!"
490 PRINT""
500 R#=GET#:IFR#<"Y":CLS:!&FE00=&10670A:END
510 GOTO160
520 END
525
530 DEF PROCkeycheck
540 IF INKEY(SPACE) T=T+800
550 IF INKEY(ROL) AN=AN-1
560 IF INKEY(ROR) AN=AN+1
570 IF INKEY(ABORT) AN=0:AB=1

```



```
580 ENDPROC
585
590 DEF PROClander
600 VDU23,224,128,64,60,36,36,60,64,128
610 VDU23,225,0,0,24,36,228,24,8,8
620 VDU23,226,0,0,60,36,36,60,66,129
630 VDU23,227,0,0,24,36,39,24,8,8
640 VDU23,228,1,2,60,36,36,60,2,1
650 FORI=0 TO 4
660 LEM#(I)=CHR#(224+I)
670 NEXT
680 ENVELOPE1,10,20,-20,20,1,2,1,100,0,0,0,50,0
690 ENDPROC
695
700 DEF PROCsetvariables
710 M=1250:REM mass in kgs.
720 AV=0:REM vertical acceleration
730 AH=0:REM horiz. acceleration
740 SV=1000:REM X coord of lander
750 SH=64:REM Y coord of lander
760 VV=0:REM vertical velocity
770 VH=0:REM horiz. velocity
780 T=0:REM total thrust
790 TV=0:REM vertical thrust
800 TH=0:REM horiz thrust
810 FU=8000:REM fuel left
820 G=3.4:REM gravity
830 TIME=0:REM zero time
840 AN=0:REM angle of rot./45deg.
```

```
850 SPACE=-227:REM 'INKEY' space code
860 ROR=-201:REM 'INKEY' colon code
870 ROL=-216:REM 'INKEY' ; code
880 BAP=(285-RND(250))*4:REM base pos.
890 OL#="" :REM old lander
900 NL#="" :REM new lander
910 N=0:REM fuel warning flag
920 ABORT=-194:REM 'INKEY' A code
930 AB=0:REM abort flag
940 ENDPROC
945
950 DEF PROCcalculations
960 TV=T*COSRAD(45*AN)
```

```
970 TH=T*SINRAD(45*AN)
980 FU=FU-T/400
990 MT=M+FU/10
1000 AV=(TV-MT*G)/MT
1010 AH=TH/MT
1020 TI=TIME/100
1030 SV=VV*TI+0.5*AV*TI*TI
1040 SH=VH*TI+0.5*AH*TI*TI
1050 VV=VV+AV*TI
1060 VH=VH+AH*TI
1070 TIME=0
1080 T=T-350
1090 ENDPROC
1095
1100 DEF PROCcheckvalues
1110 IF T>9000 AND AB=0 T=9000
1120 IF T<0 T=0
1130 IF AN<-2 AN=-2
1140 IF AN>2 AN=2
1150 IF FU<0 FU=0
1160 IF FU>8000 AND AB=1 T=15000
1170 IF AB=1 AND VV>6 AB=0
```



```

1190 ENDPROC
1195
1200 DEF PROCnoises
1210 IF FU>0 SOUND&10,-7/1100-1,6,7
1220 ENDPROC
1225
1230 DEF PROCchitote
1240 CH=0:FOR C=0 TO 28 STEP 4
1250 H=POINT(SH+C,SV-32):IF H=2 OR H=-1:CH=1
1260 NEXT
1270 ENDPROC
1275
1280 DEF PROCcheckland
1290 OK=0

```

A giant exploration ship orbits a mysterious planet. You are the pilot of a small lander. Your mission is to ferry an exploration party down to the planet's surface. It's a difficult task. No-one knows what you might find below the cloud cover which shrouds the planet. It's all up to you...

the craft the machine actually shows this happening, and when you increase thrust you can hear the roar of the engines.

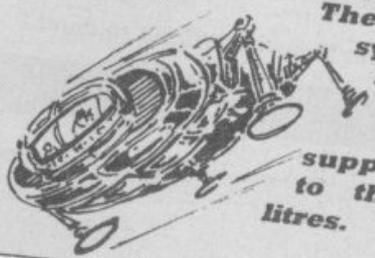
Other warnings and effects include a low fuel audible and visual warning, a spectacular crash and explosion effect when you fail in your mission.

The program makes full use of the BBC micro's graphics sound capabilities. When you rotate

To move the ship, rotate it in the direction that you want to move and apply thrust. These functions are accomplished by using the following keys. ';' rotates craft 45 degrees left. ':' rotates craft 45 degrees right. 'Space' applies thrust in direction that craft is pointing.

If you get into trouble on the way down you can temporarily abort the mission by pressing the 'A' key. This will have the effect of igniting the booster rockets until your vertical velocity exceeds 5 m/s.

The fuel warning system will come into operation as soon as your fuel supply runs down to the last 1500 litres.



```

1300 IF SH>=BAP:IF SH<=BAP+40:IF SV<=320:OK=1
1310 ENDPROC
1315
1320 DEF PROCsetscreen
1330 COLOUR120:CLS:VDU20,19,0,4,0,0,0
1340 GCOLOR,1:FOR I=1 TO 150:PLOT69,RND(1200),RND(734)+290:NEXT
1350 H=350
1360 FOR I=0 TO 1200 STEP 4
1370 P=RND(40)-24:GCOLOR,3
1380 IF P+H<292 OR P+H>600:P=-P
1390 H=H+P:MOVE I,256:DRAW I,H-24:GCOLOR,2:DRAWI,H
1400 IF I>=BAP-12:IF I<=BAP+32:DRAWI,260
1410 NEXT:GCOLOR,0

```

```

1420 MOVE BAP,260:MOVE BAP,610:PLOT 85,BAP+40,260:PLOT85,BAP+40,610
1430 GCOLOR,1
1440 MOVE BAP,260:MOVE BAP,292:PLOT 85,BAP+40,260:PLOT85,BAP+40,292
1450 PRINTTAB(1,25);"V.VEL."
1455 REM *** 16 SPACES IN ABOVE LINE *** H.VEL."
1460 PRINTTAB(1);"FUEL."
1465 REM *** 17 SPACES IN ABOVE LINE *** THRUST."
1470 GCOLOR,3:ENDPROC
1475

```

```

1480 DEF PROCupdate
1490 PRINTTAB(2,26);INT(VV*10)/10;" ";TAB(24,26);INT(VH*10)/10;" "
1500 VDU-17*(FU<1500),-129*(FU<1500)
1510 PRINTTAB(2,30);INT(FU);CHR$(17);CHR$(128);" ";TAB(24,30);INT(T);" "

```

```

1520 ENDPROC
1525
1530 DEF PROClemstring
1540 OL#=NL#
1550 NL#=LEM$(2-AN)
1560 VDU5:MOVESH,SV:PRINTOL#
1570 MOVESH+SX,SV+SY:PRINTNL#
1580 VDU4:SH=SH+SX:SV=SV+SY:!!&FE00=&10200A
1590 ENDPROC
1595
1600 DEF PROCfuel
1610 IF FU>1500 OR N=1 ENDPROC
1620 SOUND1,1,130,10:N=1:ENDPROC
1625
1630 DEF PROCmessage
1640 RESTORE 1680

```

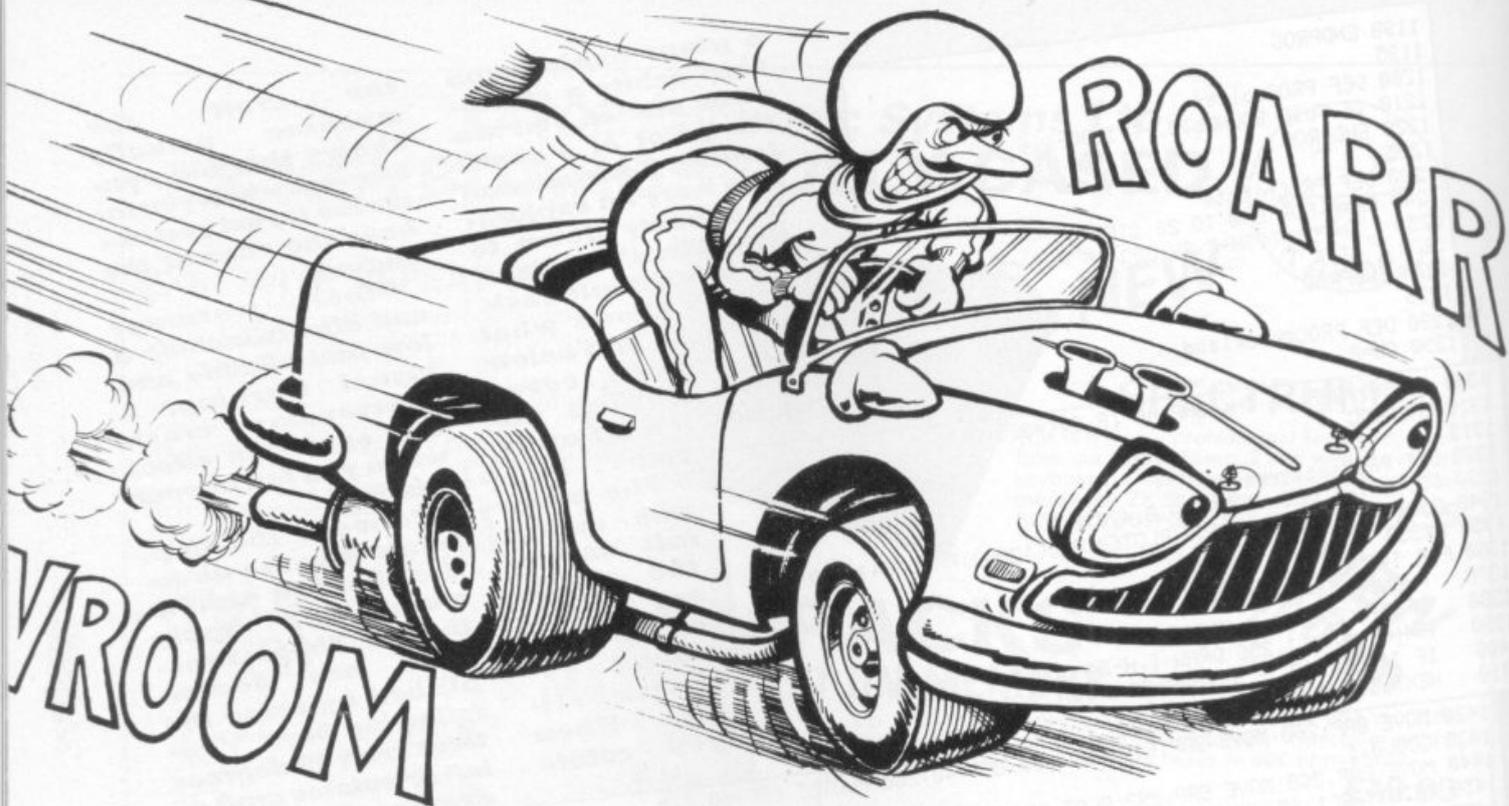
```

1650 FOR I=0 TO 4:READ ME$(I):NEXT
1660 FOR I=0 TO 9:READ ML$(I):NEXT
1670 ENDPROC
1675
1680 DATA "TERRIBLE","AWFUL","RUBBISH","UUUUUUGH!","DREADFUL!"
1690 DATA "EXCELLENT","BRILLIANT","VERY GOOD","PRETTY GOOD","AVERAGE"
1700 DATA "NOT BAD","BUMPY","ROUGH","A CLOSE SHAVE","A DEFINITE FLUKE!"
1705
1710 DEF PROCinstructions
1720 VDU19,0,4,0,0,0
1730 PRINTTAB(10,2);"SUPER LANDER!!";TAB(10,3);"~~~~~"
1740 PRINT""TAB(5);"CONTROLS:"
1750 PRINT""TAB(5);" " ROTATE RIGHT"
1760 PRINT""TAB(5);" " ROTATE LEFT"
1770 PRINT""TAB(5);"SPACE" THRUST"
1780 COLOUR2
1790 PRINT""TAB(5);"A" ABORT!!"
1800 PRINT""TAB(9);"V.VEL < 10 TO LAND.";"TAB(10);"ARE YOU READY?"
1810 *FX15,0
1820 R#=GET$:IFR$(">")GOTO 1820
1830 RESTORE 420:FOR I=1 TO 22:READM1,M2
1840 SOUND1,-8,M1+48,M2*2:SOUND2,-5,M1+96,M2*2:SOUND3,-4,M1+144,M2*2
1850 SOUND&1001,a,0,0:NEXT
1860 ENDPROC

```



Illustration: Dorian Cross



RUNS ON A SHARP MZ-80K IN 4K

Kerrunch! Skerrape! Ouch! Driving your Sharpmobile can be a tough business. Your only aim is to keep bumping the computer controlled car — before it bumps you!

You score a point for each contact with the computer's car. But you must avoid the unwary pedestrians who cross your path. If you hit one the computer gets a point. It also scores if the computer car hits your much dented vehicle.

You can select the speed of the cars and the number of pedestrians at the start of each game. The score and time are displayed throughout the game.

Be warned, the computer's car is difficult to catch!

BY FRANK ROONEY

Illustration: Terry Rogers

```

10 REM *** BUMPERS ***
20 REM *** F.R. ROONEY 1982 ***
30 GOSUB 1170
40 R=208:E1=32:D1=32:X=1
50 PRINT "E"
60 FOR I=53248 TO 53287:POKE I,R:NEXT
70 FOR I=53327 TO 54207:STEP 40:POKE I,R:NEXT
80 FOR I=54247 TO 54208:STEP -1:POKE I,R:NEXT
90 FOR I=54168 TO 53397:POKE I,R:NEXT
100 FOR I=53378 TO 53597:STEP 40:POKE I,R:NEXT
110 FOR I=53437 TO 53618:STEP -1:POKE I,R:NEXT
120 FOR I=53578 TO 53418:STEP -40:POKE I,R:NEXT
130 FOR A1=53460 TO 53463
140 FOR A1=53460 TO 53463
150 READ B1
160 DATA 25,15,21,43
170 POKE A1,B1
180 NEXT A1
190 POKE 53464,E1
200 FOR A1=53470 TO 53472
210 READ B1
220 DATA 13,5,43
230 POKE A1,B1
240 NEXT A1
250 POKE 53473,D1
260 FOR A1=53547 TO 53551
270 READ B1
280 DATA 19,5,3,19,46
290 POKE A1,B1
300 NEXT A1
310 RESTORE
320 FOR K=53610 TO 54130:STEP 80
330 FOR L=1 TO 1
340 B1=INT(35*RND(2))

```

Bump

```

350 IF K+B1>53617 THEN IF K+B1<53638 THEN IF T
360 POKE K+B1,202
370 NEXT L
380 NEXT K
390 A=53748:Y=1
400 P=53330:W=53760:T1#="000000"
410 GOSUB 850
420 U1=PEEK(A+C1)
430 IF U1<>R THEN A450
440 GOTO 460
450 IF U1<>202 THEN GOTO 530
460 IFC1=1 THEN NC1=40:GOTO 500
470 IFC1=40 THEN NC1=-1:GOTO 500
480 IFC1=-1 THEN NC1=-40:GOTO 500
490 IFC1=-40 THEN NC1=1
500 U1=PEEK(A+C1)
510 IF U1=R THEN GOTO 460
520 IF U1=202 THEN GOTO 460
530 A=A+C1
540 IF PEEK(A)=71 THEN MUSIC="_C5":GOTO 560
550 IF PEEK(A)=72 THEN A=A-C1:Y=5:GOTO 560
560 POKE A,72
570 POKE H,240
580 H=6:G=F:F=E:E=A
590 FOR Y=1 TO 52:STEP 1
600 Z=VAL(T1#)
610 IF Z<10 THEN PRINT "000000";TAB(6);Z
620 PRINT "000000";TAB(15);Z
630 IF Z=31 THEN MUSIC="CO_B_#A_A_#G_#M"
640 GET B#
650 IF B#="W" THEN X=-40:GOTO 690
660 IF B#="X" THEN X=40:GOTO 690
670 IF B#="A" THEN X=-1:GOTO 690
680 IF B#="D" THEN X=1
690 IF PEEK(P+X)<>R THEN GOTO 790
700 IF X=1 THEN X=-40:GOTO 740
710 IF X=40 THEN X=1:GOTO 740
720 IF X=-40 THEN X=-1:GOTO 740
730 IF X=-1 THEN X=40
740 IF PEEK(P+X)<>R THEN GOTO 790
750 IF X=1 THEN X=-40:GOTO 790
760 IF X=40 THEN X=1:GOTO 790
770 IF X=-40 THEN X=-1:GOTO 790
780 IF X=-1 THEN X=40
790 IF PEEK(P+X)=72 THEN MUSIC="_C5":G
800 IF PEEK(P+X)=202 THEN MUSIC="CO_B
810 IF PEEK(P+X)=71 THEN W1=W:W=T1#

```


How to make the best home computer in the world even better.

Peripherals to turn a powerful computer into a super-computer for the professional.

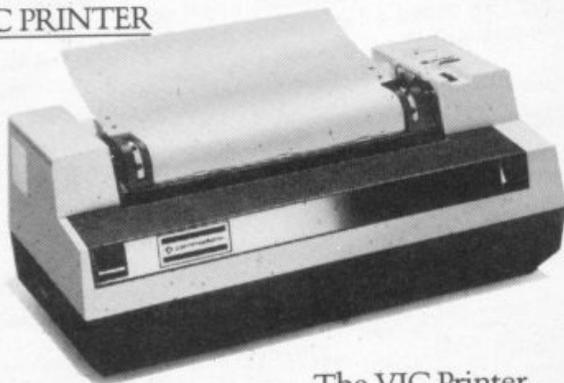
With VIC, you have the finest home computer money can buy. And the more you use it, the more you will ask it to do.

Pretty soon, you'll want to extend VIC's vast potential to the full; and there is a wide range of VIC peripherals to help you do it.

Disk drives, disk-based software, a printer, cassette unit, joysticks, paddles—with these, VIC computing becomes total computing: giving you true professional power and capability.

We describe the major units here.

VIC PRINTER



The VIC Printer, like all VIC peripherals, offers a very high specification at a very competitive price.

It will print programs, letters, business data, graphic displays and so on.

Its main features include: 80 characters per line • Tractor feed dot matrix • 30 characters per second print speed • Full alphanumerics and graphic printing • Double-size character capability • All cables and leads.

VIC FLOPPY DISK UNIT

The VIC single-drive Disk Unit provides a fast, accurate and efficient means of storing and retrieving data and programs.

Together with the Printer, it transforms the VIC 20 into the ideal system for the small businessman or serious computer programmer.

Features include: 174,848 bytes capacity • Uses soft-sectored standard 5¼" single density floppy disks • Direct interface to VIC •

Direct compatibility with Printer Intelligent system independent of VIC.

(VIC RAM not required to run it).



EXPANSION MEMORY CARTRIDGES

Special plug-in cartridges are available to expand VIC's memory. 3K, 8K and 16K RAM packs plug directly into the computer.

A Memory Expansion Board is also available to develop VIC's capabilities to the maximum.

For full details of VIC 20, its peripherals and software, and a list of your local dealers, contact: The Commodore Information Centre, 675 Ajax Avenue, Slough, Berkshire, SL14BG. Tel: Slough (0753) 79292.



commodore
VIC 20

The best home computer in the world.

4-A-SIDE SOCCER

You thrilled to our World Cup Manager program! Now get in trim for the new season with this version of four-a-side soccer featuring the Sinclair All Stars!

The teams are represented on screen by star and inverse star graphic characters.

Each team has a goalkeeper and a back, midfield and forward. The goalkeeper's movements are restricted to the goal-mouth but each of the other men operates in a zone which covers one third of the pitch.

At the beginning of the game the men are positioned randomly in their respective zones. The men in the central zone race to the ball at the centre of the pitch. The first man to the ball has control. A display on line 21 at the bottom of the screen will be in normal print or inverse print depending on who has control of the ball.



© 1984 Sinclair
UK & Ireland
USA & Canada
All Rights Reserved

```

1 REM 4-A-SIDE NOT NOT NOT NOT (IF
TAN
10 REM 4-A-SIDE FOOTBALL
15 REM (C) S.HORSFIELD 1/82
20 DIM A$(2,15)
30 LET A$(1) = "DIRECTION 1-12?"
40 LET A$(2) = "STRENGTH 1-12?"
50 DIM B$(2,15)
60 LET B$(1) = "STRENGTH 1-12?"
70 LET B$(2) = "STRENGTH 1-12?"
80 LET L$ = ""
90 LET G1 = 0
100 LET G2 = 0
110 GOSUB 900
120 GOSUB 600
130 PRINT 20,4;G1;AT 20,26;CHR$(
(32+155)
140 IF G1=10 OR G2=10 THEN STOP

150 LET Z=1
160 IF F/2=INT (F/2) THEN LET Z
=0
170 PRINT AT 21,0;A$(Z)
180 INPUT D
190 IF D>12 THEN LET D=12
200 LET A=D*PI/6
210 PRINT AT 21,0;B$(Z)
220 INPUT S
230 PRINT AT 21,0;L$
240 LET S=INT S+3
250 IF S>15 THEN LET S=15
260 GOSUB 300
270 GOTO 130
300 LET T=1
310 LET U=1
320 FOR F=1 TO S
330 LET P=0
330 IF BL<1 OR BL>18 THEN LET T
=-T
340 IF BC<1 OR BC>31 THEN LET U
=-U
350 LET LB=INT BL
360 LET CB=INT BC
370 LET BL=BL-T*COS A
380 LET BC=BC+U*SIN A
390 IF BC>31.4 THEN LET BC=31.4
390 IF S<3 THEN GOTO 420
400 PRINT AT INT BL,INT BC;
410 LET P=PEEK (PEEK 16398+PEEK
16399*256)
420 IF F=1 THEN GOTO 470

```

```

430 PRINT AT LB,CB;"*"
440 PRINT AT INT BL,INT BC;0
450 IF P=23 OR P=151 THEN GOTO
490
460 IF P=5 OR P=133 THEN GOTO 5
30
470 NEXT F
480 GOTO 510
490 PRINT AT LB,CB;"*"
500 PRINT AT INT BL,INT BC;0
510 GOSUB 600
520 RETURN
530 PRINT AT 21,12;"GOAL";AT 21
,12;"*"
540 IF INKEY$="" THEN GOTO 530
550 IF P=133 THEN LET G2=G2+1
560 IF P=5 THEN LET G1=G1+1
580 CLS
590 GOTO 110
600 LET BC=INT ABS BC
601 LET BL=INT ABS BL
604 FOR F=1 TO 2
605 PRINT AT L(F),C(F);"*"
610 IF (BL>7 AND BL<12) THEN LE
T L(F)=BL
615 PRINT AT L(F),C(1);"*";AT L
(F),C(2);"*"
620 IF L(F)=BL AND C(F)=BC THEN
RETURN
625 NEXT F
640 FOR F=3 TO 6
645 IF (F=3 OR F=4) AND BC>10 T
HEN GOTO 810
650 IF (F=5 OR F=6) AND BC<1 OR
BC>28 THEN GOTO 810
655 IF (F=7 OR F=8) AND BC<21 T
HEN GOTO 810
660 LET L=L(F)
665 LET C=C(F)
670 IF LF<>BL THEN LET L(F)=L(F
)-(L(F)-BL)/ABS (L(F)-BL)
700 IF C(F)<>BC THEN LET C(F)=C
(F)-(C(F)-BC)/ABS (C(F)-BC)
710 IF LF<0 OR L(F)>19 THEN LET
L(F)=L
720 IF C(F)<1 OR C(F)>30 THEN L
ET C(F)=C
730 IF F/2=INT (F/2) THEN GOTO
770
740 PRINT AT L,C;"*"
750 PRINT AT L(F),C(F);"*"
760 GOTO 800
770 PRINT AT L,C;"*"
780 PRINT AT L(F),C(F);"*"
800 IF L(F)=BL AND C(F)=BC THEN
RETURN
810 NEXT F
820 GOTO 630
905 DIM L(8)
910 DIM C(8)
920 CLS
930 GOSUB 1200
935 RAND
940 FOR F=1 TO 2
950 LET L(F)=9
950 LET L(F+2)=INT (RND*20)
970 LET L(F+4)=INT (RND*20)
980 LET L(F+6)=INT (RND*20)
990 LET C(F+3)=INT (RND*10+1)
1000 LET C(F+4)=INT (RND*10+11)
1010 LET C(F+6)=INT (RND*10+21)
1020 NEXT F
1030 LET C(1)=1
1040 LET C(2)=30
1050 FOR F=1 TO 8
1060 IF F/2=INT (F/2) THEN GOTO
1090
1070 PRINT AT L(F),C(F);"*"
1080 GOTO 1100
1090 PRINT AT L(F),C(F);"*"
1100 NEXT F
1110 LET BL=9
1120 LET BC=15
1130 PRINT AT BL,BC;0
1140 RETURN
1200 RAND USR 16514
1210 PRINT AT 20,0;L$;L$;L$;L$
1220 FOR F=8 TO 11
1240 PRINT AT F,0;" ";AT F,31;"
"
1250 NEXT F
1260 RETURN
2000 SAVE "S"
2010 RUN

```

Let Commodore expand your horizons.

VIC 20 is the finest home computer that money can buy.

And the better you get to know it, the more confident, adventurous and ambitious you'll become.

You'll want to take advantage of the vast range of VIC software: a superb and constantly-growing selection of programs, embracing business systems, entertainment, education and many applications in the home.

Every program in the series has been designed by experts, and chosen for its quality and value for money.

VIC business software covers a wide range of applications, including spread-sheet analysis, stock control, information handling and word-processing.

A mind-blowing range of games including Scott Adams' world-famous 'Adventure' series.

Advanced space games, including the sophisticated 'Omega Race'.

Learn subjects as diverse as English Language, programming, and biology.

And 'home' software ranges from IQ tests to Robert Carrier menus.

In addition, there is a range of VIC software, like programmers' aids and graphics packages—



to add to your understanding and enjoyment of computers and computing.

There's even a special 'VicSoft' Club for VIC 20 enthusiasts, with many advantages including special offers to club members.



© RICH SHENFIELD 82

SPACE INTRUDERS WITH MUTANTS

- Four different types of Alien.
- Random saucer gives mystery points.
- Mutant Alien from second Attack-Wave.
- Bonus base at 50,000 points.
- Aliens explode when hit.
- Left, right and fire.
- Full sound effects and colour.

METEOR STORM WITH SPEECH

- Three different types of meteor.
- Two different saucers.
- Full screen wrap-around.
- Bonus ship every 10,000 points.
- Superb explosions.
- Left, right, thrust, fire and hyperspace.
- Sound effects and speech.

ORDER COUPON

Please send me:
 SPACE INTRUDERS at
 £5.95 each
 METEOR STORM(S) at
 £5.95 each
 I enclose a cheque or P/O for

£ _____
 (cheques payable to
 QUICKSILVA)

Name: _____

Address: _____

BOTH OF THESE FULL FEATURE GAMES INCLUDE:

- Personalised high score table.
- Hold feature, suspends game at any time.
- Progressive difficulty.
- Full "Attract Mode" with instructions and scores.

Supplied on Cassette. Both run in 16K on the ZX Spectrum
 SEE US AT THE NORTHERN COMPUTER FAIR

Send order to: QUICKSILVA, Dept. SPE, 92 Northam Road, Southampton SO2 0PB

REVERSI

MIRROR ON MEMORY

I have indicated the basic strategies for playing the game of Reversi, also known as Othello. There are three basic "Rules of Thumb": (1) Aim to capture the corners, while avoiding playing near the corners for fear of giving your opponent a chance. (2) Capture as few pieces as possible early on, as it ironically weakens your position to capture too many. (3) Avoid taking sides unless you are running out of options, as they are a liability at the end.

These three 'thumbs' can be carefully balanced to form an effective algorithm for playing Othello. Obvious exceptions can also be added, such as take maximum pieces near the end. But no general "thumb package" can always find the best play, without a detailed list of exceptions — to mirror the way a skilled human selects moves by experience.

The ideal would be a massive memory bank of all possible positions, to tell a computer the best move in each case. You would need to use the whole planet earth as a store for that massive job, and hitchhikers won't always find the answer is 42!

Human beings manage with their limited memory by being very selective in what they learn. We can do the same with a computer, because the symmetry of the board combines nicely with the fact that

BY JOHN BALL

It is surprising how we all assume certain abilities in human beings. For example, I covered many important side positions in my book *Key To Othello* with the assumption that my readers had the ability to spot mirror images elsewhere on the board in real games. Computers do not have this in-built pattern recognition, so have to be taught.

most vital plays are on the side two rows of the board.

If we work out all the positions for one side, that our Thumbs have missed, we can then describe a mirror image for that same side to cover positions that are the same but the other way round. The same patterns can then be repeated for the other three sides. This provides a memory hall of eight mirrors for the computer to reflect on.

To save memory space, a system of labels for just one "set" can be re-used eight times for the mirrors, by suitable computer loops. Then any additional positions you discover need only be written-in once in the mirror section.

How does this mirror system work? Basically, you are putting special attractive values to a square if the position around it fits a certain shape.

For example in figure 1, there is a hole in a side at "A". If as Black, you don't play there, your opponent will, gaining an option as well as a solid side.

Othello is all about fighting for

options — choices of moves — so such spots should be pounced on. Simply tell the computer in the mirror section that if b, c, and d are occupied, then play at A, or at least make A highly attractive.

A more complicated item is shown in figure 2. Your opponent has played a terrible move — near a corner. To exploit this fully you must play first at F, then at G, then at H, all the time watching out for any replies that should evoke a different response.

The end result should be a captured corner, and an easily won game. So put lots of ifs and buts in the memory mirror, to make sure that the computer plays in the correct sequence.

Watch out for cracks in the mirror. In figure 3, playing as Black at I is obviously essential to save the corner at J. So you describe the five pieces in between, and say that I is massively attractive.

But what if white had a piece at J? Then it becomes essential to avoid I, as it would give away the whole side and next corner. So make sure that you specify all the relevant squares.

Once you have a mirror system established, every time you discover a weakness in the computer's play you simply add another line to the mirror memory, saying "stop playing that rubbish move in that position, play this instead".

It should remember more consistently than you — so watch out.

Figure 1.

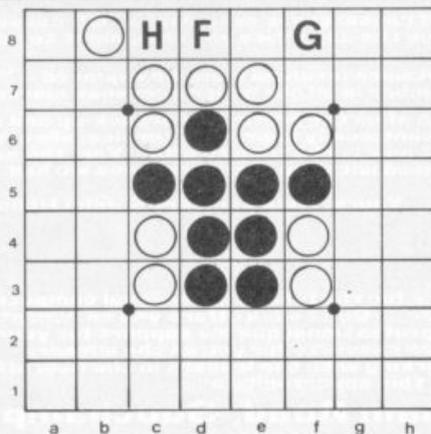
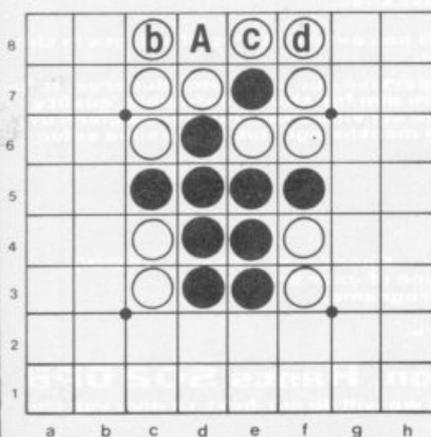
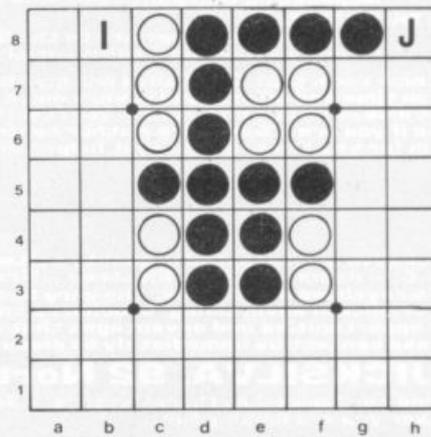


Figure 2.

Figure 3.



WE CAN PUT YOUR PROGRAM HERE



IF YOU WRITE SOFTWARE THEN READ ON...

15 months ago we had written some excellent Games Software for the ZX-81, but when debugging was finally completed we realised that much of the work remained. Who could we rely on for the effective marketing and production of our efforts? Who would give our software the chance it deserved? No company was really giving ZX Software the professional backup and production it deserved so we created Quicksilva to fulfill this role. Now Quicksilva has developed a set of specific policies to match our beliefs about how a company of this kind should operate.

CUSTOMERS

The highest priority must be given to customer service — "QS customer relations are the best in this field."

SOFTWARE

A high standard must be maintained for all software — "QS reputation for innovative software is firmly established."

PRESENTATION

Should support and enhance the software — "QS policy is to use full colour reproductions of specially commissioned artworks to match the standards of the programs."

ADVERTISING

Needs to be accurate, informative, enjoyable, eye-catching and effective — See recent magazines.

PRODUCTION

Reliable and efficient duplication of cassettes is essential — "QS cassettes are produced by The Tape Duplicating Company Ltd., who have the expertise and equipment to do just that."

DISTRIBUTION

All avenues appropriate to the Software involved must be explored — "QS has over 200 retail outlets in this country alone and a substantial number in all the major overseas markets."

We now know that Quicksilva will give both of us the professional back-up and expertise our programs deserve. It has taken time and effort, and is very much a continually improving service; always we aim for that indefinable 'quality' that makes all the difference. We feel that now is the time to offer 'You' the same service that Quicksilva gives us. So if you are a Software Author confronted with the same problems we had 15 months ago, let Quicksilva solve them for you and help you as it helped us.

Yours, Nick Lambert & John Hollis

Quicksilva is interested in quality software for the following personal computers — Spectrum — Atari — VIC 20 — B.B.C. — Atom — ZX81 — Electron — Dragon. Quicksilva offers you on acceptance of your program: 25% royalties on all sales; the very best professional quality support for your programs; full credits in advertising, brochures and on cassette for you as the author; the opportunities and advantages that working with the leaders in the field offers. Please contact us immediately to discuss this opportunity at:

QUICKSILVA, 92 Northam Road, Southampton, Hants SO2 0PB

or ring our Special Authors' Hotline — Southampton (0703) 20169 Ext. 42 — and we will do our best to give you the answer you are looking for.

Adventure

SPECTRUM ZX81 BBC nascom

Colossal Adventure .. 16K/32K .. £8/10 The classic mainframe game "Adventure", with all the treasures and creatures of the original. And with 70 extra rooms!

Adventure Quest 16K/32K .. £8/£10 From the Great Forest, up Orc Mountain, braving fire, swamp and caverns on a quest against Tyranny. Face vampires, demons, wizards, 200-foot worms...

Adventure games are fascinating. You enter English phrases and the computer acts as a window to worlds of magic.

Every Level 9 adventure has over 200 individually described locations and a game may take weeks to solve! Only our combination of data and code compaction allows so much to be provided.

FREE P&P. NO VAT. Money back if unhappy. Supplied on TDK cassettes. Send order, describing your computer, or a SAE for full details of all our programs to:

LEVEL 9 COMPUTING

229 Hughenden Road, High Wycombe, Bucks

SOUND with ZX-81!

MAKE AMAZING SOUND EFFECTS WITH YOUR ZX-81



£25.95 THE ZON X-81

incl p&p & VAT



- * The ZON X-81 SOUND UNIT is completely self-contained and especially designed for use with the ZX-81. It just plugs in – no dismantling or soldering.
- * No power pack, batteries, leads or other extras.
- * Manual Volume Control on panel – ample volume from built-in loudspeaker.
- * Standard ZX-81 – 16K Rampack or printer can be plugged into ZON X-81 Sound Unit without affecting normal ZX-81 operation.
- * Huge range of possible sounds for games or: Music, Helicopters, Sci-Fi, Space Invaders, Explosions, Gun-shots, Drums, Planes, Lasers, Organs, Bells, Tunes, Chords etc., or whatever you devise!
- * Uses 3-channel sound chip giving programme control of pitch, volume of tones and noise, all with envelope control.
- * Easily added to existing games or programmes using a few simple "BASIC" lines.

FULL instructions with many examples of how to obtain effects and the programmes, supplied. Fully Guaranteed.

BI-PAK

Dept CG11 P.O. Box 6,
63A High Street,
Ware, Herts.



Access & VISA accepted
Ring 0920 3182 for
immediate despatch.

ATARI VCS Cartridges

The largest selection in the UK . . . at lowest prices

New releases . . . many only available from Pancom. Recent releases

Atari Demons & Diamonds £17.95 Raiders of the Lost Ark £27.95	Atari Defender £27.95 Berzerk £24.95 Yare Revenge £24.50	Pacman £27.95 Haunted House £17.95
Activision Pitfall £21.95 Megamania £21.95	Activision Chopper Command £21.95 Star Master £21.95 Ice Hockey £21.95	Grand Prix £21.95 Stampede £16.95 Barnstorming £21.95
Coleco Donkey Kong £27.95 Turbo £27.95 Venture £27.95	Imagic Cosmic Ark £21.95 Atlantis £21.95 Fire Fighter £18.95 Riddle of the Sphinx £21.95	Demon Attack £21.95 Trick Shot £18.95 Star Voyager £21.95
Apollo Infiltrate £24.50	USG Space Jockey £21.95 Sneak & Peek £21.95 Word Zapper £24.50	
TigerVision Threshold £19.95	Spectravision Gangster Alley £22.50 Planet Patrol £22.50	
Parker Bros The Empire Strikes Back £28.50 Frogger £28.50	TigerVision King Kong £21.95 Apollo Space Chase £21.95 Space Cavern £21.95	

Coming Soon

Atari: Star Raiders. **Parker Bros:** Amidar; Super Cobra; Reactor; Spider Man. **Spectravision:** Crossfire; Tape Worm; China Syndrome. **TigerVision:** Jawbreaker; River Patrol; Marauder.

ATARI 400/800

A vast range of cassettes available soon . . . many new to the UK . . . send stamp for details.

Le Stick joystick . . . special offer £22.95

Postage etc: 50p per item. Two or more items Post Free.

Pancom, Mail Order and Enquiries: 6 Tranby Drive, Grimsby, S. Humbs. Telephone (0472) 694196.
Retail: 87-89 Pasture Street, Grimsby.

DO YOU PLAY T.V. GAMES?

If so, then why not send today for details of our library of T.V. games cartridges for ATARI, INTELLIVISION, PHILIPS and ACETRONIC Video Computer Games?

For only £10 Life Membership, we offer you the most comprehensive library of the above T.V. games on a daily rental basis, from only 25 pence per day, with no postage and packing costs and special discount purchase prices.

Until Christmas we are also offering a very special deal and a free gift to anyone joining us within 21 days.

So don't delay, send today for details of our fast growing Video Games Library, and get yourself a whole lotta fun!!

S.A.E. to

E & E ENTERPRISES LTD.

P.O. Box 8, Saltash, Cornwall.



PATTERNS AND PROGRAMS

Constructing patterns is a good way to illustrate how to build programs. Just as a complicated pattern can be developed using simpler sub-patterns, so a complex program can be developed from simpler sub-programs.

In dealing with graphics programming there is direct correspondence between the way in which a pattern is built up and the way the program to draw it is constructed.

For this reason a pattern can actually be seen as a picture representing the structure of the program that drew it.

Making patterns with a micro is also a fascinating way to use it and to show off its graphics capabilities. Random patterns can be generated quite easily, and introductory manuals for many micros contain such programs.

Patterns generated in a systematic and non-random way can also be attractive and interesting. Whether or not patterns have a random element they can be informative, aris-

ing as they do in the simulation of such things as the growth of living organisms and the development of economic systems.

The first requirement in displaying a pattern is to describe it to the computer, and this requires the use of a computer language.

It is possible to describe patterns using Basic and the plotting commands it possesses, but other languages can be more suitable.

For example, a square can be plotted using Basic with the following instructions (or with something very similar involving PLOT).

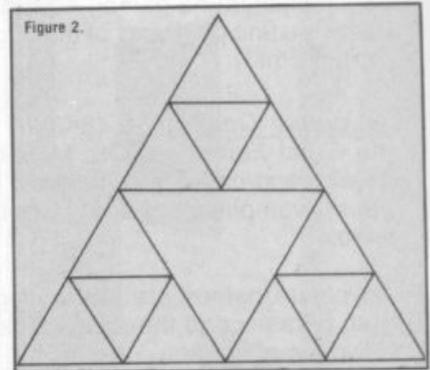
```
10 MOVE 0,0
20 DRAW 0, 10 : DRAW 10,10
30 DRAW 10, 0 : DRAW 0, 0
```

In LOGO (or using 'Turtle' graphics) a square is produced by:

```
REPEAT 4(FORWARD 10 TURN 90)
```

You may agree the Logo description is more natural, giving as it does a direct set of instructions for the following a square which you could actually follow yourself, whereas the Basic description requires a knowledge of where the points such as (10,10) have, perhaps arbitrarily, been placed.

In any event, if you consider how to generate Figure 1 in Basic using a



subroutine for drawing a square as the fundamental building block you may decide that it is none too easy, whereas in Logo it is quite simple.

To build the pattern in Figure 1 from a square, we need a sub-program to draw a square, and in Logo this can be defined by:

```
TO SQUARE
REPEAT 4 (FORWARD 10 RIGHT 90)
END
```

Using this program, Figure 1 is generated by

```
REPEAT 6 (FORWARD 3 RIGHT 60
SQUARE)
```

In addition to its simplicity, the construction of this program exactly reveals that of the pattern.

The Logo program uses its sub-program in exactly the same way as a Basic program can use a subroutine. However, Logo can also support recursion, so that sub-programs can call themselves, whereas most micro Basics do not. (Atom Basic and BBC Basic are notable exceptions.)

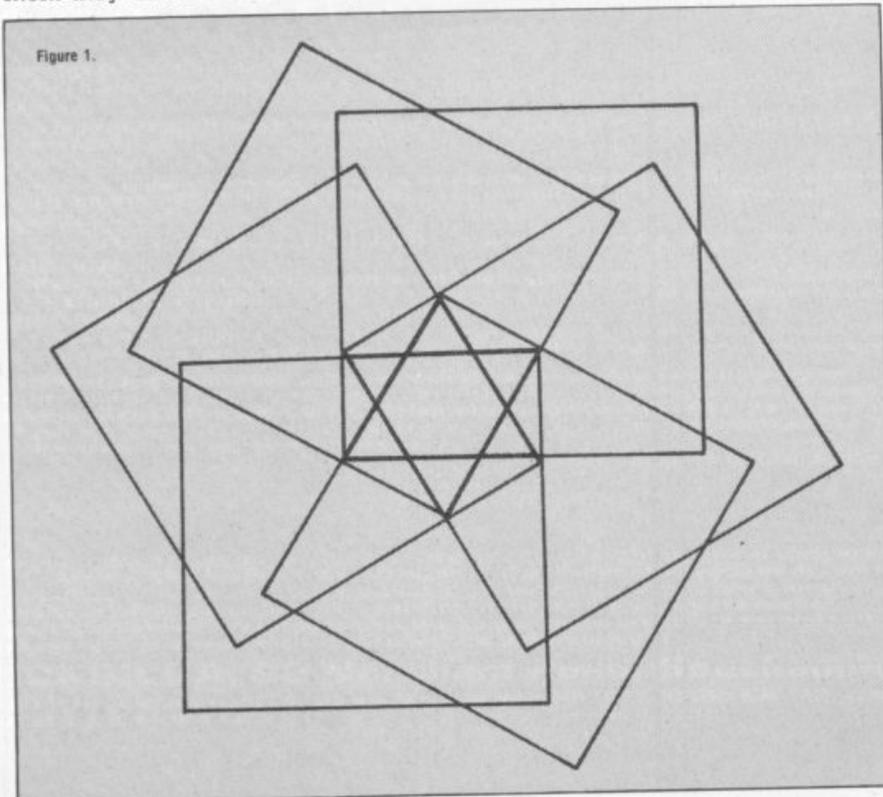
The pattern of Figure 2 can be constructed using recursion. The rule for making the pattern is: Take a large triangle, and at each end of its corners construct a new triangle with half its height, then do the same for each of the new triangles and so on until the triangles become so small that we can halt.

The process has been carried three times in the figure.

The pattern was produced by defining TRIFILL as

```
TO TRIFILL : SIDE
IF : SIDE 5 THEN RETURN
REPEAT 3 ((TRIFILL( : SIDE/2) FORWARD : SIDE
RIGHT 120))
END
and then executing
TRIFILL 24
```

Figure 1.



LET ACORNSOFT OPEN THE DOORS TO YOUR IMAGINATION

BBC Microcomputer or Acorn Atom

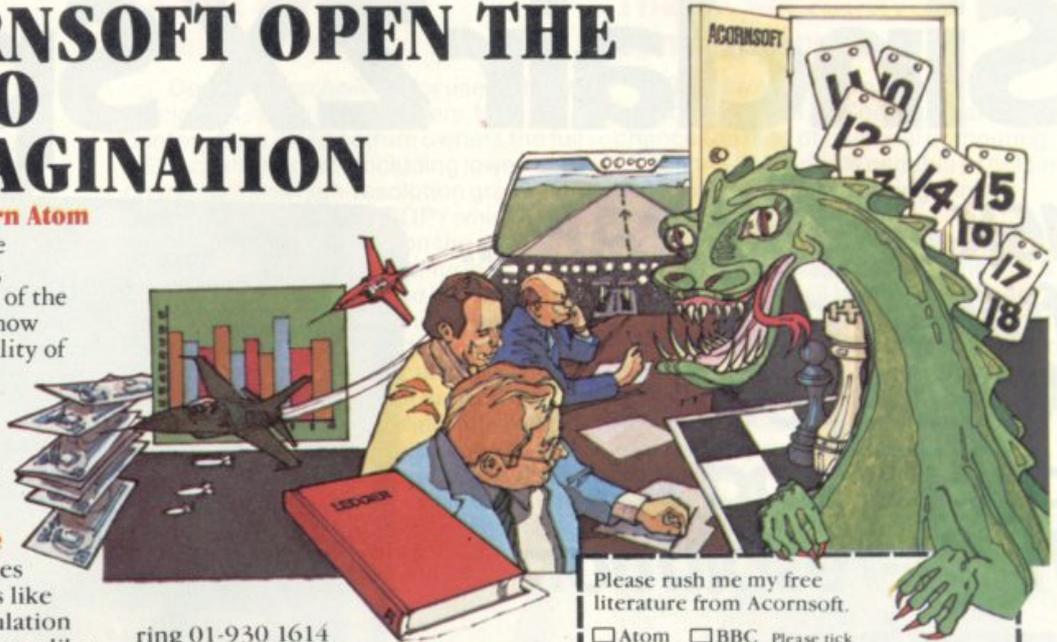
Acornsoft is the software division of Acorn Computers, designers and manufacturers, of the BBC Micro and Atom. We know better than anyone the capability of the machines, we know how to get the very best from the hardware. And we have produced a range of exciting games, exacting business and useful household software.

The Biggest Range Available

Acornsoft software ranges from authentic arcade games like Snapper to Algebraic Manipulation to Desk Diary to other languages like FORTH and LISP. Striking colour, amazing sound effects and powerful graphics are all used to the full. And it does not stop there. There is a complete range of manuals, accessories and plug-in ROMs.

Free Brochures

Just clip the coupon or write to us and we will rush our catalogue absolutely free. Can't wait for the post



ring 01-930 1614 now! Don't delay - do it today. Let Acornsoft help you get the best from our machine and open the doors to your imagination. Acornsoft and Atom are registered trade marks of Acorn Computers Ltd.

ACORNSOFT

4A Market Hill,
CAMBRIDGE CB2 3NJ.

Please rush me my free literature from Acornsoft.

Atom BBC Please tick

Name _____

Address _____

Postcode _____

MICHAEL ORWIN'S ZX81 CASSETTES

The best software (by various authors) at low prices

QUOTES

"Michael Orwin's £5 Cassette Two is very good value. It contains 10 stolid well designed games which work, offer plenty of variety and choice, and are fun."

from the ZX Software review in Your Computer, May '82 issue.

"I had your Invaders-React cassette... I was delighted with this first cassette."

P. Rubython, London NW10

"I have been intending to write to you for some days to say how much I enjoy the games on 'Cassette One' which you supplied me with earlier this month."

E. H. London SW4

"... I previously bought your Cassette One and consider it to be good value for money!"

*Richard Ross-Langley,
Managing Director,
Mine of Information Ltd.*

CASSETTE 1

(eleven 1k programs)

machine code:

React, Invaders, Phantom aliens, Maze of death, Planet lander, Bouncing letters, Bug splat.

Basic:

ICing, Mastermind, Robots, Basic Hangman. PLUS Large screen versions of Invaders and Maze of Death, ready for when you get 16k.

Cassette 1 costs £3.80

CASSETTE 2

Ten games in Basic for 16k ZX81

Cassette Two contains Reversi, Awari, Laser Bases, Word Mastermind, Rectangles, Crash, Roulette, Pontoon, Penny Shoot and Gun Command.

Cassette 2 costs £5.

CASSETTE 3

8 programs for 16k ZX81

STARSHIP TROJAN



Repair your Starship before disaster strikes. Hazards include asphyxiation, radiation, escaped biological specimens and plunging into a Supernova.

STARTREK This version of the well known space adventure game features variable Klingon mobility, and graphic photo torpedo tracking.

PRINCESS OF KRAAL

An adventure game.

BATTLE Strategy game for 1 to 4 players.

KALABRIASZ World's silliest card game, full of pointless complicated rules.

CUBE Rubik Cube simulator, with lots of functions including 'Backstep'.

SECRET MESSAGES This message coding program is very tulp qexi jf.

MARTIAN CRICKET A simple but addictive game (totally unlike Earth cricket) in machine code. The speed is variable, and its top speed is very fast.

Cassette 3 costs £5.

CASSETTE 4

8 games for 16k

ZX-SCRAMBLE (machine code)



Bomb and shoot your way through the fortified caves.

GUNFIGHT (machine code)



INVADERS (machine code)



FUNGALOIDS (machine code)

GALAXY INVADERS (machine code)

Fleets of swooping and diving alien craft.

SNAKEBITE (machine code)

Eat the snake before it eats you. Variable speed (very fast at top speed)

LIFE (machine code)

A ZX81 version of the well known game.

3D TIC-TAC-TOE (Basic)

Played on a 4x4x4 board, this is a game for the brain. It is very hard to beat the computer at it. 7 of the 8 games are in machine code, because this is much faster than Basic. (Some of these games were previously available from J. Steadman).

Cassette 4 costs £5.

Recorded on quality cassettes, sent by first class post, from:

Michael Orwin, 26 Brownlow Rd., Willesden, London NW10 9QL (mail order only please)

SPECTRUM SOFTWARE WANTED

Sinclair ZX Spectrum

**16K or 48K RAM...
full-size moving-
key keyboard...
colour and sound...
high-resolution
graphics...**

**From only
£125!**

First, there was the world-beating Sinclair ZX80. The first personal computer for under £100.

Then, the ZX81. With up to 16K RAM available, and the ZX Printer. Giving more power and more flexibility. Together, they've sold over 500,000 so far, to make Sinclair world leaders in personal computing. And the ZX81 remains the ideal low-cost introduction to computing.

Now there's the ZX Spectrum! With up to 48K of RAM. A full-size moving-key keyboard. Vivid colour and sound. High-resolution graphics. And a low price that's unrivalled.

Professional power— personal computer price!

The ZX Spectrum incorporates all the proven features of the ZX81. But its new 16K BASIC ROM dramatically increases your computing power.

You have access to a range of 8 colours for foreground, background and border, together with a sound generator and high-resolution graphics.

You have the facility to support separate data files.

You have a choice of storage capacities (governed by the amount of RAM). 16K of RAM (which you can update later to 48K of RAM) or a massive 48K of RAM.

Yet the price of the Spectrum 16K is an amazing £125! Even the popular 48K version costs only £175!

You may decide to begin with the 16K version. If so, you can still return it later for an upgrade. The cost? Around £60.



Ready to use today, easy to expand tomorrow

Your ZX Spectrum comes with a mains adaptor and all the necessary leads to connect to most cassette recorders and TVs (colour or black and white).

Employing Sinclair BASIC (now used in over 500,000 computers worldwide) the ZX Spectrum comes complete with two manuals which together represent a detailed course in BASIC programming. Whether you're a beginner or a competent programmer, you'll find them both of immense help. Depending on your computer experience, you'll quickly be moving into the colourful world of ZX Spectrum professional-level computing.

There's no need to stop there. The ZX Printer—available now—is fully compatible with the ZX Spectrum. And later this year there will be Microdrives for massive amounts of extra on-line storage, plus an RS232 / network interface board.



Key features of the Sinclair ZX Spectrum

- Full colour—8 colours each for foreground, background and border, plus flashing and brightness-intensity control.
- Sound—BEEP command with variable pitch and duration.
- Massive RAM—16K or 48K.
- Full-size moving-key keyboard—all keys at normal typewriter pitch, with repeat facility on each key.
- High-resolution—256 dots horizontally x 192 vertically, each individually addressable for true high-resolution graphics.
- ASCII character set—with upper- and lower-case characters.
- Teletext-compatible—user software can generate 40 characters per line or other settings.
- High speed LOAD & SAVE—16K in 100 seconds via cassette, with VERIFY & MERGE for programs and separate data files.
- Sinclair 16K extended BASIC—incorporating unique 'one-touch' keyword entry, syntax check, and report codes.

rum

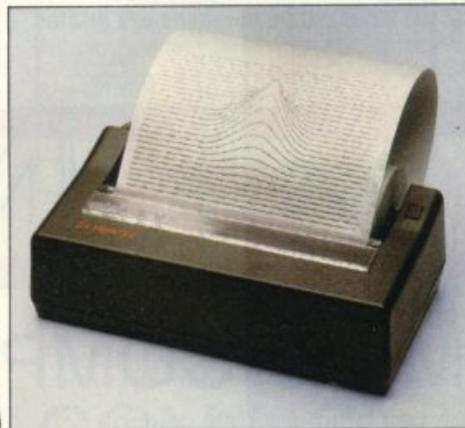


The ZX Printer—available now

Designed exclusively for use with the Sinclair ZX range of computers, the printer offers ZX Spectrum owners the full ASCII character set—including lower-case characters and high-resolution graphics.

A special feature is COPY which prints out exactly what is on the whole TV screen without the need for further instructions. Printing speed is 50 characters per second, with 32 characters per line and 9 lines per vertical inch.

The ZX Printer connects to the rear of your ZX Spectrum. A roll of paper (65ft long and 4in wide) is supplied, along with full instructions. Further supplies of paper are available in packs of five rolls.



The ZX Microdrive—coming soon

The new Microdrives, designed especially for the ZX Spectrum, are set to change the face of personal computing.

Each Microdrive is capable of holding up to 100K bytes using a single interchangeable microfloppy.

The transfer rate is 16K bytes per second, with average access time of 3.5 seconds. And you'll be able to connect up to 8 ZX Microdrives to your ZX Spectrum.

All the BASIC commands required for the Microdrives are included on the Spectrum.

A remarkable breakthrough at a remarkable price. The Microdrives are available later this year, for around £50.



RS232/network interface board

This interface, available later this year, will enable you to connect your ZX Spectrum to a whole host of printers, terminals and other computers.

The potential is enormous. And the astonishingly low price of only £20 is possible only because the operating systems are already designed into the ROM.

ZX Spectrum

Available only by mail order and only from

sinclair

Sinclair Research Ltd,
Stanhope Road, Camberley,
Surrey, GU15 3PS.
Tel: Camberley (0276) 685311.

How to order your ZX Spectrum

BY PHONE—Access, Barclaycard or Trustcard holders can call 01-200 0200 for personal attention 24 hours a day, every day. BY FREEPOST—use the no-stamp needed coupon below. You can pay by cheque, postal order, Barclaycard,

Access or Trustcard.

EITHER WAY—please allow up to 28 days for delivery. And there's a 14-day money-back option, of course. We want you to be satisfied beyond doubt—and we have no doubt that you will be.

To: Sinclair Research, FREEPOST, Camberley, Surrey, GU15 3BR.				Order
Qty	Item	Code	Item Price £	Total £
	Sinclair ZX Spectrum—16K RAM version	100	125.00	
	Sinclair ZX Spectrum—48K RAM version	101	175.00	
	Sinclair ZX Printer	27	59.95	
	Printer paper (pack of 5 rolls)	16	11.95	
	Postage and packing: orders under £100	28	2.95	
	orders over £100	29	4.95	
			Total £	

Please tick if you require a VAT receipt

*I enclose a cheque/postal order payable to Sinclair Research Ltd for £ _____

*Please charge to my Access/Barclaycard/Trustcard account no. _____

*Please delete/complete as applicable _____

Signature _____

PLEASE PRINT

Name: Mr/Mrs/Miss _____

Address _____

_____ CVG 811

FREEPOST—no stamp needed. Prices apply to UK only. Export prices on application.

PUZZLER IN CHIEF

Welcome to the first *Computer & Video Games* puzzle page which will appear every other issue with a selection of simple brain teasers and harder brain manglers. These may have you reaching for the trusty computer to help you through some laborious number-crunching.

On some occasions, (the Mastermind puzzle) you will be invited to send in your answer to try to win a prize. Others we expect to be solved quickly.

The resident puzzle master will be Trevor Truran, and we invited him to write a small biography to explain his credentials.

He did! It started: "Age: In three year's time my father's age will be double what my age was two years ago . . ." And then Trevor's natural modesty took over, so we thought we'd better take a hand.

Trevor is a former puzzles editor of *Games & Puzzles* magazine, he now edits *Top Puzzles*.

If you have any ideas for computer puzzles yourself, please send them in to us and we will pass them on to Trevor, he pays £5 for each one published.

Apart from the Mastermind competition, all other puzzle solutions are printed on page 11.

SWORDS OR WORDS

The answer to each clue is a six-letter word and sometimes that word is to be entered clockwise in the cells of the hexagon — starting in the numbered cell.

On other occasions, though, the word to be entered is an *anagram* of the clue word! (Entered in just the same way).

To help you decide which to use when, the answers have been so arranged that touching cells of neighbouring hexagons will both have the same letter.

One pair has been filled in to give

PUZZLING

MASTERMIND COMPETITION

No, don't panic! We are not going to strap you into an overgrown black leather chair and grill you for two minutes on *Pre-Dynastic Etruscan Pottery*.

All you have to do is crack the codes hidden in these examples of Invicta's classic peg puzzle.

Each picture shows you the position in a computer generated game just before the hidden line is correctly formed. There are six colours to choose from and they may be repeated — though there will be no blanks in the code.

Each attempt has been scored at the side — a black marker indicates that a peg is the correct colour in the right hole; a white marker shows that a correct colour peg is in the wrong hole. A blank shows that

a peg is not the right colour.

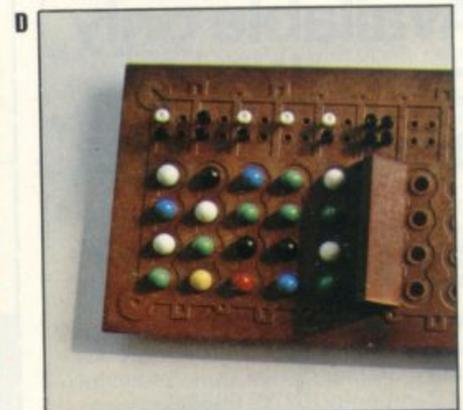
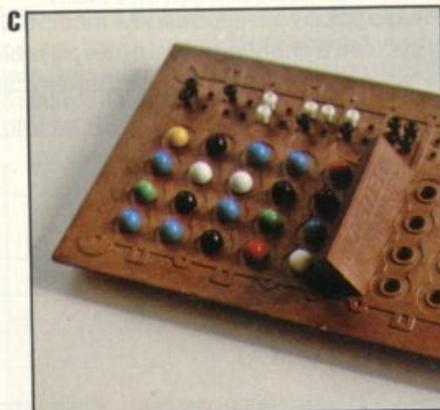
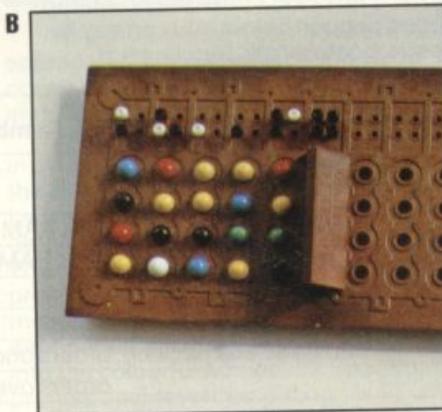
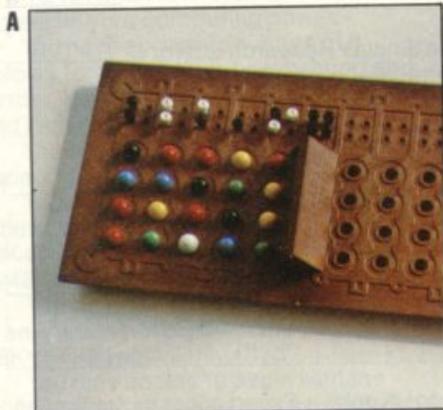
For example: if the hidden code was: red, blue, blue, white. And you tried: red, white, black, blue, the line would show a marker for the

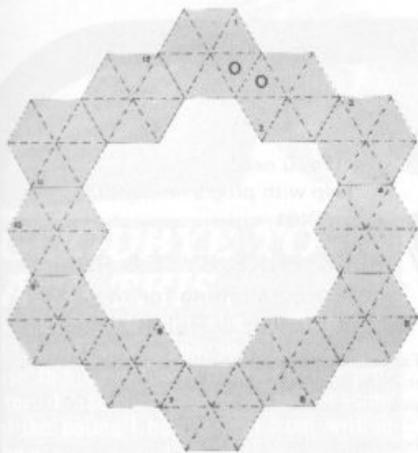
red and two white markers representing white and blue.

When you have used the clues given in each picture, write your answers to the codes on a piece of paper (make sure each answer is correctly labelled A, B, C, D) and send it to: Mastermind Puzzle, Computer & Video Games, Durrant House, 8, Herbal Hill, London EC1R 5JB to reach us before 12 November 1982.

The first three all-correct entries drawn from the postbag will each receive an **Electronic Master Mind** game, donated by Invicta Plastics.

This competition is not open to any employee of East Midlands Allied Press or of Invicta Plastics or their families. The judge's decision, as usual, is final.





you a start. Can you solve the clues, find the words, re-arrange where necessary and put it all together?

CLUES:

1. Seat of royalty.
2. Rounded.
3. Domestic fowl.
4. Short time.
5. Lethargy.
6. Accompany a car?
7. Firearm.
8. Persian governor.
9. Relative.
10. A liaison.
11. At large.
12. Another relative!

ALL BOXED UP

Buying fireworks nowadays is, quite rightly, a much harder process than it used to be. For a start you have to be in long trousers and not speak in a piping treble. And, if you visit the newsagent run by Chas Hands, you would need the mental agility of a man seen in a night club from a distance — by his wife.

As Chas cheerfully explains: "I sell two boxes of fireworks, each containing 41 items. The first has a mixture of Rockets, Silver Serpents and Thunder-Claps and costs exactly £5.

"In the second there are as many Rockets as there are Thunder-Claps in the first. And likewise as many Thunder-Claps as Rockets. Both have the same quantity of Silver Serpents. The second one — Just a little over £12.

"Oh, by the way, five Rockets here would cost you the same as 17 Silver Serpents if you could buy them separately — which you can't!"

How many fireworks of each type are there in the first box and what did each cost?

IAN PEDDER

		APPROACH				EXIT									
		MINI	ROLLS	ESTATE	MAXI	BRASS	GOLD	SILVER	COPPER	LEAD	BRASS	GOLD	SILVER	COPPER	LEAD
APPROACH	Miss ELLIS														
	Mr PRICE														
	Mrs DOWNS														
	Mr LUCAS														
	Mr TURNER														
EXIT	BRASS					X									
	GOLD						X								
	SILVER							X							
	COPPER								X						
	LEAD										X				

Miss ELLIS			
Mr PRICE			
Mrs DOWNS			
Mr LUCAS			
Mr TURNER			

COMING AND GOING

Constable Paynting heaved a long sigh and reached resignedly for his notebook.

It was just his luck to be on duty at the town roundabout when stolen goods were on the move. An informer had called the station and an inspector had called him — a vehicle worth investigating had, sometime that afternoon taken the Lead Lane turning. What, he was asked, did he know about that?

Not a lot, it seemed. The traffic had been heavy, the sun bright and hot. As he struggled to recall the recent past, he made notes of the vehicles and locals he knew well who had been in the area.

1. Mr Turner, who did not drive a Rolls, exited down the road immediately to the left of the one he entered along.
2. It was a woman who met the roundabout from Gold Hill but the Mini which left at Brass Way.
3. Miss Ellis left by way of Silver



- Street but the Estate turned off at Copper Row.
4. Mr Price, in his Maxi, took the first turning off, which wasn't Lead Lane or Copper Row.
 5. Neither Mrs Downs' Van nor Mr Lucas used Copper Row or Silver Street.

Here Paynting paused and reluctantly prepared himself for an apologetic meeting with his superiors.

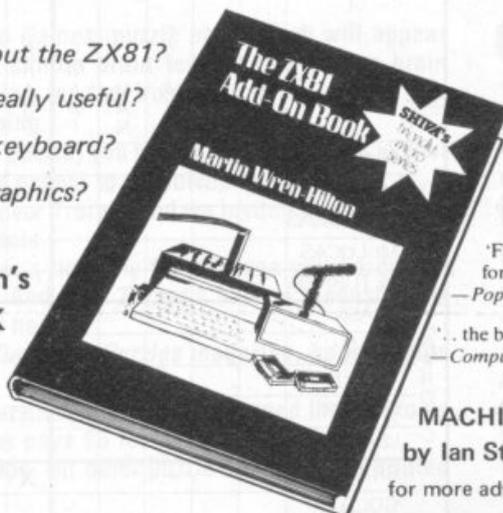
Perhaps you can do better by naming the driver of each car, the road it arrived by and the one it left by and so be able to say which car and driver should be investigated.

To help you sort out the facts, the grid can be used: enter a/for a positive piece of information and a X for a negative one. Of course, no driver arrived and left by the same road.

Are you crazy about the ZX81?
 Want it to do something really useful?
 Choosing a printer, I/O port, keyboard?
 Want some really beautiful graphics?

Read Martin Wren-Hilton's
THE ZX81 ADD-ON BOOK

to help you decide
 how to make the ZX81
 do some real work for you!
£5.50



If you need
 help with programming
 the ZX81, order a copy of:
PEEK, POKE, BYTE & RAM:
 Basic programming for the ZX81
 by Ian Stewart & Robin Jones

'Far and away the best book
 for ZX81 users new to computing'
 — Popular Computing Weekly **£4.95**

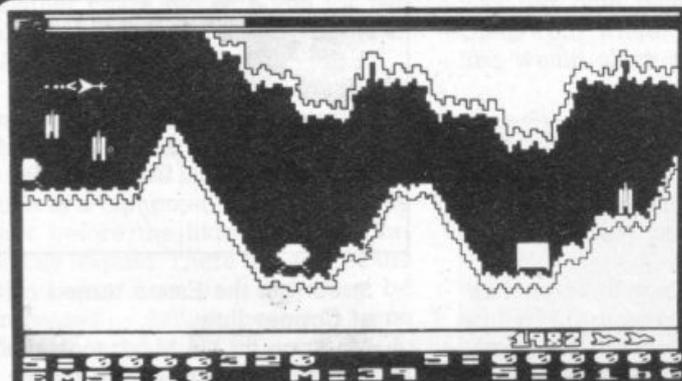
'... the best introduction to using this trail-blazing micro'
 — Computers in Schools

MACHINE CODE AND BETTER BASIC
 by Ian Stewart & Robin Jones
 for more advanced programming techniques.

£7.50

Available from booksellers or direct from the publishers:

Shiva Publishing Limited
 4 Church Lane, Nantwich, Cheshire CW5 5RQ
 Telephone: (0270) 628272



AIRSTRIKE For The ATARI 400/800

• INTRODUCING THE NEW ARCADE GAME FOR ATARI COMPUTERS!
 • SUPERB SCROLLING GRAPHICS WITH DAZZLING COLOURS!
 • 100% MACHINE CODE PROGRAMME FOR ONE OR TWO PLAYERS!
 • MULTIPLE SKILL LEVELS - FIGHT YOUR WAY THROUGH CAVERNS AND TUNNELS WITH ATTACKING MISSILES, FUEL AND AMMO DUMPS TO CONTEND WITH!
 • AVAILABLE NOW: 16K CASSETTE £19.95 | 32K DISK £19.95 | Plus 50p P & P

WE STOCK

ATARI 400/800 COMPUTERS
 COMMODORE VIC COMPUTERS

CALL FOR BEST PRICES!

WE STOCK

ALL ATARI APOLLO ACTIVISION PARKER & IMAGIC CARTRIDGES

CALL FOR BEST PRICES!

WE STOCK

LOTS & LOTS OF VIC SOFTWARE

CALL FOR BEST PRICES!

WE STOCK

LOTS & LOTS OF ATARI SOFTWARE E.g. Time Warp, Nautilus, Canyon Climber, Apple Panic, Centipede, Venus Voyager, Slime, Intruder, Alien Swarm, Preppie, Pacman, Frogger, Shamus, Ali Baba, Micropainter, Clowns & Balloons - plus many, many more titles - Call now for our latest batch of detailed brochures!

We will keep you up to date on all the new software releases!!!

2 YEAR GUARANTEE

ON **ATARI** COMPUTERS

WE SERVICE ALL **ATARI & COMMODORE** COMPUTERS

ATARI INDEPENDENT SERVICE CENTRE

FAST NATIONWIDE MAIL ORDER ON ALL PRODUCTS.

GEMINI ELECTRONICS

ATARI Dept CVG, 50 Newton St., Off Piccadilly, Manchester M1 2EA. Tel: 061-236 3083.



COMPUTER CHESS GAMES

COMMODORE VIC & 64 NOW IN STOCK PLUS GAMES NOW IN STOCK!

VIC-20

Kit Korner

GOODBYE TO ALL THIS...

As this is going to be the last time that Kit Korner will appear in this form I will use this opportunity to review the previous 12 issues and to relate to you some of the points I have learnt from writing them.

It may come as a surprise to know that I have probably learnt more than anyone who has come to me with a problem will ever learn, in the last year, about kit building. I should therefore like to thank all of those people who made so many blunders and kept me busy trying to solve them.

From the very beginning I assumed that most of my readers knew little or nothing about construction as this was the best way of reaching everyone. I progressed as time went on to consider some of the more complex aspects of the art.

These I tried to explain in the simplest terms so that they followed through from the previous articles. From the limited response I have had this worked quite well. Some readers and friends, however, who already had considerable experience in this field were only really interested in the specific hints I had to give. So, altogether it worked quite well. Now here, and hopefully not in list form, are some of the more important points which I learnt from writing this page.

As a result of reducing production costs the difference in price between kit and ready built models has been reduced to a point where, to a kit builder, it is tempting to buy the ready built model.

I would still not do this, as to reduce the cost involved it appears that the manufacturers have failed to maintain quality. This is apparent in many of the newer models. It is therefore a great pity that so few micros are offered in kit form.

Even when complicated modifications are required for, let us say, a screen memory expansion I would prefer to buy the circuit diagram from the company involved at the modification price and do the work myself.

I feel most strongly that it is essential to know how your machine works if you are going to use it to the full.

Also, I would not undertake to build a kit with only assembly instructions. As shown with the early ZX81s the instructions were at fault,

at one point, whereas the circuit diagram was correct.

I am very fortunate in having access to a complete tool kit and workshop which I have found indispensable when it comes to construction. This is also part of my job function anyway, so I am doubly fortunate.

At one stage I outlined the minimum tool kit and later went on to fill it out somewhat. I discovered later that I should not have recommended the minimum version but should have gone for something a little larger.

I hope that if some people did try to build a kit with the minimum of tools that they managed. I have heard no complaints.

Another field that I am fortunate to be a spectator in is that of addons. Although I have not built many of these they are usually so simple as to draw no comment.

The kits that are more complicated normally arrive with well-written instructions and are so numerous that it would require the whole of this magazine to list them, let alone review them all. The only point that comes to mind here is to make sure that the kit does come with a full set of instructions and diagrams.

If they do not you should ask for them as a condition of purchase saying that you do not consider the kit complete without having them.

Be a little wary of kits that either originate from abroad or, worse, are mailed from overseas without there being an office in this country.

Not all, or even many, are pirates but someone will be unfortunate and find one that is. The only thing to do is to inform the Director of Fair Trading and all the magazines you care to. You may be lucky and with the possible help of others be able to salvage something from the kit. I sincerely hope that no one does discover a pirate the hard way.

I did not, at the very beginning, believe that I "knew it all" and did consult as many of my friends and colleagues as I could to find out their opinion which has proved useful in many instances.

Unfortunately many of the mistakes I have come across could have been avoided so easily if the offender had consulted someone with a little more experience for just five minutes.

I have stressed the point in the past that if you feel uneasy about some aspect of kit building, stop and consult someone about it. Even contact the suppliers if need be. They will be only too grateful to you for bringing the difficulty to their attention. I am afraid that this will not be the last time I will mention this though.

I hope that this page has been of some help to those who have begun kit building and that you have enjoyed it as much as I.



BY KEITH MOTT

Tandy/Genie software catalogue is free!

UNDESCRIBABLE! UNBELIEVABLE!

Cosmic Swarm

Having to wait four months for his BBC Micro was hard luck for top programmer Mike Chalk, but it was certainly good news for Tandy/Genie owners, for he spent the time creating his last Arcade game for these machines, and of course exclusively for Kansas

BBC MICRO and COLOUR GENIE programs
Ask for catalogue and see the difference!

It surpasses anything, anywhere! Two entirely different 'screens' provide action and variation the like of which has never been seen on a computer screen before, and certainly not in any 'arcade' game

First you have to beat the astroids. Easy at first but when hit they split and multiply, then split and multiply yet again before they can be completely killed off. But as they split, so they come in at entirely different angles... As the game progresses more and more appear.

If you survive the astroids, down swoops the swarm! These horrors move about relentlessly, then without warning two, three or even more suddenly break away and attack, raining down bombs.

Then its back to harder astroids...and so on... There are bonus scores and extra lives, and sound of course.



MIKE CHALK'S GREATEST EVER. For the Tandy and Genie £9.50 Vat and post paid.

Recognised brand leader in microcomputer software The only company giving a lifetime unconditional guarantee and assured return first class post service.

Kansas

Kansas City Systems, Unit 3, Sutton Springs Wood, Chesterfield, S44 5XF. Tel. 0246 850357

LANDAU ELECTRONICS LTD.

THE HOME COMPUTER & GAMES SPECIALIST

Christmas Gifts for all the family

SENSORY CHESS CHALLENGER 8
 THE THINKING CHESS GAME SEES EVERY MOVE YOU MAKE!
 WAS £119.95
NOW £89.95
 +£2p&p

MATTEL INTELLIVISION GAME
 INTELLIVOICE — VOICE-SYNTHESIS MODULE
 £69.95 + £1 p&p.
 THE ULTIMATE VIDEO GAME!
only £139.95
 +£3p&p

ACTIVISION CARTRIDGES for the ATARI

Barnstorming	£24.95
Starmaster	£24.95
Bridge	£24.95
Chopper Command	£24.95
Ice Hockey	£24.95

Add 50p p&p per cartridge

POCKET GAME WATCH
 at a pocket money price. 4 titles to choose from:
 King Kong New York
 King Kong Jungle
 Mr Woodman
 Mr Richman
£9.95
 +50p p&p

THE CHRISTMAS GIFT! ALIEN ATTACK
 RRP £24.95
ONLY £12.95
 +£1.50p&p
SUPER SPACE GAME

FROM ATARI

Berzerk	£29.95
Demonds to Diamonds	£18.95
Math Grand Prix	£14.95

Add 50p p&p per cartridge

TEXAS T199 / 4A
£199.95 + £5 p&p

ATARI 400 £199.95 + £5 p&p
ATARI 800 £499.95 + £5 p&p

LOW PRICES INCLUSIVE OF VAT. PROMPT DESPATCH

XMAS CARD HOTLINE

ACCESS/BARCLAYCARD Holders
TEL: 01-636 9613

SINCLAIR ZX81 PERSONAL COMPUTER
 ZX PRINTER £59.95 + £2 p&p
 16K RAM PACK £29.95 + £1 p&p

FOR INTELLIVISION

Speech Synthesizer	£69.95 + £1.50 p&p
B17 Speech Cartridge	£29.95 + 50p p&p
Space Spartens	£29.95 + 50p p&p

MAGIC CARTRIDGES For ATARI

Demon Attack	£24.95
Star Voyager	£24.95
Fire Fighter	£19.95
Riddle of Sphinks	£24.95
Cosmic Arc	£19.95
Atlantis	£19.95

Add 50p p&p per cartridge

FOR FULL DETAILS OF OUR RANGE SEND LARGE S.A.E. TO:-

LANDAU ELECTRONICS (Dept CVG II) LION HOUSE, 227 TOTTENHAM COURT ROAD, LONDON W1.
 Also at 215 HIGH STREET, SUTTON, SURREY Tel. 01-643 5494
 CALLERS WELCOME 6 DAYS A WEEK AT ALL STORES
 In Store TEMPO, 190 KENSINGTON HIGH STREET LONDON, W8. Tel. 01-937 0291
 — at —

Adventure

THE YEAR OF ADVENTURE

Well, here we are one year later and still going strong! Adventure is as popular as ever, with an increasing variety of games on the market for every conceivable machine.

In the course of the next year I hope to tell you what it is like to play Adventure on a PDP-11, introduce you to Captain 80's Book of Adventure, and give you an assessment of what appears to be the Adventure programmers "last one".

In the meantime here's an "end-of-term" exam to see whether you've been paying attention to what

I've been telling you over the past year. All the questions can be answered by reading the Adventure pages in the past years' issues of *Computer & Video Games*.

ADVENTURE QUIZ

1. What advantages does a machine-code Adventure have over one written in Basic?
2. In what Adventure might you find patches of oily slime?
3. What could give you heartburn if your stomach was grumbling?
4. Who are you likely to find following you around in a pyramid?
5. Why would a telescope prove

6. If you were a Hellfire Warrior, name two monsters that might trouble you.
7. IF: Black Rod = Sceptre
AND: Small Bird = Bird Statue
THEN: What is equal to Wicker Cage?
8. What often covers you at the top of an extinct volcano?
9. What keeps falling on my head in the Asylum?
10. Who have delicate ears?
11. In what Adventure would you find yourself in the role of a journalist?
12. What words would you use to get through a hole in the wall in an old Manor House?

THE NOT SO INSTANT KARMA . . .

Having treated my micro to a memory upgrade recently, I was quite impatient to try out a big Adventure on it, so I decided to see if I could lose my way in "Lords of Karma".

The game opens in the city of Golconda which is surrounded by mountains and forests. Sunlight filters softly through the leaves of Aspen, Oak, Redwood and Pine, to help guide you through the paths and clearings that abound. You will have a long journey, for I estimate that there are upwards of 100 locations in the game.

Your aim is to collect as many "Karma Points" as possible. These are obtained by carrying out brave and kind deeds.

Some deeds, of course, are braver and kinder than others, so you might be easily misled into thinking that because you had gained points, you had performed the right deed in the right place with the right equipment. This is not necessarily

so, and a similar act in a different scenario might have proved more fruitful.

Therefore, to achieve a high score, once you have made an initial exploration, the game is best played in sections before tying the whole thing together.

For instance, today you might try to collect a few goodies together and spend your time in retreat at the Chapel of Prayer, whilst tomorrow you might feel fit enough to take on the Green Giant—is he the jolly one or not?



If your wife, girl friend or mother needs a new handbag why not organise a trip to the cypress swamp and go crocodile hunting? Or perhaps carry out one of the special quests set you by the folk you encounter?

I hope I have conveyed how diverse this game is. It is also quite user friendly. The conversation with the computer scrolls, telling you where you are without filling the screen with unwanted detail unless you request it with "LOOK".

A typical response might be: "Up the sky. Down the ground. North a gate. South a path. East an unclimbable mountain. West forest. You are on the Trail of Tears."

My only complaint with the dis-

play was the lack of a cursor. It is impossible to tell whether or not you have hit the space bar during input, whether deliberately or accidentally.

Since the game is so large I know not what the highest score is, if indeed there is an absolute maximum. The highest I know of so far is 887, a total reached by Duncan Wood of Chatham, a friend who helped me cover the ground in time for this review.

If you've achieved a score higher than that let me know, and I'll keep a high-score tally running on this page!

Lords of Karma is supplied on a cassette containing a separate recording for each of the four machines. These are listed together with the memory requirements of each, in fig. 1.

The game is published by Avalon Hill and is impressively packaged in a deceptively large box.

It is available from Calisto Computers, to whom I offer my thanks for the review copy.

Figure 1. Machines and memory requirements for Lords of Karma.

MACHINE	MEMORY REQ'D
Atari 400/800	40k
Apple II	32k
Pet 2001	32k
*TRS-80 Level II	48k

*The same recording is also compatible with the TRS-80 Model 3.

ANSWERS TO QUIZ

1. (a) Less memory consuming (b) Executes faster. 2. Adventureland (Scott Adams). 3. Eating Sneakers (Deathmaze 5000, Frank Cor). 4. A small nomad (Pyramid of Doom, Scott Adams). 5. Falls to pieces (Wizard's Mountain, Jeremy Zorvold). 6. (a) Giant Red Ant (b) Great Tick (Hellfire Warrior). 7. Statue Box (Åbersoft Adventure). 8. Sweat (Savage Island Pt. 1, Scott Adams). 9. A piano (Asylum, Frank Cor). 10. The Denizens of the Ium, Frank Cor). 11. Time Machine (Brian Howarth). 12. CLIMB THRU HOLE (Crowley Manor, Jym Pearson).

By KEITH CAMPBELL

let the
DRAGON 32
fire your
imagination . . .



for only **£199.50**
Plus £5 Post & Packing

*No other computer offers
you all these features
at any price . . .*

- 32K RAM MEMORY
- PROFESSIONAL STANDARD KEYBOARD
- 1 YEAR WARRANTY
- 9 DISPLAY COLOURS
- 5 DISPLAY RESOLUTIONS
- EXCEPTIONAL GRAPHICS CONTROL
- 5 OCTAVE SOUND GENERATOR
- DIRECT MUSIC COMMANDS
- REAL-TIME CLOCK/TIMER
- MICROSOFT EXTENDED COLOUR BASIC
- PLUG-IN CARTRIDGES AVAILABLE
- CENTRONICS PARALLEL PRINTER PORT
- SOCKETS FOR JOYSTICKS
- SOCKETS FOR FULL CASSETTE CONTROL
- EXCELLENT CASSETTE FILE HANDLING
- COMBINED AUDIO/DATA INPUT FACILITY
- AUDIO OUTPUT VIA T.V.
- EXPANDABLE TO 64K RAM
- POWERFUL 6809E MICROPROCESSOR
- FREE 160 PAGE TRAINING MANUAL
- BRITISH MADE

Available now from:

ComServe

98 TAVISTOCK STREET, BEDFORD MK40 2RX.
TELEPHONE: BEDFORD (0234) 216749

ZX81 GAMES

from
J.K. GREYE SOFTWARE LTD
THE NEW GENERATION SOFTWARE HOUSE

"Without question the finest machine code games available
today!".....J.N. ROWLAND Product Manager for W.H. SMITH.

GAMESTAPE 1 for 1K _____ only **£3.95**
10 Games incl. ASTEROIDS, UFO, CODE, BOMBER,
GUILLOTINE, KALEIDSCOPE, etc.
PROBABLY THE BEST VALUE 1k TAPE AVAILABLE.



We've done in 1k, games which some of our competitors
require 16k to do!



GAMESTAPE 2 for 16K _____ only **£3.95**
***STARFIGHTER** Superb machine code Space Battle. Set
against a background of twinkling stars, with stunning
explosions — if you can hit the enemy!
PYRAMID Can you move the Pyramid? Make a mistake and
it will collapse! A Thinkers game.
ARTIST The ultimate Graphic Designers aid. 8 Directions, 10
Memories, SAVE, COPY, RUBOUT, CLS, etc.

GAMESTAPE 3 for 16K _____ only **£4.95**
***CATACOMBS** A Multi-Level Graphics Adventure. Each
level can contain up to 9 Rooms, 8 Passages, 7 Monsters,
Food, Gold, Traps, Phantoms, an Exit (to the next level),
and there's an infinite number of levels.
NOTE: . . . This is NOT one of the necessarily limited text
Adventures as sold elsewhere.



"An excellent addictive game which will keep you amused
for hours." . . . COMPUTER & VIDEO GAMES.



GAMESTAPE 4 for 16K _____ only **£4.95**
***3D MONSTER MAZE** The Game to Top All Others.
Unbelievable Graphics! Can you find your way through the
Maze? The EXIT is there somewhere, but then so is a T.REX,
and its after YOU! All in 3D (the T.REX will actually run
towards you in full perspective!), you've never seen anything
like this before!

"3D MONSTER MAZE is the best game I have seen for the
ZX81" . . . COMPUTER & VIDEO GAMES
"If I had to choose just one programme to impress an audience with the capabilities of
the ZX81, then J.K. Greye's 3D MONSTER MAZE would be the one without doubt"
. . . ZX COMPUTING. "Brilliant, brilliant, brilliant!" . . . POPULAR COMPUTING WEEKLY

GAMESTAPE 5 for 16K _____ only **£4.95**
***3D DEFENDER** The Ultimate Space Game. Super fast
Machine Code 3D version of the Arcade favourite. You have
to save your home planet from the marauding Alien Spacecraft.
This is all in 3D, your viewscreen shows you the view out
of your fighters cockpit window. The backdrop moves when
you turn, or fly up or down (8 flight directions), just as if you
were really flying it! But then YOU ARE! The Enemy Saucers
will actually zoom towards you in 3D, and shoot you if you let them! Your display
includes Score, Shield Strength, Altitude, Proximity, Forward Radar and your viewscreen,
which shows your rotating home planet, backdrop of Stars, Meteors, Explosions,
Plasma Blasts, your Photon Beams, up to 4 Enemy Saucers and of course its all in
full 3D!



**A SMASH HIT at the ZX Microfair (most of the other software houses wanted a
copy), a game not to be missed!**



GAMESTAPE 6 for 1K _____ only **£1.95**
***BREAKOUT** Super Fast Full Screen Display Game. Your
all time favourite with an added twist. See how much Money
you can win and watch the pounds convert to Dollars. All
in Machine Code for Fast Action with 3 Speeds, 2 Bat Sizes
and three angles of rebound! The best BREAKOUT around
and at this price you can't go wrong!

GAMES MARKED * INCL. MACHINE CODE.

Prices include VAT and U.K. P. & P.
(Add appropriate Postage on Foreign Orders). Cheques/P.O.s to

J.K. GREYE SOFTWARE LTD

Dept. CVG, 16 Brendon Close, Oldland Common,
Bristol BS15 6QE.

CREDIT CARD SALES: Phone: 01 - 930 - 9232 (9 a.m. - 7 p.m.)
FOR INSTANT DESPATCH

If you prefer to see before buying, our range of **GAMESTAPES**
are stocked by the following stores.

BUFFER MICROSHOP	374A Streatham High Rd., London SW16:
GAMER	24 Gloucester Rd., Brighton;
GEORGES	89 Park St., Bristol, Avon;
MICROSTYLE	29 Belvedere, Lansdown Rd., Bath, Avon;
MICROWARE	131 Melton Rd., Leicester;
SCREEN SCENE	144 St. Georges Rd., Cheltenham, Glos;
W.H. SMITH	Over 200 Computer Branches;
ZEDXTRA	5 School Lane, Kinson, Bournemouth, Dorset;

TRADE & EXPORT ENQUIRIES WELCOME

PRACTICAL PROGRAMMING

THE STONE, PAPER, SCISSORS GAME

In the last 40 years or so there has been a great deal of work done on the mathematical theory of games. The interest in the subject is due mainly to applications in economics and warfare, but the theory does have applications in game playing, and the ideas and terminology came mainly from such games as chess, bridge and poker.

Although the theory of games involves some very difficult mathematics it is possible to understand and use some of the simpler ideas without any knowledge of advanced mathematics.

Let us begin by looking at two very simple games, Matching Pennies and Stone, Paper, Scissors.

In Matching Pennies the two players, A and B, simultaneously lay down their coins; if the two coins both show heads or both show tails, A wins; if the two coins show different sides, B wins.

In Stone, Paper, Scissors, the two players hold out their hands simultaneously, with a closed fist for stone, a fully extended hand for paper, and two fingers extended for scissors.

The winner is determined by the scheme Stone blunts Scissors, Scissors cut Paper, Paper wraps Stone, while if both players show the same the game is a draw.

We can represent these games by the following tables:

Table 1: Matching Pennies

		B	
		Heads	Tails
A	Heads	1	-1
	Tails	-1	1

Table 2: Stone, Paper, Scissors

		B		
		Stone	Paper	Scissors
A	Stone	0	-1	1
	Paper	1	0	-1
	Scissors	-1	1	0

The entries in the tables represent A's winnings, so that a positive number means that A receives a payment from B and a negative number means that A makes a payment to B.

We can now imagine the games being played by A choosing a row from the table and B choosing a column, the result being determined by the entry where the chosen row and column intersect.

Taking this view of a game we can start by drawing up a table at random and defining a game by the table. Consider the following table:

Table 3

		B			
		1	2	3	4
A	1	3	2	-3	-2
	2	1	3	2	-2
	3	2	4	2	1
	4	-2	1	3	0

If A chooses row 2 and B chooses column 1, A wins 1; if A chooses row 2 and B chooses column 4, B wins 2, etc.

In all these games, A and B make their moves without knowing what the other is going to do; if either player knew the other player's move before making his own he could always win. For example, in Matching Pennies, if A knew that B had played heads, A would also play heads and win.

MAKING RANDOM CHOICES WORK

In any game, we expect that there is some "good" way of playing that will give a better result than uninformed play.

In Matching Pennies and Stone, Paper, Scissors, it is clear that if our opponent knows what we are going to do we will lose, so we must make some random choice; it is also fairly easy to see that in both these games the best way to play is to make all the choices equally likely.

For example, in Matching Pennies the best strategy is to play heads 50% of the time and tails 50% of the time, at random. If one player does this he will, on average, win half the time and lose half the time, regardless of what the other player does.

However, if one player deviates from the 50-50 random play and the other player catches on to what he is doing, he can adjust his play to

give himself a better chance of winning.

Suppose that player A chooses heads twice as often as tails; if B discovers this he can win by choosing tails twice as often as head, since in this situation, out of every nine plays we will get, on average, two heads twice, two tails twice, one head and one tail five times.

Thus B will win five times for each four times he loses, and in the long run will come out ahead.

In general, if A plays heads and tails at random, but with different probabilities, B can win in the long run by using the same probabilities but switching them from heads to tails and vice versa.

Program 1 plays Matching Pennies in this fashion. The variable Q is used for the probability that the program will play "tails", and is initially set to 1/2.

The program keeps count of the number of times the player has chosen heads and tails in the variables NH and NT, and after 10 games Q is recalculated and set equal to the probability that the player has been using for "heads".

Of course, playing at random with probabilities different from 1/2 is not the only way of deviating from the best strategy. If you play heads and tails equally often but in a regular sequence, such as H,T,H,T... or H,H,T,T,H,H,T,T... your opponent can win by learning the sequence and playing accordingly.

The program could be modified

```

5 REM MATCHING PENNIES
10 LET Q=1/2
200 LET NH=0
300 LET NT=0
400 LET PS=0
500 LET CS=0
600 LET N=0
900 GO SUB 1000
100 PRINT "YOUR MOVE: H OR T"
105 INPUT P$
110 IF (P$("<math>H</math>")) AND (P$("<math>T</math>"))
THEN GO TO 100
115 IF P$="H" THEN LET NH=NH+1
120 IF P$="T" THEN LET NT=NT+1
125 LET N=NH+NT
130
140 PRINT " I PLAY ";C$
150 PRINT "YOU PLAY ";P$
160 PRINT
170 IF P$("<math>C</math>") THEN GO SUB 500
180 IF P$="C" THEN GO SUB 600
190 PRINT
200 PRINT " MY SCORE ";CS
210 PRINT "YOUR SCORE ";PS
220 PRINT
230 GO TO 90
450 REM COMPUTER WINS
500 PRINT " I WIN"
510 LET CS=CS+1
590 RETURN
595 REM PLAYER WINS
600 PRINT "YOU WIN"
620 LET PS=PS+1
690 RETURN
990 REM COMPUTER'S MOVE
1000 IF N(10) THEN GO TO 1100
1040 LET Q=NH/N
1100 LET C=AND
1120 LET C$="H"
1125 IF C(0) THEN LET C$="T"
1200 RETURN
    
```

BY TED BALL

PRACTICAL PROGRAMMING

to handle this situation, but it would be very difficult to write a program capable of detecting more than the simplest sequences.

If we return to the game defined by Table 3 we find a completely different situation. In the case of Matching Pennies and Stone, Paper, Scissors, we could work from the original forms of the games, or from the symmetry of the tables, but here we have an apparently random collection of numbers and no "original" form for the game.

There is a way of finding the best play in this particular case, and to understand how it works it is easiest to start by imagining that B plays first and A knows B's move.

If B chooses column 1, A will choose row 1, because the 3 in row 1, column 1 is the largest entry in column 1.

If B chooses column 2, A will choose row 3, because the 4 in row 3, column 2 is the largest entry in column 2.

If B chooses column 3, A will choose row 4, because the 3 in row 4, column 3, is the largest entry in column 3.

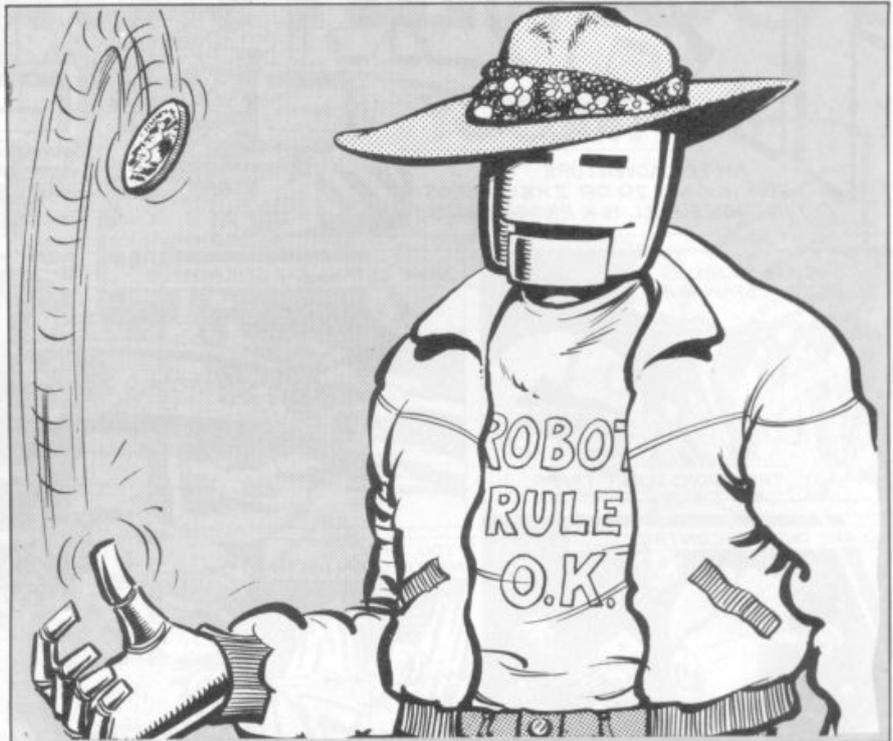
If B chooses column 4, A will choose row 3 because the 1 in row 3, column 4, is the largest entry in column 4.

B can work this out in advance, so he will know that if he chooses column 1 he will lose 3, if he chooses column 2 he will lose 4, if he chooses column 3 he will lose 3, and if he chooses column 4 he will lose 1. From this it appears that his best play is to choose column 4, as this gives him the smallest loss.

If we now change round and imagine that A plays first and B plays knowing A's move, we can go through a similar procedure, but this time B will be choosing the column containing the smallest entry.

Summarising A's strategy, if he chooses row 1 he will lose 3, if he chooses row 2 he will lose 2, if he chooses row 3 he will win 1, and if he chooses row 4 he will lose 2, so it appears that his best play is to choose row 3.

In both cases we end up with the same choices, row 3 from A and column 4 from B. This does not



Next month will be the last time you will see Practical Programming. Our expert programmer Ted Ball is not leaving us however — he is simply turning his typewriter to other things. He is going to write features on machine code, the first of which will appear in our January issue.

happen with every table (see what happens when you use this procedure on Tables 1 and 2).

The reason that both ways of working towards the solution give the same result is that Table 3 contains an entry that is at the same time the largest number in its column and the smallest number in its row.

In the terminology of game theory, an entry in a table that is the maximum of its row and the minimum of its column is called a *saddle point*. Thus, Table 3 has a saddle point at row 3, column 4, while Tables 1 and 2 have no saddle points.

In the situation of Table 3, where the best play is always to make the same choice, this choice is called a *pure strategy*; in the situation of Tables 1 and 2, where the best play is to make a random selection among the possible choices, the play is called a *mixed strategy*.

WHEN THERE IS NO SIMPLE WAY . . .

The two games we have looked at that lead to a mixed strategy are easy to solve because of their symmetry. However, in more complicated cases it is not possible to find a solution by simple inspection as we were able to do with Matching Pennies and Stone, Paper, Scissors.

Table 4

		B		
		1	2	3
A	1	-1	1	1
	2	2	-2	2
	3	3	3	-3

Table 4 has no saddle point and there is no simple way of finding the probabilities that give the best results for A and B.

There is a mathematical method that can be used on tables of any size and shape, but it is not easy to understand.

However, the mathematical method is not the only way to find the solution, and I will be continuing next month, describing a game which leads to Table 4 and explaining how to write a program that will "learn" the best solution.

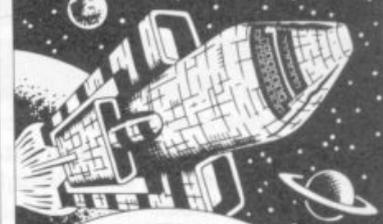
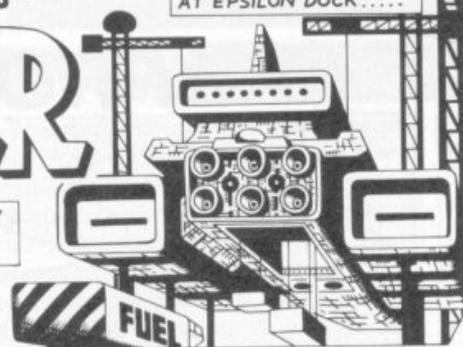
- PIXEL PRODUCTIONS PRESENTS -

THE TRADER TRILOGY

AN EPIC ADVENTURE FOR 16K VIC 20 OR ZX81 MICROS IN THREE FULL 16K PROGRAMMES

THE PEGASUS LOADS UP AT EPSILON DOCK.....

TO TRADE THE MOONS OF MERIDIEN



WE ARE NOURISHED BY YOUR BRAINWAVES



THE PSIONS DON'T TRADE...

THE BETANS ARE SCOUNDRELS.....



YOU ARE OUT OF CONTROL.....



DANGER!

YOU ZAP THE NASTIES ON DELTA



THE CARGO YOU BROUGHT FROM PSI CONTAINS A BOMB!

THERE IS NO OTHER GAME LIKE TRADER!
4.8 K OF THRILLING GRAPHIC ADVENTURE
VIC 20 DISK OR TAPE £18.50
ZX81 TAPE £10.50

PIXEL

PIXEL PRODUCTIONS
39 Ripley Gardens London SW14

SO YOU WANT TO PLAY GAMES

sinclair

ZX Spectrum 16K or 48K model

GROUND FORCE ZERO!!

JUST £5

The ground force has been defeated so the air attack must begin, and you're in control. A super fast, arcade quality, action game for your 16K or 48K Spectrum!



TEXAS INSTRUMENTS TI99/4A

MISSION 99 STANDARD MACHINE JUST £6

Here now is the game every owner of this outstanding machine has been waiting for, Mission 99.

It's sunset in Manhattan when you are sent on a merciless bombing raid. The only way down is to flatten the city. Runs on the standard machine, supplied on cassette. For an unbeatable price!!



SENSIBLY PRICED ATARI SOFTWARE NOW AVAILABLE FROM TITAN 400/800

CAVERNS (16K) JUST £6

At last... a totally addictive, arcade quality program that will take a long time to outgrow, and one that does not cost the earth. Navigate your spaceship through rock caverns, past laser fields, through Rock Valley and into the unknown. You will have to see it to believe it!! Supplied on cassette with full instructions.

VIC-20 GAMES BUY TWO, GET ONE FREE

MISSILE PANIC UNEXPANDED VIC JUST £6

Never in the world of computer games has such a game been produced for such a machine. The panic starts when you take delivery. First the panic to unpack, then the panic in play.

You will capture Crossoids and will have to stay clear of the missiles venomous path in the 'Maze of Death'. See it to believe it!!

OTHER VIC SOFTWARE (ALL UNEXPANDED VIC)

ALL £5 EACH

ROAD RUNNER
ANDROID ATTACK
SPACE HOPPER
SPACE WARS/BATTLE ZONE
STAR WARS II
NAVAL ATTACK

FOR FURTHER DETAILS ON OUR SUPERB VIC RANGE SEND S.A.E.

For immediate delivery send cheques/p.o.s to Titan Programs, Titan House, 83 Ashwood Road, Rudloe, Corsham, Wiltshire SN13 0LG.

FOR
PHONE 24 HR ANSWERPHONE 0225-810132

IMMEDIATE DELIVERY

TITAN PROGRAMS

SIMPLY THE BEST SOFTWARE IN THE WORLD

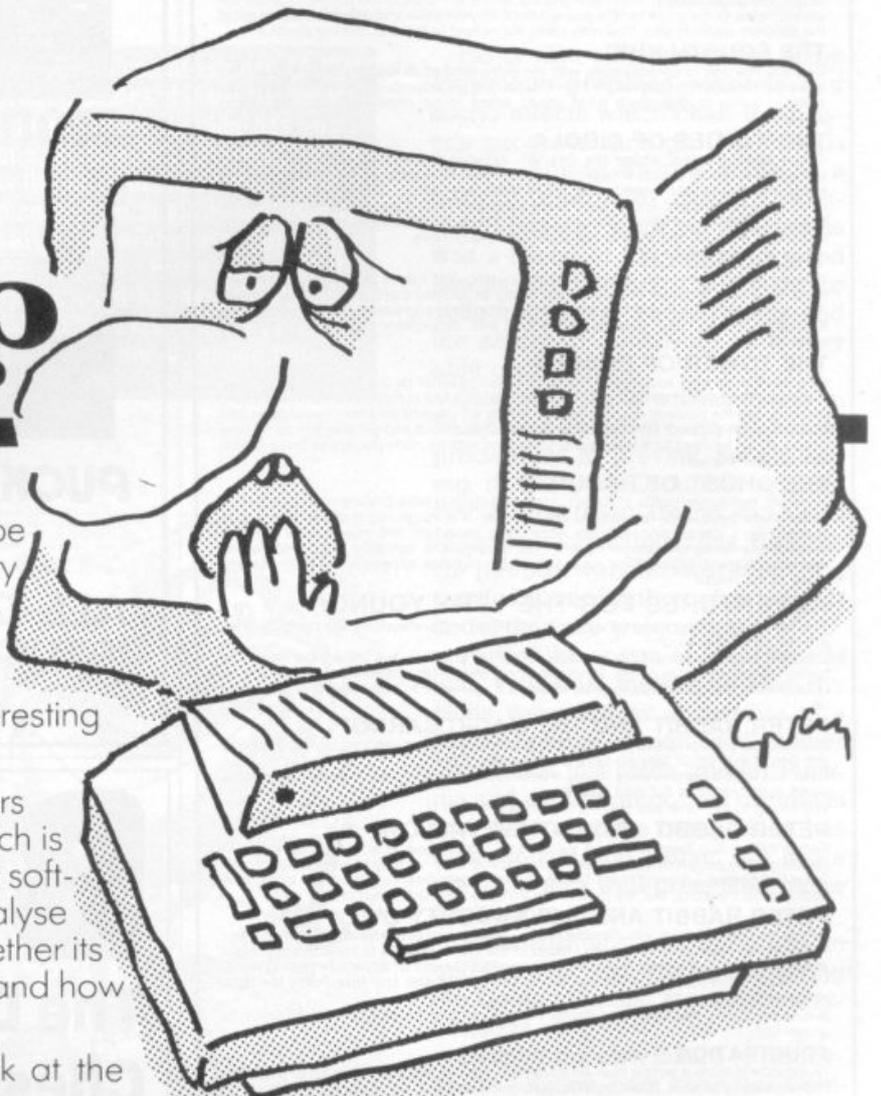
GETTING THE MOST FROM YOUR MICRO?

These days, there seem to be new developments in micros every five minutes. How can you stay in touch? Which Micro & Software Review brings you all the most important news and the most interesting facts every month.

As well as our unique buyers guide to software packages (which is updated every month) we review software in depth. This month we analyse PLANNERCALC and tell you whether its low cost represents good value, and how it stacks against VISICALC.

We also take a long look at the new cash flow forecasting package CASHFAX. Every month we tell you what's available, what's in the pipeline and what's right for you – over a range of software for home, business and school users.

We don't stint on hardware coverage either. Not only do we publish the most extensive buyers guide available (over 100 micros in detail) but we also publish reviews that really take machines apart. This month



we put two British micros under the microscope – the new 64K MIMI 802, which made us wonder whether British could be best again. And the £89.95 JUPITER ACE which is not only very cheap, it's also the world's first micro to use FORTH. Does that make for speed, versatility and ease of programming – or should it have been left with the mainframes?

With all this you get the best news, an informative (and fascinating) letters page, and a problem-solver section written by two of the most respected experts in the business. November's issue is at all good newsagents from October 15th. Don't miss it.

THE A TO Z OF MICROS

WHICH MICRO? & SOFTWARE REVIEW

C.P.S. GAMES

ADVENTURES

HASHA THE THIEF

Try to enter the Potala and steal the golden teapot of the Dalai Lama. There are not only traps and pitfalls but even some magic trying to stop you from getting to the private rooms.

THE WIZARD OF SHAM

If you can reach his hide-out, then he will give you the elixir of life. Travel through the jungle, the ghost town of Sham and find the secret entrance to the temple in which the wizard hides. Once in the temple you will need all your skills and determination to avoid the dangers awaiting you. You may meet the wizard in the end, but we doubt it...

THE FOURTH KIND

Can you manage to communicate with the extra-terrestrials and obtain from them the universal medicine for eternal life? This is not only an adventure but will test also your skills in trying to overcome what would seem to be impossible communication problems.

THE 7 CITIES OF CIBOLA

These famous cities, where the Spanish Jesuites found their gold, are situated somewhere in the South-American jungle. Their whereabouts have been lost for several centuries, and nobody has found them ever since. Can you survive in this exhausting climate and find at least some treasure? And, if you find it, will you still be strong enough to get back with your gold? There is not only the climate; indians, poisonous animals, secret religious sects and many more.

THE DOMED CITY

You are travelling through unmapped territory and your way is blocked by a giant ant heap. By a freak mutation these ants are as big as you and there is only one way open; through the ant's lair. Some ants are friendly, others are aggressive, and your weapons are not much help: your survival depends on skill, anticipation and cunning. Will you succeed?

THE TOWER OF BRASHT

One member of your expedition has been taken prisoner by the Kharrs, a cruel tribe living near the edge of civilisation. You must choose a few companions from your team, and try to get the prisoner out. Success or failure will depend on whom you choose and how they are equipped. This D&D type adventure is difficult and will take you some time to play. It can be used as a roleplaying adventure, with as many players as there can be members of the team.

THE GHOST OF RADUN

In the old, half ruined castle of Radun, a large treasure is buried. Many have tried to find it, but none have ever returned to tell the tale. It is rumoured that the treasure is guarded by a ghost, who appears when least expected, and makes sure that the treasure hunter can no longer return. This adventure is definitely not for the weak-hearted and we strongly advise not to play it after nightfall, especially not when you are alone in the house.

ADVENTURES FOR THE VERY YOUNG:

There is no longer any need for very young children to gaze wistfully at a computer they are not allowed to touch.

This new series of adventures is mainly based on graphics, but follows the traditional pattern of an adventure game. There are some elementary instructions for which a bit of help from the grown ups may be needed. If you want to see some little eyes light up...

PETER RABBIT AND THE MAGIC CARROT

Peter Rabbit goes on a quest for the magic carrot. It is rumoured that any rabbit taking one bite of that carrot gets an extra twenty years of life.

Peter has to go through the big forest, meets nice (and not so nice) friends, deals with a dwarf, gets help from old man oak, etc...

Will he get to the cave and find the magic carrot?

PETER RABBIT AND FATHER WILLOW

Father Willow has been damaged by vandals, and is now in a bit of a state. Peter Rabbit goes in pursuit of the vandals. They know and try not only to escape but to stop Peter Rabbit from following them. Luckily the latter gets help from the other trees, who heard about the story. But will he find the vandals and have them locked up?

PETER RABBIT AND THE NAUGHTY OWL

Jimmy the Owl has been unsufferable of late. The Council of the Meadows sends Peter Rabbit on an expedition to find the Master of the Owls, in order to have Jimmy taught some manners. The Master lives very far away and its quite an adventure getting there. Will Peter Rabbit come back without having seen the Master and thus Jimmy remain a nuisance?

It now transpires that the Peter Rabbit Adventures can be dangerously addictive to grown ups

FRUSTRATION

Frustration is more a puzzle than an adventure. It looks like a program full of bugs and nothing seems to work. It will be difficult to get to the end, but if you do (and don't go mad with frustration!) then there is a reward. The first ten correct answers received by us will be allowed to choose three of our games, FREE!

WAR GAMES

All with full graphics of the battle field, and inclusive of manual.

KING ARTHUR

Britain in the sixth century... THE ANGLES AND SAXONS are marauding through the Country, leaving behind a trail of blood and devastation. In the South a man is gathering troops and fitting them out. His name is Arthur. You take his role in this fascinating wargame. Will you be able to win all the battles he won and free Britain from the plundering marauders? How good are you at commanding troops, finding the enemy and bring him to battle, sifting information, seeing through the fog of war, deploying your troops and many more similar skills?

BATTLE OF THE BULGE

Ardennes, 1944. The famous 'von Rundstedt' offensive.

BATTLE OF THE RIVER PLATE

A simulation of this well known sea battle.

CONVOY

You are the commodore of a convoy under attack from submarines. Instant decisions are required and if you hesitate too long the damage might be worse. Try and locate the enemy and destroy him. Not easy... Again graphics, but combined with verbal information.

All these games are available for ATARI and need 16K RAM.

Some of the games will load different programs successively and are thus much larger than 16K.

All C.P.S. Games, except those for children, are priced at £9.50. The Peter Rabbit and Tummy Digs games are now £4.50.

C.P.S. 14 Britton St., London EC1M 5NQ

We are in the process of moving. Mail will still be received at the above address and telephone messages taken. Our new address and telephone number will be announced in the next issue.

NEW! ATOM NEW!

ALL ACTION PACKED M/CODE ARCADE GAMES

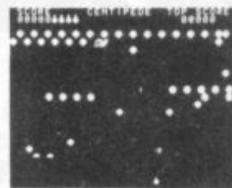


PROTECTOR £7

The most realistic version of this amazing Arcade game available for the Atom. Defend your homeworld from mutation and destroy the Aliens in this hyper fast, action packed game. Moving planetary surface, repeating mine and smart bombs, thrust, speed, increasing Attack Waves, 6 types of Aliens, Sound Effects, Top score and excellent mode 4 graphics are some of the features in this exciting game.

CENTIPEDE £6

The first and only version of this popular Arcade game for the Atom. Shout down the spitting centipede as it crawls through the mushroom field. Also inhabiting the game are Spiders, Dogs and Snails. The action increases until only skill and quick thinking can save you. Excellent high speed mode 4 graphics. Sound Effects and Top score.



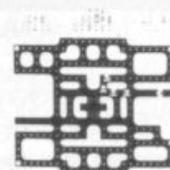
OMEGA MISSION £7

The first and only version of the superb Scramble Arcade game. Moving landscape! Fly over mountains, through caves and tunnels. 3 different stages, Ground to Air Missions, Fire Balls, Space Crabs, Satellites and the narrow twisting Tunnel. Movement in 8 directions, laser motion, Excellent COLOUR graphics (grey black & white on monochrome T.V.) mode 3a, Sound Effects, Top score.



PUCKMAN £5

One of the best versions of this popular Arcade maze chaser game. Eat all the dots in the maze but watch out for the hungry ghosts! Eat an Energy Blob and the chase reverses. Each maze cleared brings a new one with faster ghosts. Excellent high speed mode 4 graphics, Sound Effects and Top score.



ALL 12K RAM
PRICES INCLUDE P&P. FAST 2 DAY DESPATCH!
micromania
 14 LOWER HILL RD. EPSOM. SURREY.

BOSS

The Definitive Chess Game for the VIC

- ★ 10 levels of play
- ★ Beats SARGON II
- ★ Chess clock
- ★ Wide range of opening moves
- ★ En passant, queening, and castling



audiogenic LTD

Available from Audiogenic, PO Box 88, Reading, Berks. (Tel: 0734 595647) or from VIC dealers. £14.99 (inc. VAT, p&p). Credit cards accepted. Ask for full catalogue. BOSS is copyright. KAVAN SOFTWARE 1982. *Requires 8K minimum.

PIMANIA

Pimania is an aptly named computer adventure game. It sends players around in circles and quite probably turns them manic.

But with a specially commissioned gold and diamond sculpture-valued at £6,000 on offer as a prize, it is well worth the risk of trying to discover its secrets.

The adventure comes in cassette form for the 48K Sinclair Spectrum — although there are plans to put it into other computers in the new year — and is the brainchild of Porstmouth-based software house, Automata Cartography.

The idea follows the formula of the successful Kit Williams' book, *Masquerade*, which challenged readers to use clues in the book's illustrations, to discover the whereabouts of a jewelled hare which the author had buried at a secret location.

Automata's prize is the Golden Sundial of Pi and although it is still in the designer's studio, we will bring you a photograph of it in our next issue.

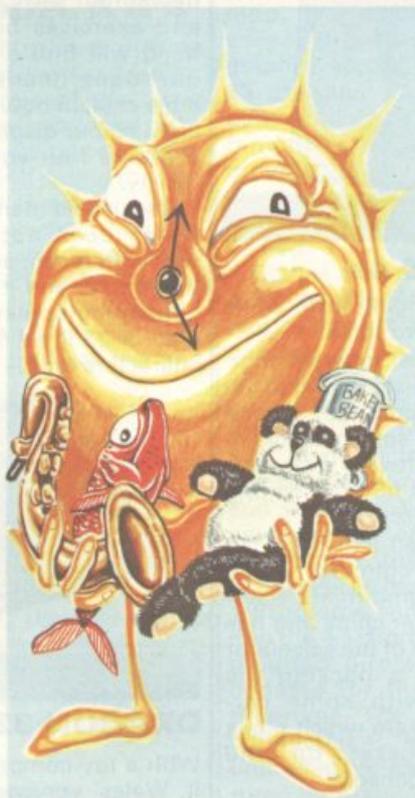
The sundial will not be hidden away but would-be solvers will have to sift through the numerous clues in Pimania to discover the "time and place" where it is metaphorically hidden.

The first person to get in touch with Automata and give the correct solution, wins the Golden Sundial. But the company's managing director, Mel Croucher is confident that it will be several months before anybody cracks it.

He told us: "You go through a series of Gates of Pi and the last one reveals exactly what we want by way of a solution. We are not encouraging people to start digging things up but hope they will meet us at the correct time and place."

Purchasers of the £10.00 cassette face their first puzzle almost as soon as the game has loaded—how to get started? The computer screen explains that one key will activate the game but then it's up to the player to press the right combination on the keyboard. I ended up going through the keys systematically before the obvious struck me.

A specially commissioned £6,000 prize provides the best evidence that computer gaming has come of age. The Golden Sundial of Pi is the prize destined to grace the mantelpiece of the first person to solve an elaborate computer adventure, Pimania. TERRY PRATT tried his hand at Pimania — and from his report his mantelpiece is likely to remain bare.



But after that hints and clues are liberally scattered in an Adventure enthusiast's dream of frustrating mazes, unlikely treasures and abrupt dead-ends.

Every time you stop and start again the treasures will be redistributed around the maze — but you can save the game during a successful run.

There is also an entertaining array of responses to the sort of desperate drivel which adventure games usually reduce me to, the: "Help! I can't take any more! Let me out!", variety. The sense of humour is strong throughout and belongs to programmer Christian Penfold.

He is also responsible for some ingenious graphics routines and sound effects which chart the player's progress through the Pimania realm. Acting as the guide is a cartoon character called the Piman. I couldn't work out whether he was a friend or foe. He has a good line in merry quips, a penchant for collecting some bizzare items and the ability to double up as a very able chorus girl.

The program is written mostly in Basic and there are no elaborate precautions to prevent people listing it. But Mel Croucher is convinced that there are no short-cuts to the solution in doing this. He says: "If people want to work out the puzzle by wading through masses of code, they are welcome to try."

Part of the charm of *Masquerade* was Williams' insistence that the clues were just as accessible to a child's mind as an adult's. Croucher claims that this holds true for Pimania and another important criteria is that even after the competition has been solved, the owner still has a playable and well-presented game for his money.

Automata launches the game in mid-October and will be displaying the Golden Sundial at computer exhibitions.

Despite my own failure to discover the solution, I am keen that *Computer and Video Games* should share in the glory of winning the Sundial.

To this end we will be referring readers' Pimania letters to Automata and hopefully printing any tips or helpful hints in our Mailbag section. So please write in if you think you can pass on something useful and perhaps the combined might of the C&VG readership can resolve the puzzle of Pimania.

The only tips I can offer are:

- Look for clues even in the instructions.
- Take a pencil and paper around the maze with you and map it out.
- Dismiss nothing in the program — even the music should be noted down — it could be significant.

Good luck and watch out for red herrings!

FATHER XMAS

1 NORTH POLE
ARCTIC CIRCLE
TOP OF THE WORLD

To: The Ed.,
Computer & Video Games
73rd Chimney past St Pauls
London

Dear Sir,

Many of my regular customers are putting in most unusual orders this year. I have had requests for Genie's, Dragons, Atoms and all sorts. Some gentleman called Vic seems to be in great demand too. This electronic age has left me longing for the old days when dolls and footballs seemed to be the rage and made me feel quite old fashioned.

It's got to the stage that when a young lad asks for a Pet, I hesitate to drop him in a puppy! Could you help by pointing out the top selling computers this Christmas and giving some tips on how to go about buying them — my elves will have to work out some kind of wholesale deal I imagine.

If you could take the trouble to keep an old man up to date I would be very grateful.

Yours sincerely,
S Claus



TEXAS INSTRUMENTS TI/99 4a

Previously the undiscovered microcomputer, the Texas Instruments TI 99/4a now seems to be establishing itself in the home market, a year after its launch.

This computer was one of the first into the high street at outlets like Rumbelows but its recent price drop to £199 has made it much more competitive.

It has an adequate typewriter style keyboard and a readable 24 line by 32 character display on any domestic TV set. The manual is well thought out with a quick reference chart and will take the beginner into such computer mysteries as user-definable graphics without too much difficulty.

The 16 colours are more than can usefully be utilised and do have a slightly muddy quality. But it can produce a wide range of

sounds, ranging from white noise to pure tones.

The Texas software market is only just starting to get off the ground with several companies set up to distribute US software over here and a small number writing their own programs.

Texas itself is a huge US computer concern which made its name manufacturing computer chips and has a good slice of the calculator market. It is backing the machine with some cartridge software which plugs into a socket on the machine's console.

The 16K memory included in the basic machine can be expanded up to 48K and the Extended Basic cartridge which introduces SPRITES, movable graphics characters is a worthwhile buy for the games programmer.

Disc drives and a printer are also available from Texas, as are joysticks.

The Texas comes across as something of a rogue microcomputer, using a Basic all its own and has several other peculiarities which set it apart from rivals. But with software backup and the new low price it should sell well.

COMMODORE VIC-20

The Vic-20 will be one of the most readily available microcomputers on sale this Christmas.

It can be bought in most high street branches of Boots, Dixons, Rumbelows and Currys — plus computer specialists — for around £169.

A compact computer with a moulded typewriter style keyboard, which gives it an advantage over rivals like the Atari 400 and the Sinclair duo, the Vic works with an ordinary domestic TV set.

It comes with a manual written for the computer newcomer with examples and exercises but the old hand will find a lot of his questions unanswered. It does explain how to use the eight colour display and impressive four-voice sound facility.

The usable memory is 3½K which does not compare well with recent additions to the market and it has a disappointing screen text display of 23 lines deep by 22 characters long.



The computer comes from the well-established US micro manufacturer Commodore which is backing it with a large range of peripherals, disc drives and a printer and, unusually, some high-quality games.

This comes in both the common cassette form and cartridges which plug into the back of the micro. These have the advantage of adding the necessary extra memory to the Basic machine to give good arcade quality games but cost upwards of £17.

Games-playing aids like joysticks and paddles, plus printers, disc drives, memory expansions and light pens are available from Commodore and independent sources.

The Vic is a reliable loader of cassette software but you will need to buy the Commodore recorder (cost £44) to use with it.

The low basic memory and cumbersome text display give the year old Vic a dated look but it has some high quality games software available.

DRAGON 32

With a toy company behind it, Wales' very own Dragon 32 microcomputer should be a games-player's machine.

It is! But despite all the careful thought that has gone into it, there are reservations. It is a compact computer with a typewriter keyboard which utilises a normal domestic TV and cassette recorder.

With 32K memory, colour graphics and sound for only £199 it also sounds a good buy.

It uses the 6809E micro-processor and much of its games software has been converted from the closely related Tandy Colour Com-

puter. As it is such a new machine what software there is comes from the manufacturers.

Dragon Data is a subsidiary of Mettoy, toy company and the emphasis has been put on the computer being a family acquisition.

The ports and sockets are all clearly marked and the manual gives a clear diagram showing how to set it up. The manual tries valiantly and should help most beginners into understanding the beast.

There are nine colours on the Dragon 32 and it offers a comprehensive variety of musical options. There are five levels of graphics re-



COMPUTER CHOICE



solutions enabling the user to draw lines, arcs, circles and utilises a PAINT operation for solid areas.

The display uses only a small area of the TV set and does look rather twee, although it manages 16 lines of 32 character text display.

On paper the Dragon sounds a marvellous machine but so far the software has seemed unimpressive and it has not been around long enough to prove that really good games can be put on it.

BBC MICROCOMPUTER MODEL A & B

The BBC Microcomputer has had a troubled first year since being launched amid glowing reviews last January.

Rushed out to coincide with a BBC television series, it did not have a proper introduction manual, its manufacturers underestimated the demand for the Model B version and too many purchasers spent too long on the waiting lists.

Now a comprehensive user manual is being sent out, the waiting lists have been cut, but it is possible to by-pass these entirely by going to specialist dealers like North London-based Microage.

The BBC is a large flat microcomputer which boasts a robust typewriter style keyboard which will please the typist. It has a

claimed 16 colours include several that are just flashing combinations of the basic colours but combined with the high resolution possibilities and good sound quality, the Model B offers games software which is as playable as the arcade originals.

So far BBC software has been slow to develop, but those games which have been produced are fast and impressive.

The Model A has 16K of usable memory and the Model B 32K and they cost £299 and £399 respectively. The A also has only four graphics modes and its games software is more limited.

The BBC Basic is highly rated as Microsoft compatible but including much more. It has many commands (like automatic line



powerful cassette interface and seems to load and save programs from the most elderly and decrepit cassette recorders.

The graphics are available in eight different modes on the Model B machine. Each offers a different resolution and text display. The

numbering and renumbering) as standard which other computers only offer as a programmer's aid "toolkit". Its strong points are its loading reliability, a strong Basic and good graphics. On the minus side, it is a complicated machine for the beginner to get the most out of and it so far lacks much in the way of peripherals.



ATARI 400 and 800

The Atari range of computers is establishing a firm hold in the UK market — and will be a top seller this Christmas.

There are two models on sale, the 400 which costs £199 and the 800 at £599.95.

Both the 400 and the 800 have many features in common. The machines have very highly regarded graphics capabilities — with 29 graphics keys, and 16 different colours with 16 intensities, which simply means the machines are capable of producing a very good game of Space Invaders.

Games are a good starting point for the Atari computers as there is a rapidly expanding number of games available — mainly imported but some home produced — for the 400 and 800. Many of these games are of exceptional quality and very well known, such as Pacman and Missile Command. Joysticks and Paddles are also available.

Programs can be loaded into the 400 from cassette or plugged directly into the console for the cartridge programs. The 800 can be connected to a disc drive unit which is also manufactured by Atari.

Extra memory can be added by installing either

the 8K or 16K memory expansion unit. There are three different printers available for the 800, and two for the 400. Modem devices are available to enable you to gain access to telecommunications information networks.

The basic differences between the two machines are that the 800 offers you an electric typewriter style keyboard whereas the 400 has the touch-sensitive keys.

The 400 has only two languages which can be used — Basic and Assembly language — the 800 is compatible with Extended Basic, Pilot and Pascal.

Both machines are good teachers. The sound capabilities plus the instruction manuals and tapes teach you computing, illustrating points on the screen and speaking to you in synthesised speech. The Basic program, however, does not come with the Atari 400 but has to be purchased separately at approximately £50 which includes two instruction manuals. There are a number of other educational packages available.

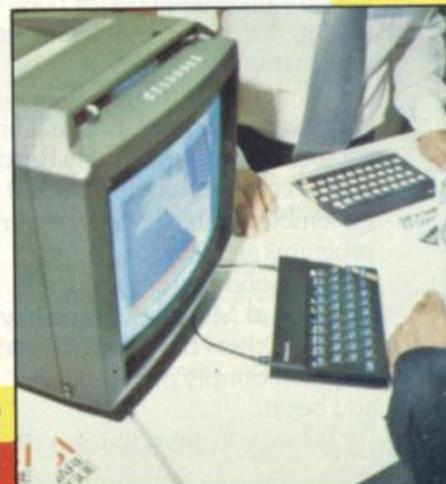
The Atari 400 is a good family computer with impressive games and educational packages available in quantity. The 800 is probably over-priced.

ZX SPECTRUM

The Sinclair ZX Spectrum is building on the incredible success of the ZX81 and is destined to be a big seller this Christmas.

This is despite the fact that it is only available through mail order from the manufacturers. It is undoubtedly a bargain price at £125 for the 16K model and £175 for the 48K version.

The tiny computer features a push button, calcula-



Continued on page 89



TI's Home Computer. Unbeatable value. Unrivalled software.

When you choose a TI Home Computer you're choosing a "real" computer. A computer that can grow with you and your family. A computer that lets you play, invent, discover... that lets your imagination soar.

What makes this possible is our wide range of software. You'll find subjects as simple as "Early Reading" and as complex as "TMS 9900 Assembler Editor." Many of our programs are packaged in our unique Solid State Software™ Command Modules. Some have sound. Others have superb colour graphics. Simply plug them in and begin.

When you want to learn to

program for yourself, the TI 99/4A is ready too. TI BASIC is built in. The programming manual is easy to understand, easy to follow every step of the way. You will be amazed

WHAT THE PROFESSIONALS LOOK FOR IN A HOME COMPUTER

Feature	Texas Instruments TI 99/4A
Microprocessor	TMS 9900 16 BIT
Graphics	16 colour, high resolution
Languages	TI-BASIC (built-in), extended BASIC, UCSD-PASCAL, TI-LOGO, Assembler
Memory	16K RAM standard—expandable to max ROM/RAM of 110K
Keyboard	Full size, standard typewriter style
Software	1000 programs to choose from worldwide
Solid State	Yes
Speech Capability	

to discover how much fun programming can be.

And when you're ready to expand your system, we're ready too. Our unique Peripheral Expansion System can house up to seven peripherals without extra cables or clutter. There is even a speech synthesiser that gives your computer a voice.

Sound impressive? Try the TI Home Computer for yourself at your nearest dealer. At around £200 you'll look no



TEXAS INSTRUMENTS

SANTA'S CHOICE

Continued from page 87

tor-type, keyboard with one key word entry which takes some getting used to.

Sinclair Research is Britain's low-cost computer specialist, now with several years of mail order experience behind it. The company does not usually write its own software but a huge cottage industry has built itself around the Sinclair name.

These come in cassette form and the Spectrum is a far better loader and saver than its predecessors with a VERIFY command ensuring that a program has been properly saved.

Sinclair also scores on the peripherals side with a cheap printer, £59.95, and the promise of ZX Microdrives, around £50, to come.

The Spectrum is an innovative but unpretentious computer which will quickly enjoy a vast and competitive games software library. Many people will find the small button-like keyboard an irritation and on any benchtest it will prove a slow runner.

Editor's reply: In response to your query Mr Claus, I have outlined the seven machines which we expect to be the top sellers this Christmas.

If your elves in the ordering department have any difficulty with some of the terms we have used, I have incorporated a small glossary of terms, which should help in understanding the kind of jargon which computer adverts and salesmen have a tendency to lapse into.

As this is such a fast-growing market there are several machines which are coming out between now and Christmas, or have already been announced and may seem worth waiting for, even though they are not due in the shops until early next year.

SINCLAIR ZX81

The Sinclair ZX81 is still the cheapest introduction to microcomputing it is possible to get in this country.

Now available at £49.95, the ZX81 is no longer limited to mail order purchasers.

For your money you receive a small black computer which, at first

These can hardly be given an honest criticism when software houses have not had a chance to produce games for them or we to test out the standards and quality of those games.

But we have included a few brief details about six of these machines, which will also provide an idea about how this market is developing.

Finally there are many questions the conscientious buyer can ask himself or his dealer to ensure that he ends up with a computer to suit his needs and his hopes for it. We have included a guide on how to approach buying a microcomputer, compulsory reading for all elves who have to deal with the trade.

sight, looks no bigger and no more than a calculator. You also get a power supply, mains leads to connect your ZX81 to a cassette recorder and to a black and white TV set, and a widely respected instruction manual which teaches you Basic through a series of operating exercises.

If you opt for a ZX81 you

will benefit from the enormous range of software which has been built up.

The basic machine has limited memory capacity with only 1k for user programs. It also has a much-criticised flat, touch-sensitive keyboard.

The ZX81 is easily expandable for beginners who have out-grown the limited capabilities of the standard package. Expansion boxes are available which plug into the back of the ZX81 increasing the memory up to 16K, 32K, or even up to 64K. An inexpensive printer is produced by Sinclair at £59.95.

Games players are also well catered for in the additions department with joysticks and graphics ROM which enable you to enhance the graphic capabilities of the ZX81.

As an introduction to Basic programming it is still a marvellous buy but the demand for sound and colour graphics and its notoriously inefficient loading ability means that its days are numbered.

JUPITER ACE

Go Forth and conquer the personal computer market.

That's the hope of Cambridge-based Jupiter, which announced its Jupiter Ace microcomputer this summer.

The Ace is unusual in its departure from Basic as the main programming language.

Instead it is offering "the language of the future", Forth.

For a price of £89.95, the Ace

comes with 3K of memory.

It is a high resolution black and white microcomputer designed and produced by two ex-Sinclair engineers.

Jupiter claims that Forth, which can be found on several other microcomputers as a compiler cassette or cartridge, is easy to learn but operates faster than Basic.

The Jupiter Ace is a small computer with push button type keyboard.

ORIC 1

The Oric 1 is the latest microcomputer to be announced as a rival to the Spectrum.

Designed by Tangerine Computer Systems, the machine will come in 16K and 48K versions and will be launched by Oric Products.

Due out in October, the 16K model will sell for £99 inclusive of VAT and the 48K model will be priced at £169.

It runs on Microsoft Basic and Oric Products claims that a soft-

ware house is already compiling a comprehensive range of business and home software for the machine.

Both versions offer 16 colours and the text is displayed in 24 rows of 40 characters.

It has a dedicated sound chip and the games enthusiasts are catered for with some pre-programmed sounds, like: explosions and laser blast noises.

A push-button calculator style type keyboard makes it still more reminiscent of the Spectrum.



THE BINATONE COMPUTER

The Binatone Computer is currently causing a good deal of excitement in home computer circles.

Although it is not due to be released until Easter of next year, it does give some indication of how the home computer market is going which is why it has been included here.

It will cost £49.95 and offers 16K of memory expandable up to 64K.

As its launch is still some time away the details below may change but Binatone are hoping to include 16 colours, a Basic as close as possible to Microsoft and a resolution of some 40,000

Continued on page 91

SANTA'S CHOICE

From page 89

pixels. It will be possible to make up your own graphics symbols.

Binatone are planning to buy in games software from a software house to support the machine, and are taking a similar attitude to Sinclair about

peripherals, ie that specialist companies will provide them.

Final decisions still have to be made about the text display and the keyboard but Binatone claim that the keyboard will be a reasonable size and *not* touch sensitive.

COLOUR GENIE

The Colour Genie will be launched from the Lowe Electronics stable late in October.

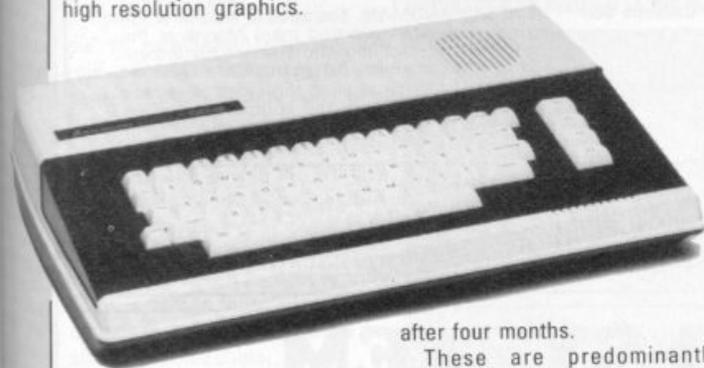
The TRS-80 compatible Video Genie was one of the popular early personal computers and the company are producing the colour version at £199 inclusive of VAT.

It has eight colours, a 40 character by 24 line text display and high resolution graphics.

ing duties.

Where this machine scores over some of its cheaper rivals is in having close compatibility to its predecessor so that games with the colour added can be easily converted.

Already planned are 10 cassettes for launching in the first two months after the micro itself has been brought out. This range should increase to 25 cassettes



after four months.

These are predominantly games software being written by independent companies.

Lowe is also supporting the computer with a range of peripherals which includes: a 16K RAMcard, joysticks, light pen and printer interface cable.

ADDRESS FILE OF MOST POPULAR COMPUTERS.

Atari 400

Atari UK, P.O. Box 59, Alperton-Lane, Wembley Middlesex HA0 1FJ

BBC Microcomputer

BBC Microcomputer Systems, P.O. Box 7, London W3 6JX

Dragon 32

Dragon Data, Queensway, Swansea Industrial Estate, Swansea SA5 4EH.

Sinclair ZX81 and ZX Spectrum

Sinclair Research, 6 Kings Parade, Cambridge CB2 1SN

T.I.99/4a

Texas Instruments, European Consumer Division, Manton Lane, Bedford MK41 7PA

Vic-20

Commodore, 675, Ajax Avenue, Slough, Berks.

ADDRESS FILE OF THE COMPUTER NEWCOMERS

Binatone

Binatone Electronics, Binatone House, Beresford Avenue, Wembley, Middlesex

Colour Genie

Lowe Electronics, Bentley Bridge, Chesterfield Road, Matlock, Derbyshire DE4 5LE

Commodore 64

Commodore, 675, Ajax Avenue, Slough, Berks.

Electron

Acorn Computers, Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN

Jupiter Ace

Jupiter Cantab, 22 Foxhollow, Bar Hill, Cambridge CB3 8EP

Oric 1

Coworth Mansion, Coworth Park, London Road, Sunninghill, Ascot, Berks SL5 7SE

COMMODORE 64

The Commodore 64 is being marketed as a business machine but has many features which make it ideal for games players.

It comes with 64K of memory (although only 38K is available for Basic users) which is more than most games will ever require, but at a price of £299 it is still within many computer buyers' price range.

A 40 column by 24 lines text display with high resolution, pre-

defined graphics characters and the movable object blocks or SPRITES makes graphical games much easier to program.

SPRITES can also be set up in eight layers giving a 3D effect. 16 colours and a strong sound chip complete the games-playing attributes of this machine.

But the manufacturers are only supporting the 64 with business software it may be some time before games software becomes available for this machine.

ACORN ELECTRON

Acorn has high hopes that its Electron microcomputer will find a ready market wanting to use BBC Basic at a cheaper price.

The Electron comes out at the end of the year but the company are still playing their cards close

to their chest. It will have a 32K of memory and what they describe as a "full travel keyboard".

It will offer the same colour facilities and high resolution as the BBC Microcomputer but at a price of £125.

GLOSSARY OF TERMS

Basic: The most widespread computer language which is one of the easiest to learn and is used for programming all microcomputers.

Cartridge: A one-off computer program contained in a rigid plastic case. Cartridge programs plug directly into the computer and do not require a cassette recorder or a disc drive system to use them.

Cassette: Computer program stored on a cassette tape and loaded into the computer using a conventional cassette recorder.

Compiler: A computer program which can convert programs from one language to another.

Forth: An advanced computer language designed to have a large number of commands in plain English.

Graphics Mode: A facility which enables you to draw on the screen. Many computers feature a special mode for using graphics symbols.

Graphic symbols: Keys which enable you to build up a picture on the screen due to a variety of shades and shapes which they instruct the computer to produce.

High resolution: Drawing graphics in pixels, rather than shapes, which would be a collection of pixels.

Joystick: A small lever mounted on a plastic plinth which enables the player to move objects on the screen.

Memory: The power of a computer is measured in memory capacity. The greater the memory — the longer and more complex the programs that can be entered into it.

Microsoft Basic: A form of Basic.

Pixels: The basic element of a TV screen derived through various types of scanning processes.

Printer Interface: Device which enables you to connect a printer to your microcomputer.

Software: Another name for computer programs.

Software House: A company which produces games, educational, or business programs for computers.

Sound chip: A component specifically designed to store and reproduce sound effects within a computer.

Sprites: Programmable moving characters which greatly enhance the graphic capabilities of your computer.

Text display: The display of written information on the screen.

TRS-80: Tandy computer. Models I, II or III available at upwards of £300.

User Defined Graphics: Graphics created by the programmer with the graphics commands of the microcomputer.



WHAT PEOPLE ARE SAYING ABOUT OUR . . . **BBC MICRO GAMES**

"... I bought all your tapes to date for the BBC Micro and I think they are just super, especially STAR TREK, and the sound effects in CANDY FLOSS really made me sit up! Well done and keep them coming!"
J. S., Paisley

"... I was very impressed, not only with the cassette, but also at the speed at which it came!"
— R.L., Cheshire

"... I must congratulate you on your MUTANT INVASION cassette. I have had it for two weeks now and it is really superb. Incidentally, I have beaten your high score of 4,500 — mine is 7,580!"
— S.L., Berks

AND NOW LOOK AT OUR LATEST CASSETTES!

CASSETTE EIGHT

Model A Invaders



"Actual screen photo"

Cassette Eight contains Model A Invaders. A superb full feature machine code teletext colour graphics version of the popular 'Space Invaders' arcade game for the Model A BBC Micro. Choice of Invader and Missile speeds. **FAST, SMOOTH AND GREAT FUN!**

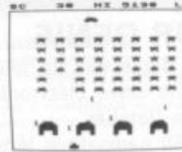
Only £4.95 inc.

Cassette Nine contains Model B Invaders. A superb full feature adaptation of the arcade 'Space Invaders' game in machine code and high resolution colour graphics for the BBC micro model B (or A + 32K). Play normal game or choose from the many options including Missile, Bomb and Invader speeds, Invisible/Visible Invaders and Shields/no Shields. Quite simply the best!

Only £6.95 inc.

CASSETTE NINE

Model B Invaders



Actual screen photo

CASSETTE TEN: WORDPRO. Cassette based word processor for either Epson or Seikosha printers. Features right hand justification, alter, insert, delete, save pages to tape, printer mode changes from within text line etc. etc. Complete with manual.
Only £9.95 inc. (Model B or A + 32K)

NOT FORGETTING THE REST OF OUR FANTASTIC RANGE

FOR MODELS A AND B

- Cassette One: STAR TREK (8x8 Galaxy, Klingons, Phasers etc) and CANDY FLOSS, the tremendous new game everyone is talking about! **Only £5.95 inc.**
- Cassette Two: HANGMAN, KRYPTOGRAM, DICE, BEETLE, GRAND NATIONAL and MUSIC. **Only £3.95 inc.**
- Cassette Three: MUTANT INVADERS (arcade game). Can you destroy the Mutants before they destroy you with their radioactivity. **Only £5.95 inc.**
- Cassette Four: BREAKOUT (arcade game). Superb version, 6 skill levels, 1 or 2 players. **Only £3.95 inc.**

FOR MODEL B ONLY (OR A + 32K)

- Cassette Five: BEEBMUNCH (arcade game). Our version of the 'Pacman' game. Tremendous version containing multi-ghosts, tempting fruits, superpoints, screams etc. **Only £5.95 inc.**
- Cassette Six: SUPER HANGMAN. The special feature is the high-resolution animated man. Marvel at the detail of his clothing and witness his impatience! Contains many categories. **Only £3.95 incl.**
- Cassette Seven: 3D MAZE. Battle against the clock to escape from the maze, with the computer showing your view in 3-D each step you take! **Only £3.95 inc.**

ALL CASSETTES AVAILABLE NOW FROM:

(All our software is available before we advertise)

I. J. K. Software

55 Fitzroy Road, Bispham, Blackpool, Lancs

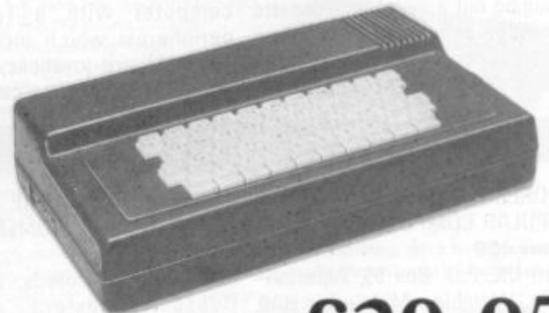
FULLER FD SYSTEM

PROFESSIONAL KEYBOARD & CASE FOR SINCLAIR ZX81

First Anniversary Offer

The FD System is now one year old and Fuller are celebrating with this amazing offer on the FD42 Professional Keyboard and Case.

Makes an ideal Christmas present to expand the new low priced Sinclair ZX81. Or why not buy a new ZX81 based system directly from us, consisting of ZX81, FD42 keyboard and case with power supply and reset switch, leads and manual **£69.95 + £2.50 p & p**
FD42 Keyboard and Case Kit £24.95 + £2.50 p & p
FD42 Keyboard kit £14.95 80p p&p



~~£39.95~~ **£29.95**
+ £2.50 p&p

STAR TREK FOR ZX 16K SPECTRUM

Play this popular adventure game on your Spectrum with ship display and sound

£5.00 + 50p p&p

GUARANTEED 14 DAYS DELIVERY FROM RECEIPT OF ORDER, OR CALL TO THE ZX CENTRE.

Mail to FULLER MICRO SYSTEMS,

The ZX Centre, Sweeting Street, Liverpool 2, England, U.K.

Please Supply:-

Name
Address

SAE for more details — Enquiries: Tel. 051-236 6109

SANTA'S CHOICE

MORE THAN A TOY

The computer isn't a toy. But it can be a games-playing machine with a whole host of possibilities.

It can take the part of an opponent in the traditional games when there isn't a human one available.

Most computers now offer quite sophisticated chess programs which can play up to club standard. Reversi (or Othello), backgammon and draughts are games where the computer can usually beat all but the best human players.

Many games actually improve when played on a computer. Wargaming is an example where the location of a secret squadron can be left lurking in the computers memory until they spring out to surprise their enemy.

Computers can also prove an aid to established games. The role playing fantasy genre of games like Dungeons and Dragons, can now be catered for by computer programs which help plan and design the worlds, treasures and monsters needed for role-playing. A computer version of this type of game is, Adventure, which has proved so popular that there are now countless versions available on all types of machine.

But still the most popular games are the arcade variety, needing quick hand-to-eye co-ordination. These are very different from the early space invaders (although they owe a lot to their success).

Arcade games now use 3D graphics, offer different scenarios which require different tactics to master and some fascinating games concepts.

The latest generation of computers are quite capable of reproducing these, mirroring the speed which is essential to the play, the graphical detail so necessary to fleshing out the story-line and the sound effects which can drive the player to distraction.

These can be among the most demanding to program but certainly not beyond the determined home user.

IN THE HIGH ST.

This year has seen microcomputers develop a "High Street presence" in stores like W. H. Smiths, Currys, Rumbelows and Dixons.

It has taken the microcomputer industry a long time to admit that its current success is down to the common or garden space invader.

This time last year many of the micro manufacturers were openly disdainful of computer gaming and keen to give the impression that their machines were business tools.

Now the pendulum has swung the other way and the talk is of computers as toys and a £50 price tag is helping to promote that image.

The truth lies somewhere in-between. While many computers are used only for games, they are still much more than toys. Loading up a game of space invaders and blasting away to a high record with some frantic keyboard pummelling is the first

step in the direction of a computer education.

The Basic language is a simple one to understand and most children over 10 can quickly grasp the way to print their name 40 times on the household's TV.

Basic is a simple and satisfying language to learn and it should not be long before the user starts using it to produce simple and ultimately, complicated games. While the games themselves may not be the most useful contribution to society, the programming skills needed to produce them can be very demanding.

Computers will play an increasingly important role in our society and learning to use them is going to be just as important. Games playing is as good a way as any of doing this.



Zaxxon: 3D graphics in the arcade

This has made them more visible and accessible but done little to help the uninitiated to appreciate just what they are getting for their money.

Firstly make a checklist of all the hopes and aims you have for your microcomputer and the sort of games you would like to play on it.

Then go along to the computer dealer or high street chain and collar a salesman.

Make sure the salesman you have collared knows his way around the computer, he is going to be your first port-of-call if you need to go back for help later on. Don't let him confuse you with jargon, every computer term can be broken down into plain English.

Memory sizes are measured in kilobytes, usually abbreviated to "K". Rather than getting bogged down

in what kilobyte stands for, remember that a 16K machine will be able to produce most simple arcade games. More complicated adventure games and arcade games will need 24 or 32K and a decent database of file will need over 48K of memory.

Get the salesman to demonstrate the graphics facilities. Most of these computers now come with a display tape but a good salesman should be able to show how to produce high resolution using DRAW and PLOT commands. Ask if user-definable graphics are possible on the machine — these enable you to draw your own space invaders.

What colours and sounds are possible. Look out for flicker at the edge of the screen and make sure the text on the screen is

able to be read.

Ask to see a copy of the manual and look through a section to see if it includes examples of code and exercises for the user to try out and learn from. Is it expressed in plain English? Does it have a good index at the back and a good description of the chapters for easy reference at the front?

What software back-up is there for the machine and does it include the type of games programs you are interested in? Find out if the computer manufacturer supports his own machine with software or if it all comes from independent software houses.

Things like joysticks, light pens, printers and toolkits are known as peripherals. These are the add-on extras which can boost a computer's potential. Again check on the range and where these items can be obtained from.

The bugbear of many a computer owner is loading software. Ask the salesman to demonstrate a simple loading procedure to you and watch out for difficulties and excuses. Check if the machine needs a special cassette recorder and if so what additional expense this will cause.

THE KEY AREAS

Graphics, sound and memory are three key areas to look at when choosing a good games computer.

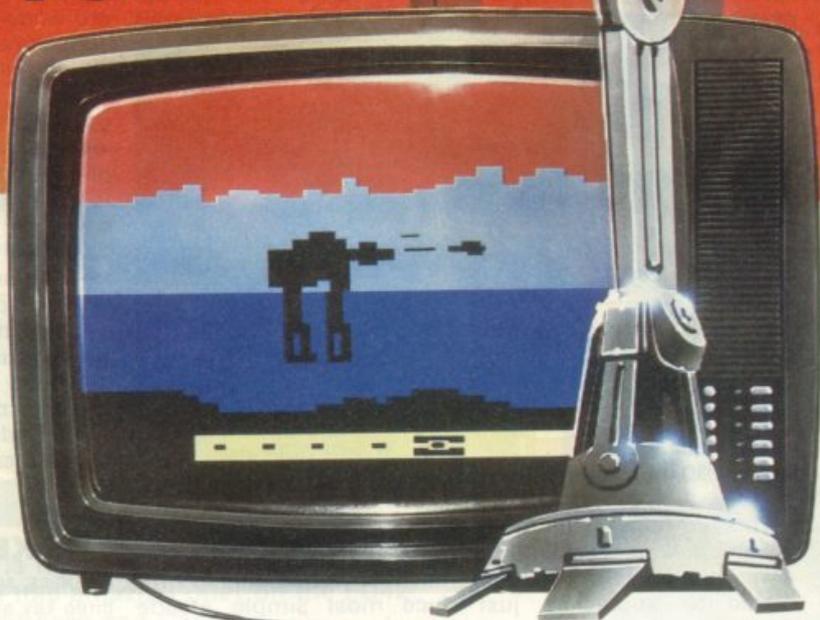
The memory will be needed to produce the text-based adventure games and the vast lines of DATA which they usually feature.

The graphics facilities should include high-resolution and user-definable graphics to help reproduce the arcade game quality of game design.

Ideally the sound chip should include a white noise voice to give the laser blast and explosion noises which are such a feature of arcade games.

Eight colours will usually suffice for most screen displays and if the computer does not offer a good keyboard, check to see if there is a joystick available or you could end up frustrated at being blown up while pressing the wrong key.

NOW YOU'VE GOT THE CHANCE TO STRIKE BACK.



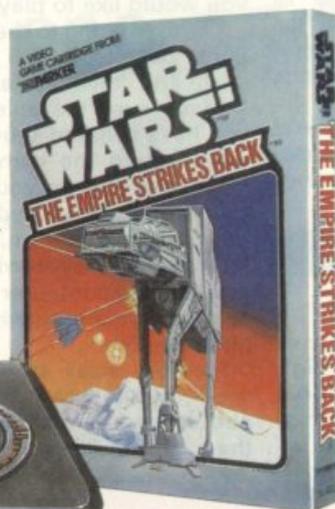
You've seen it on the big screen. Now it's all happening on your screen, because now *The Empire Strikes Back*™ where it really hurts. At home.

So climb into your Snowspeeder, aim for the "bomb hatch," try to gain The Force. It's the only way the At Ats are at your mercy.

The Imperial Walkers stop at nothing. They shoot "smart bombs" that follow you, and no matter how much you try to weaken and destroy them with your barrage of missiles they seem to keep on moving,

faster and faster heading for the Rebels' power generator. Unless you can prevent them they'll blow up the entire base!

It's up to you to strike back while there's still time.



**VIDEO GAMES
THEY HATE TO
LET YOU WIN.**
For use with the Atari
video computer system.

*STAR WARS AND THE EMPIRE STRIKES BACK ARE TRADEMARKS OWNED BY LUCAS FILM LTD. (LFL) AND USED BY PARKER UNDER AUTHORISATION.



Take the wraps off the best Christmas you've ever had

The Computer Supermarket brings you entertaining, educational, practical presents for all the family – tots, teenagers, mums and dads – and at prices that'll make you celebrate.

With the bonus that telephone orders will be despatched to you within 48 hours of your order. Guaranteed. (If it's not in stock, we'll ring and tell you.)

We'll even send it Datapost (for £8.50 extra) if you need goods the very next day. You can order any of the items shown (which are only a selection of what's available from us) by telephone, telex or simply by filling in the coupon below.



CBM 64

The very latest in personal computer technology. A built-in memory of 64K; a musical synthesizer; three dimensional graphics that can interpolate; 16 colour high-resolution; a 66-key keyboard. The CBM 64 can be used for all business needs as well as word-processing, education and entertainment and has a full range of peripherals available.

£343.85

SPEAK & SPELL

The original talking learning aid with electronic voice and brain. Four levels of spelling achievement, common problem words programmed into computer-like memory. Automatic scoring announced and displayed after each set of ten words. Additional features include: "Mystery Word", "Secret Code", "Letter" and "Say It" activities.

£34.95



TOUCH & TELL

Texas Instruments' 'Touch and Tell' uses advanced electronics and an actual synthesized voice – not a recording – to help the pre-school child learn how to recognise shapes, colours, animals and more. It's a genuine learning aid that helps children between 2-5 years grasp the basics needed for early school years.

£29.95

THE LITTLE PROFESSOR

Suitable for children 5 years and over. The Little Professor explores basic mathematics, combining space-age excitement with the time-proven flash card learning technique.

£9.95



Telephone now for free catalogue of The Computer Supermarket's comprehensive range of computers and video games, learning aids and calculators by leading manufacturers. (Approved Distributor for Commodore, Sharp, Atari, Texas, Dragon). Products offered subject to availability.

Qty	Item	Please send me	Value
<input type="checkbox"/>	CBM 64 Computer at £343.85		
<input type="checkbox"/>	Speak & Spell at £34.95		
<input type="checkbox"/>	Speak & Maths at £34.95		
<input type="checkbox"/>	Speak & Write at £23.95		
<input type="checkbox"/>	Touch & Tell at £29.95		
<input type="checkbox"/>	The Little Professor at £9.95		

I enclose my cheque for £ _____
Or debit my Access/Barclaycard/
Diners/American Express number.

(Cardholders may telephone orders to 0536 744015)
(Prestel subscribers may order some items through Prestel,
directory no. 400400)
Credit facilities available, write/ring for details.

Signature _____ (I am over 18)
Name _____
Address _____

SEVEN DAYS MONEY BACK GUARANTEE

If you're not happy with your purchase, return it in good condition in the carton it arrived in – we will refund your purchase price and postage. Your remittance should be made payable to Computer Supermarket Reader's Account and shall remain your money until the goods have been despatched to you at the address specified. All goods offered are subject to Computer Supermarket conditions of sale, available on request. Reg. in England No. 264589.

THE Computer SUPERMARKET

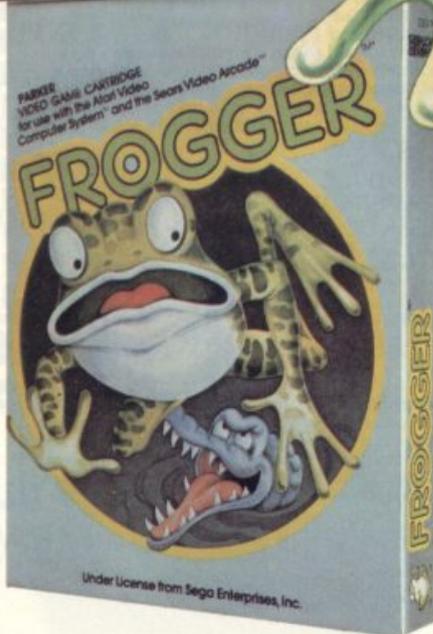
All orders acknowledged by return of post.
THE COMPUTER SUPERMARKET LIMITED
Unit 8, Southold Road, Oakley Hay Industrial Estate, Corby,
Northamptonshire. Telephone: 0536 744015.
Telex: COMPSU 341543/4. Prestel Directory No. 400400
Also at Knightsbridge Mall, Arndale Centre, Manchester (retail only)

THE NEW VIDEO GAME THAT'S ABSOLUTELY RIBBETING.



You've waited in line to play it in the arcades, now bring Frogger™ home and play it in your own pad.

Getting Frogger home is the whole point of the game. It isn't easy! There's a frantic 5-lane highway with fast moving cars and trucks all heading in opposite directions. When the music stops, the traffic starts! Every leap could be his last.



Then a swirling river full of jaw-snapping alligators, diving turtles, frog-eating snakes. And Frogger can't swim! Can you keep Frogger from getting "splooched"? Please hurry up and get Frogger home safely. It's up to you.



VIDEO GAMES THEY HATE TO LET YOU WIN.

For use with the Atari video computer system.

™ FROGGER IS A TRADEMARK OF SEGA ENTERPRISES INC.

WE PROUDLY PRESENT, FOR THE
BBC MICROCOMPUTER
 (MODELS A & B)

THE INTERNATIONALLY SUCCESSFUL

**MYSTERIOUS
 ADVENTURES**

These superbly written, 16k Machine Code Adventures have been enjoyed by TRS80/VIDEO GENIE owners in Britain for well over a year now and are currently taking the U.S. by storm. The Author has now implemented these absorbing programs on the BBC Microcomputer.

ALL ADVENTURES IN THIS SERIES INCLUDE:-

Split screen display, Ultra fast Machine code response, Save game to Cassette feature, simple two word command entry, approx. 70 Locations to visit, 30 Objects to manipulate, 20 or more "problems" to overcome.

ADVENTURES PRESENTLY AVAILABLE:-

- 1). **THE GOLDEN BATON** — Venture into a strange province of danger and evil magic to retrieve the stolen Baton of King Ferrenuil.
- 2). **THE TIME MACHINE** — As a newspaper reporter you have been sent to the old house on the moors to investigate the eccentric Dr. Potter
- 3). **ARROW OF DEATH (Part I)** — In the first part of this epic Adventure you must find and destroy the source of the evil blight which has befallen your homelands.

These are the first three of a series which should ultimately total more than 20 Adventures.

WARNING! — Only supreme courage and low cunning can ensure eventual success on these dangerous missions!

Available soon for ZX Spectrum, ZX81 (16K), Apple II, Atari 400/800. Write for details.

EACH ADVENTURE COMES ATTRACTIVELY PACKAGED FOR JUST £8.95 inc. SEND CHEQUE OR P.O. TO:

DIGITAL FANTASIA DEPT. DWL

24, NORBRECK ROAD, NORBRECK, BLACKPOOL, LANCs.

Now! For the **SPECTRUM 48K!**



**FOOTBALL
 MANAGER**

*Addictive
 Games*

for
 ZX81
 SPECTRUM
 TRS80
 VIDEO GENIE

★ AS MANY SEASONS AS YOU LIKE ★ 4 DIVISIONS ★

★ PROMOTION & RELEGATION ★

★ FULL LEAGUE TABLES ★

★ TRANSFER MARKET ★

★ INJURIES ★

★ 7 LEVELS OF PLAY ★

★ SAVE GAME FACILITY ★

★ MANAGERIAL RATING ★

★ PICK YOUR TEAM FOR EACH MATCH ★ F.A. CUP ★



This is NOT a mere simulation. This is an exciting and highly enjoyable game in which you play the part of a Football Manager coping with the problems and decisions involved in running your club. There are so many features it is impossible to list them here but included are form (top teams NORMALLY win), giant-killings, wage bills to pay, and you can even be sacked! It is a game requiring a great deal of skill, and people play it for literally hours on end (we have PROOF!).

WE GUARANTEE that this is one of the best computer games you've ever played!
BUT BEWARE, this game is extremely addictive!

HARDWARE REQUIRED

Spectrum 48K RAM	TRS80/ Video Genie LEVEL II 16K RAM
ZX 81 16K RAM	

To Order send Cheque/P.O. £7.95
 made payable to: ADDICTIVE GAMES
 at: Dept. C.V.G. P.O. BOX 278
 CONNIBURROW
 MILTON KEYNES MK14 7NE
 PLEASE STATE COMPUTER

IMPACT SOFTWARE

From Scotland's Capital comes quality software for the

ZX Spectrum and VIC 20

The Quest (48K—Spectrum only)

(One of the most exciting adventure games currently available). Fight your way into the depths of the complex in your Quest for the Holy Grail. Discover Gold and Precious stones, buy weapons and Magic wares from a trader. Battle with one of the many Monsters. Up to 1500 locations may be searched in the course of a game. Full sound effects and save game facility. — Only £5.00

Starfighter (16K—Spectrum only)

All action, full-colour, graphic machine-code, Space-battle with devastating explosions. On screen scoring and high score kept. The longer you survive the more difficult it becomes. — Only £5.00

Orb (48K—Spectrum ; 16K—VIC 20)

Make your way through the underground labyrinth in your search for the dreaded Orb, which you must destroy. Encounter many Monsters, discover Treasure and try to remember your route so that you can get out again. Full sound effects and save game facility. — Only £5.00

Star Trek (16K—Spectrum; 8 K—VIC 20)

Save the Galaxy from the Klingons using your rapid-fire phasers and photon torpedos. Automatic short-range scan, Galaxy map and Star-bases. Full sound effects and 10 levels of difficulty! — Only £5.00

Games Pack (Unexpanded VIC 20)

- Alien * Road Race *
- The Island * Pontoon *
- Only £5.00

Dealers

Attractive Discounts & Exclusive Agencies available in most areas.



Please Supply:

The Quest (£5.00) Orb (£5.00)

Starfighter (£5.00) Star Trek (£5.00)

Games Pack (£5.00)

Please state machine type: _____

I enclose a Cheque/P.O. for £. _____

Name _____

Address _____

Post Code _____

All prices include P&P and VAT

IMPACT SOFTWARE
 70, Redford Avenue,
 EDINBURGH EH13 0BW
 TEL. 031-441-4257

VICTIMS OF THE FISHY PIRATE

SHARK ATTACK

The sharks are after you, jaws agape and hungry for flesh. Your only escape is to trap them in your yellow net which you trail behind you as you swim away from them.

The game is made more difficult by the fact that the sharks keep chomping away at the net, biting out holes large enough for them to escape.

If you manage to hem in all the sharks little green octopi will begin to appear — from whom you must also escape, or be dragged to the bottom of the ocean by their icy tentacles.

The key to success in Shark Attack is to manoeuvrability. You have to choose just the right second to dash in with your net and trap a fish.

But be careful when you get close to one as they are programmed to turn towards you.

My main gripes were with the graphics and the packaging. Pirates are mentioned on the packet: "You are . . . thrown overboard from a Pirate ship".

I was expecting pirates to appear on my TV screen with a look in their eye as if to say: "Watch out you pesky VIC owner we're going to throw you to the sharks". But alas, no pirates.

The sharks were pretty disappointing too. If they resembled any sort of swimming creature at all I would say a tadpole was the nearest.

The octopi were a little more realistic than the sharks but appeared to stay still. It would have been better if they had

pursued your little man with the sharks.

This reviewer failed to get the little green beasts to do anything.

Despite my reservations I did find Shark Attack a most playable game. It's not easy to trap the sharks, and you really can't stop until you've succeeded.

In fact the game had several members of the Computer and Video Games staff hooked from the moment we plugged in our VIC!

Shark Attack runs on an unexpanded VIC and is available from Slough based Romik Software at £9.99.

- Getting started 7
- Value 5
- Playability 8



As the game progresses the lawn-mowers transform into golf carts and then — would you believe — Bulldozers! The barges perform a strange metamorphosis into floating logs and there are crocodiles as an added hazard in the river.

Just to make things even more difficult the game speeds up as you reach the different stages.

A further hazard is a frog which appears on later screens and leaps along the previously safe riverbank squashing everything that gets in its way. So by the time you reach the sixth screen you are really being tested. And it doesn't end there!

The game uses multi-colour high-res graphics, and it is unlikely that you will find such quality in any other game out at present.

Another excellent feature is the music. As Preppie runs around collecting golf balls the computer plays three catchy tunes.

At £20, this cassette produced by Adventure International, is a must for all 16K Atari owners.

- Getting started 9
- Value 9
- Playability 9

ALL'S FAIR ON THE FAIRWAY

PREPPIE

Just when you thought it was safe to go back on the golf course — here comes Preppie!

This is a Frogger type game in which Preppie — the American slang word for junior school pupils — has to collect golf balls from an extremely dangerous golf course.

And it's not just an easy afternoon stroll for little Preppie — danger lurks around every runaway ball!

The first problem he encounters is actually getting across the fairway. There are nasty lawn mowers which he must dodge as they criss-cross the course. If he manages to avoid the mean mowers there's a river to cross. He has to jump from barge to barge as they float serenely down river.

TERMINAL SOFTWARE

UNEXPANDED VIC 20 GAMES CASSETTES

TVIC1 Line Up 4-Panic Driver	£7.95
TVIC2 Maze Muncher Reversi	£7.95
TVIC3 Skramble!	£9.95
TVIC4 Terminal Invaders	£7.95

Prices include P & P Allow 14 days delivery.

Order from: **TERMINAL SOFTWARE**,
28 Church Lane, Prestwich, Manchester M25 5AJ.

16K ZX81/SPECTRUM

DO YOU LIKE MONOPOLY?

OUR GAMES WILL APPEAL TO YOU

AIRLINE. You must decide on number of aircraft to operate, loan and fuel contracts, whether to buy or charter, and levels of staffing and maintenance.

AUTOCHEF. As MD you must negotiate for leases, decide on menu prices, level of wages, advertising and dividends and forecast levels of inflation. If you are not successful you will be made to resign!

FOR THE EXPERT

PRINT SHOP. As owner of a printing company you have to decide on staffing, paper stocks, quotations, work schedule.

£5.00 for one, £8.50 for any two or £12.00 for three.

C.C.S. Please state computer type and send cheque to Dept. V.
14 Langton Way
London SE3 7TL

TRS80 — VIDEO GENIE

SOFTWARE TREASURE TROVE

25 Super programmes: m/c Arcade games like Break-out, simulations like 'Star Wars', mind-torturing games like Amazing 3-D Mazes, Business and Household Utilities etc. All 25 on one cassette, sent return post for £8.50 inclusive. Or send a SAE for full details.

J. T. WILSON, 9 COTSWOLD TERRACE, CHIPPING NORTON, OXON. TEL: 0608-3059.

VIC-20 SOFTWARE

PACK 1 — 3D MAZE — Find your way out of the maze.
EB
incl. GUN FIGHT — Shoot the other cowboy
LANDER — Try and land your spaceship
ROCKS — Like Asteroids

PACK 2 — CRAZY LADDERS — Make your way up the ladders
EB
incl. ROBOT ATTACK — Shoot the robots
FIGHTER — Like Scramble
MISSILE — Guide your missile to hit the UFO's.

For a 3.5K machine. The games include full colour and sound with super graphics.

KILLER BYTE
7 Clintons Green, Bracknell, Berks RG12 1YL
(Cheques payable to: A. & K. Stanford)

VIDEO GAME T-SHIRTS

Superb 5 colour screen-printed video game motif on quality poly/cotton T-shirt. Imported from U.S.A. where they are this year's fashion craze. Available for first time in U.K. Sizes: Kids: 10-12, 14-16. Adult: S, M, L, XL. Motifs/T-shirt colour — Pacman/White, Pacman/Tan, Asteroids/Black, Missile Command/Blue (Not 10-12), Space Invaders/Black (Not 10-12), Donkey Kong/White, Tempest/Black (Not kids or S), Frogger/White. Only £4.50 (Inc P&P), £4.00 (Inc) kids sizes. State alternative motif if poss. Cheque/P.O. to: Neil How, 3 Victoria Road, Leamington Spa, Warwicks.

VIKING SOFTWARE

New games for the BBC Micro Model B

ROBOT	
Real-time action	£4.95
SPACEFIGHT	
Strategy game	£7.95
BREAK-UP	
Real-time action	£3.95
SKWOSH	
Real-time action	
(Joystick only)	£3.95

P&P 50p

28 New Road, Northbourne,
Bournemouth, BH10 7DS

ATOM BBC

DESIGNER

Can your ATOM manipulate high resolution character graphics?

Can your BBC handle FULL COLOUR character graphics?

Let DESIGNER do the work:

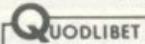
It will produce, test and edit your graphic.

Then finally write your graphics routine for you!
Cassette £8

Or: Send £1 for introductory game cassette and Catalogue.

QUODLIBET, (State which machine!)

2, Victoria Tce.,
Dorchester,
Dorset. DT1 1LS



SPECIAL OFFERS ON SHARP COMPUTERS
LOWER COMPUTING COSTS
PERSONAL * BUSINESS * TECHNICAL
HELPFUL SUPPLY, SERVICE & ADVICE
FROM

SERATAN LIMITED
BARTON AIRPORT, MANCHESTER
M30 7SA
061-707 3815

**CALLING ALL APPLE,
ATARI & TRS-80
OWNERS**

Introducing 'SOFTSIDE', simply the best software magazine from America. Game and simulation listings, tutorials, reviews and much, much more.

Send £21.00 for a six month subscription (inc. Postage) or £19.00 for six back issues (inc. Postage) or £3.50 + 50p postage for a sample issue.

This magazine **MUST** not be missed! Cheques and P.O. to 'The 48 Club', 29 Riddlesdown Road, Purley, Surrey.

martech games

EXCITING AND ABSORBING COMPUTER BOARD GAMES FOR TWO PLAYERS (16K ZX81).

"CONFLICT": the battle will be intense as you each search for the advantage in this tactical war game involving armies, warships, missiles, stock market, etc.

"I enjoyed this strategy game as it made me think, rather than letting the computer do all the work, as so many other new computer games do."

(Computer & Video Games, Sept '82)

"GALAXY CONFLICT": stand on the bridge of any of the battle cruisers in your fleet and take full command — and responsibility — in your battle for the galaxy. Born galactic rulers will do well.

Games include cassette tape (16K), full size board, pieces, instruction rules. Each game £9.50 (inc P&P) Cheques or P.O. to: MARTech GAMES, 9 Dillingburgh Road, Eastbourne, East Sussex. BN20 8LY.

**ZX 81 (16k)
EDUCATIONAL SOFTWARE**

"O" LEVEL FRENCH REVISION — 3 teach and test grammar programs plus 3 vocabulary programs.

"O" LEVEL MATHS REVISION — 1 teach and test program plus 2 programs of timed tests using generated questions from "O" level syllabus.

JUNIOR MATHS 1 — Long Multiplication, Long Division, Highest Common Factor, Lowest Common Multiple, Fractions 1 (+ & -), Fractions 2 (x & ÷).

JUNIOR MATHS 2 — Areas, Perimeters, Simple Equations, Percentages, Sets, Venn Diagrams.

JUNIOR ENGLISH 1 — Meanings 1, Meanings 2, Parts of Speech, Proverbs, Similes, Anagrams.

JUNIOR ENGLISH 2 — Idioms, Opposites 1, Opposites 2, Group Terms, Odd Word Out, Spellings.

ARITHMETIC FOR THE UNDER 8's — Add, Subtract, Multiply, Divide. Allows for the entry of units first.

EDUCATIONAL QUIZ — 4 programs on General Knowledge, Reasoning, English and Maths. All questions use RND function.

£4.50 per cassette or send SAE for catalogue to: ROSE CASSETTES, 148 Widney Lane, Solihull, West Midlands B91 3LH.

**E SOFTWARE SOFTWARE SOFTWARE
REVIEWS**

LET'S HUNT THE INVADERS

INVADERS FOR THE SPECTRUM

As the race continues among software houses to produce games for the Sinclair Spectrum we decided to test the three Space Invader games that have so far been produced for this fledgling machine.

Spectral Invaders was the first game on the market for the Spectrum and marked another first for the Liverpool firm Bug Byte.

The game is a fairly authentic version of the arcade classic. It loaded without difficulty and started according to the instructions.

The main drawbacks were that the gun

can hardly fail to hit something once you get a missile in the air.

The mystery flying saucers didn't look too much like flying saucers and moved so slowly they could be picked off with ease.

About the only department in which the Psion game beat the other two versions was sound. The Spectrum produced clear well synchronised bleeps as the ships exploded.

Space Raiders loaded well — the Psion logo appearing seconds after the play button on tape was depressed — cutting out some of the nail-biting I experienced



Illustration: Jon Davis

turret responded slowly to the keys and did not explode until a split second after it had been hit, continuing to move right or left. The missiles were also slow movers — jerking awkwardly skywards.

The Invaders themselves did not explode immediately they had been hit either — causing you to hesitate, unsure if you had hit them or not.

On the plus side Spectral Invaders was the only game of the three we looked at that offered a two player game. It had the fastest and most authentic mystery flying saucers. It also had the best score board, flashing to indicate player one or two.

Despite its faults, Spectral Invaders was the only version that looked and felt at all similar to arcade Space Invaders.

Psion Software — the official Sinclair software writers — entered the field with Space Raiders, the slowest version we tested.

The Invaders don't move down the screen in vertical columns in this version making them particularly easy to hit. Their side-stepping motion means that the gaps between the columns are blocked so you

with other Spectrum games.

Southampton firm Quicksilva were hot on the heels of Bug Byte with their version of Invaders for the Spectrum — Space Intruders.

This was the fastest of the three games. So fast in fact that it detracted from the playability of the game. Not because it made it impossibly difficult, but because you had such a speed advantage over the advancing fleet that you could shoot them down with ease.

The missiles could be fired far too fast and furiously. You could kill a whole column of Invaders in a split second, sometimes without dodging right or left, which in turn made the fleet relatively easy to defeat.

In fairness to Quicksilva their version does have a number of features which the others do not.

Most useful of these is a hold button which enables you to answer the phone or make a cup of tea and then continue where you left off when you are ready. It also has a high score facility which enables you to

SOFTWARE SOFTWARE SOFTWARE REVIEWS

enter the top ten high scores of the session with the initials of the players.

Space Intruders displays clear instructions on the screen and also gives you the value of the various Invaders. Extra features are, however, no substitute for a good playable game, which I do not feel this version from Quicksilva gives you.

For my £5 Bug Byte offers the best game of Space Invaders on the Spectrum so far.

Bug Byte

- Getting started 7
- Value 7
- Playability 7

Quicksilva

- Getting started 6
- Value 6
- Playability 5

Psion

- Getting started 8
- Value 4
- Playability 4

SMART BOMBS, SMART GAME

Defender is not a game you can pick up in five minutes before leaving for a dinner party . . .

Three hours later you will be cursing the anxious would-be host for phoning to interrupt you while you still had a smart bomb and three humanoids left on wave three.

In the arcades, Defender players earned their expertise through a mint of 10p's. On the BBC Model B Microcomputer, you have to be prepared to sacrifice time — lots of it — to enjoy the satisfaction of smart-bombing the Pods at the start of wave three.

A lot of people are put off Defender by the vast range of control buttons. There are seven of them: Up, Down, Thrust, Fire, Smart Bomb, Reverse and Hyperspace.

At the start you doubt that you will ever master them but slowly the game starts to make sense. Up and Down come first, then remember not to Thrust too quickly and don't spare the Fire button unless the humanoids, you must defend, are climbing into dangerous positions on the mountainous scenery.

Soon you will have cleared the first wave of 15 Lander aliens and found yourself just starting to gain confidence in Reverse and thumping down on the Smart Bomb in tight situations.

For the uninitiated, Defender puts you in a craft above a bumpy landscape, charged with the task of stopping aliens kidnapping humanoid figures from the surface.

The most dangerous opponents are the



Illustration: Terry Rogers

DEFENDER

Mutant, Baiter and Swarmer craft but you are responsible for the appearance of all of these.

Mutants only appear if you let a Lander craft steal a humanoid to the top of the screen.

Baiters, only if you dally too long on one wave and Swarmers only come into the game when you blow-up a harmless Pod — so only do it when you are ready to deal with them.

In Defender you are responsible for everything that happens to you. And even the "easy" first wave is crucial to your future survival in the game so treat it with due respect.

Extra lives are awarded every 10,000 points, an extra Smart Bomb too, but a new batch of humanoids is only given to you each fourth wave. And if you lose all your humanoids, all hell is let loose.

When you have just flown your last man into a pack of Swarmers, quite forgetting that you still had another Smart Bomb left and the split second the machine takes to set up a new game seems like a frustrating eternity, you'll realise why Defender has enjoyed such a long reign as king of the arcade games. Sheer compulsion at £9.95 inclusive of Vat.

- Getting started 7
- Value 9
- Playability 10

BUFFER MICRO SHOP

(NEXT TO STREATHAM STATION)

RETAIL CENTRE FOR

* SINCLAIR COMPUTERS *

SOFTWARE, GAMES,
RAM-PACKS, KEYBOARDS

Items from most leading mail order suppliers — games, serious, business and technical progs — available over the counter, see appreciated for catalogue.

★ ★ ★

374A STREATHAM HIGH ROAD,
LONDON SW16

TEL. 01-769 2887

STAINLESS SOFTWARE

Software for the TI 99/4A. Large illustrated catalogue. Imported & UK programs. 50p (Refundable on order) to: 10 Alstone Road, Stockport, Cheshire, SK4 5AH.

— MAIL ORDER ONLY —

TEXAS TI99/4A SOFTWARE

Quality software on tape.	
3-D O's & X's/Mastermind	£4.95
Sorcerer's Castle	£5.95
Lunar Lander	£4.95
Maze/Towers of Hanoi	£5.95
Haunted House	£5.95
Roulette Craps	£4.95

All prices include p&p.
Send s.a.e. for complete list.

APEX TRADING LTD (Dept. CVG).

115, Crescent Drive South, Brighton BN2 6SB
Tel. 0273 36894 Access/Barclaycard welcome

BROKEN YOUR TV/COMPUTER JOYSTICK?



Inside your joystick handle is a white plastic insert. (The main cause of failure.) Stronger insert replacements now available. Supplied with full fitting instructions allowing you to be back in action in seconds.

Send £2.50/pair inc. p&p to:
B. HILL, 146 Church Road, Boston, Lincs. PE21 0JX.

UK101 8K

BACKGAMMON

LUNAR LANDER

BREAKOUT

GOLF

£5 each — set of four £13.50 incl. VAT and P&P

Write or phone for program descriptions, alternatively send 95p (redeemable against order) for full catalogue & free listing (not from the above). Access orders taken by phone 24 hrs a day.

Dealer enquiries welcome
Lower North St., Cheddar, Somerset.
Tel. Cheddar 515265

24hrs

VISION STORE

South London's
Largest Micro
Computer Store

COMMODORE



Vic-20

5K
£169
inc Basic

21K
£199
inc Basic

Vic Cassette **£44.00**
Vic Printer **£229.00**
Vic Disk Drive **£395.00**

ATARI



400

16K
£199
Less Basic

32K
£259
Less Basic

Basic Cartridge **£34.90**
Atari 800 16K inc Basic **£499.00**
Atari 800 48K **£569.00**



Commodore 64
64K Colour Computer
in Stock Now
£345

Sinclair ZX81
Now Available
£49.95
With **Free Programme**

Now Available*
EMI Submarine Commander
EMI Jumbo-Jet Lander
Incredible Games for Atari
*From November 8

Over 900 software programmes
always in stock. We carry
probably the widest range with
continuous demonstrations.

VISION STORE

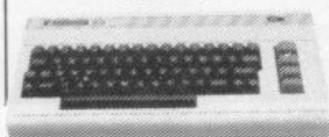
Vision Store, 3 Eden Walk Precinct
Kingston-on-Thames, Surrey. Tel: 01-546 8974



We offer excellent part exchange
deals or cash for your old
machine.

THE BIG NAME IN SMALL COMPUTERS

VIC 20



- Colour TV output
- Sound
- Full size typewriter keyboard
- 5K memory expandable to 32 K
- Programmable Function Keys
- Graphics character set

£147.78 + VAT

SHARP MZ80A



- 48K Ram
- Built-in video screen
- Integral cassette

£477 + VAT

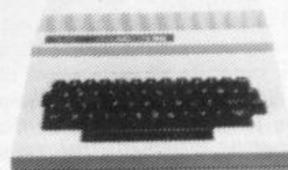
NEW BRAIN (Model AD)



- Dual communication channel
- 32K Ram
- 29K Rom
- Built-in display
- Dual cassette port
- TV and video output

£229 + VAT

DRAGON 32

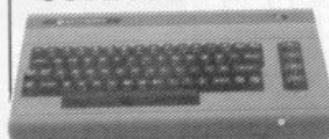


- Real Keyboard
- Real time clock
- Hi and Lo Res graphics
- Sound
- Colour
- 32K Ram
- Printer Port

£173.47 + VAT

LARGE RANGE OF
PERIPHERALS, PROGRAMS
BOOKS ETC ALWAYS IN STOCK

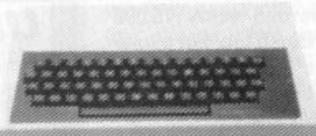
COMMODORE 64



- 64K built in Ram
- 40 column screen
- Colour TV output
- 3D graphics on eight levels
- Music synthesiser with three voices and nine octave range
- VIC compatible

£299 + VAT

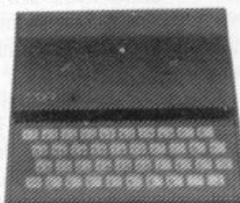
ACORN ATOM



- 8K Rom + 4K Ram
- Sound
- 20 Introductory Programs
- Built-in Colour

£173.05 + VAT

SINCLAIR ZX81



- Unique 'one touch' key word entry
- 1K Ram
- Graph drawing
- Multi-dimensional string & numerical arrays
- Full mathematical and scientific functions

£43.43 + VAT

Printer **£52.13 + VAT**

16K Ram pack **£26.04 + VAT**

THE COMPUTER SHACK

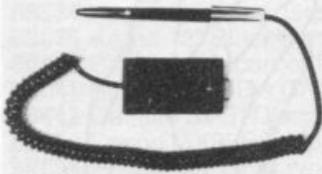
Computer Shack Ltd. 14, Pittville Street, Cheltenham, Glos. Telephone: (0242) 584343

Credit available through major credit company.
Access or Barclay Card Accepted, Mailorder Enquiries Welcomed.

Prices exclude VAT

STACK FOR VIC-20 ACCESSORIES

VIC-20 LIGHT PEN + NEW LIGHT PEN GAMES



Hold the LIGHT PEN + like a normal pen, point it at your TV screen and the pen tells your VIC-20 what it sees! Instead of pressing keys, touch the screen with your LIGHT PEN + and move your man in CHESS, create LIFE, play OTHELLO, play GO. Point the pen at your man and move him to his new position. Many games are already available for the LIGHT PEN + and many more are being developed. You can write programs which allow you to read with your LIGHT PEN + from the TV screen or place images or words on the screen. e.g. From a long list on your screen use the LIGHT PEN + to choose the facts and figures you want. The well-known game CONCENTRATION is supplied on cassette tape FREE with every LIGHT PEN +.

Light Pen Go (colour and sound)
The program allows two players to play this traditional and fascinating Oriental game placing and removing pieces using the LIGHT PEN +.

Light Pen Othello (colour and sound)
A two-player game placing and reversing pieces in this high strategy game using the LIGHT PEN +.

Light Pen Draughts (colour and sound)
The program allows two players to play against each other using the pen to move and take, including kings and blocking of illegal moves. Requires a 3K RAM pack.

Light Pen Concentration (colour and sound)
A two-player game in which a pack of cards are shown face down on the screen and turned over by the LIGHT PEN + in a search for pairs. Highest score wins.

Light Pen Life (colour and sound)
In this cult game pieces are placed in the universe and grow or die like bacteria colonies in life giving fascinating gliding or pulsing displays.

Cassette based games for use with STACKS' Commodore Approved LIGHT PEN +

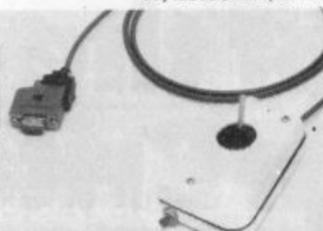
only £5.00 each plus VAT

only £25.00 plus VAT
FREE GAME SUPPLIED!!

ANALOGUE JOYSTICK

Programming the VIC-20? Why not write your very own games! The ANALOGUE JOYSTICK will add another dimension to the games you write. It gives you full joystick control in ANY direction — and it fires too! Move your spaceship in a figure of eight or loop the loop — you are not restricted to up, down, right, left any longer!

only £13.00 plus VAT



ACCESS, BARCLAYCARD or AMEX welcome or send cheque including £1.72 p&p to:
STACK COMPUTER SERVICES LIMITED

290-298 DERBY ROAD, LIVERPOOL L20 8LN. TELEPHONE: 051-933 5511. TELEX: 627026.

TWO IMPORTANT ANNOUNCEMENTS

- 1) NEW DEAL FOR SOFTWARE AUTHORS.**
MR MICRO are now accepting submissions for any colour computer. Our deal can mean ten to one hundred times the earning potential that you would get elsewhere! PLUS we offer additional benefits such as equipment loans, discounts, special commissions, advice, protection and important access to U.K. and WORLDWIDE MARKETS. Send us your work today for an immediate reply. Your hard efforts deserve to be well rewarded.
- 2) MR MICRO APPOINTED SPECTRUM DEALER.**
We are proud to announce that in addition to our existing range of quality software MR MICRO now offer the full range of products detailed in the SPECTRUM COMPUTER GROUP'S advertisements (in this issue). Our new retail shop will be open NOVEMBER 1982. We look forward to seeing you there.

MR MICRO LTD., 69 PARTINGTON LANE, SWINTON, GTR. MANCHESTER M27 3AL.

P.S. Send us a large SAE and details of your computer system to receive exciting news of forthcoming software.



ELTEC SERVICES LTD



BBC MICRO COMPUTERS

BBC Model "A" (in stock now)	£299.00
BBC Model "B" (in stock now)	£399.00
BBC Model "A" plus extra 16K memory	£330.00

16K Hitachi memory (as fitted by ACORN) £31.00

FULL UPGRADE KIT (Genuine ACORN issue)	£90.00
UPGRADE KIT fitting charge	£10.00

14" Full colour MONITOR (used in BBC computer programmes)	£309.35
12" Green Screen MONITOR	£126.00
RGB Monitor lead	£5.00
Monitor leads	£5.00
Cassette Recorder (recommended)	£28.00
Cassette lead (7 pin DIN/3 jacks PLUS matching resistor for reliable saving)	£5.00
Blank Cassettes SCOTCH 3M C-10	£0.80

SOFTWARE

Sinclair (IJK) Software cassettes 1-7	from £3.95
AGENTS for BUG BYTE software	
AGENTS for PROGRAM POWER software	
FULL RANGE of ACORN SOFT BBC CASSETTES	all £9.95
ELTEC PRO-DIS Disassembler	£6.85

SEND SAE FOR OUR SOFTWARE PRICE LIST

BOOKS

NEC 30hr Basic	£5.50
Practical Programmes for the BBC Computer Johnson-Davies	£5.95
Basic Programming on the BBC Microcomputer Cryer	£5.95

WIDE RANGE OF BOOKS on the PROGRAMMING of the 6502

SEND SAE FOR OUR BOOK LIST

16K Hitachi memory (as fitted by ACORN)	£31.00
FULL UPGRADE KIT (Genuine ACORN issue)	£90.00
UPGRADE KIT fitting charge	£10.00

PRINTERS

Seikosha GP100A	£225.00
EPSON MX80 F/T III	£390.00
EPSON MX100 F/T III	£530.00
SMITH CORONA Daisy Wheel Printer	£557.00
Printer Cable	£18.40

ATOM MICROCOMPUTER

Extra Memory (2114L)	per K £2.20
Floating point ROM	£21.00
ACORN 96K DiskPack	£343.00
Disk Buffer Pack	£11.20
DISATOM SUPER ROM — The most powerful toolkit yet	£29.85
4 Socket software utility switch	£22.95

Prices are VAT INCLUSIVE

P&P £1.00 for orders under £100.00:

Orders over £100.00 add £10.00 for a Securicor Delivery

ELTEC SERVICES LTD

231 Manningham Lane, Bradford BD8 7HH Tel: (0274) 491372

OPEN Mon-Fri 9am-5pm Sat 9am-12 noon.



Meet some of the best brains in Britain

at THE

Northern Computer Fair

*Personal computers
Home computing
Small business systems*

**BELLE VUE,
MANCHESTER
NOVEMBER 25-27, 1982**

**Opening Times
10am-6pm each day**

The brains we're talking about are the printed circuit, silicon-chip variety and you'll find them (thinking hard) in the vast range of exhibits at The Northern Computer Fair. The show covers the fields of personal computing, home computing, small business systems and associated software, through computer books to video games, with a special attraction being the ZX 81 Sinclair Village. So whether you're a businessman (or woman) who needs to keep up to date with the latest developments in this fascinating field, a die-hard computer enthusiast, or simply interested in the subject, you'll find what you're looking for at the Northern Computer Fair.

Ticket prices at the door are £2.00 for adults and £1.00 for children under 16, but special party rates are available for 20 people or more with the organiser admitted free. For more information contact IPC Exhibitions, Surrey House, 1 Throwley Way, Sutton, Surrey SM1 4QQ. Tel: 01-643 8040.

BBC/DRAGON

BBC1	BBC Micro Model A	£299.00
BBC2	BBC Micro Model B	£399.00
BBC3	BBC Model A Micro with 32K	£338.30
BBC4	BBC Model A Micro 32K & VIA	£347.30
BBC21	Upgrade Model A to B	£115.00
BBC27	Disc Upgrade for BBC B	£92.00
BBC30	14" Colour Monitor for BBC	£287.50
BBC31	BMC 14" Colour Monitor	£258.75
BBC33	BMC12A 12" Black/Green Monitor	£90.85
BBC34	Karga 12" Black/Green Monitor	£113.85
BBC35	Karga 12" Black/Amber Monitor	£113.85
BBC40	Cassette Recorder for BBC	£29.90
BBC41	Single 5.25" Dis Drive etc.	£265.00
BBC42	Datalife 5.25" Discs	£2.20
BBC50	Epson MX80F/T type 3 for BBC	£373.75
BBC51	Epson MX80F/T type 3 for BBC	£396.75
BBC70	Plinth/Stowage for BBC	£29.90
DRG1	Dragon 32K Micro	£196.50
DRG50	Sekosha GP100A Printer for Dragon	£228.75
DRG60	Joysticks for Dragon	£19.95
DRGxx	Cartridges for Dragon	£19.55
ATM2	Atom assembled 12Kram	£184.00
ATM11	Atom Kit 12Kram	£149.50
ATM26	New Atom 1.8A Power Supply	£9.66

Prices inc. VAT. Postage £3.00 Micros £8.00 Monitors
All items in stock — quick despatch
All upgrades etc. are fitted free of charge and the computer fully retested. Credit cards not accepted for BBC micros.

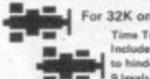
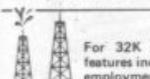
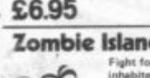
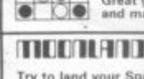
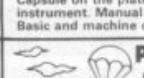
ELECTRONEQUIP

128 West Street, Portchester (opp. RUBY), Hants
PO16 9XE. Tel 0705-325354

Software for all

72 NORTH STREET, ROMFORD, ESSEX. TEL 0708 60725

Announce the launch of their range of BBC programs

 <p>Grand Prix For 32K only Time Trials around our race track. Includes computer controlled car to hinder your progress. 9 levels of difficulty. £5.95</p>	 <p>GHOST MAZE For 32K only. Our own version of this popular Arcade game. With colour & sound. 9 levels of difficulty. £6.95</p>
 <p>BEEBITES For 16K/32K, real time advanced Startrek Game. Extra facilities include "probe satellites", "damage reports" & "on-board computer". £7.95</p>	 <p>Cobra/Robo-Swamp For Model 16K/32K (please state version required). Two addictive graphic games — 9 levels of difficulty! £6.95</p>
 <p>J.R. For 32K only. Two player game, features include exploration, drilling, employment and Price Wars. £6.95</p>	 <p>DATABASE For 16K/32K Accepts up to ten definable fields. Facilities include Quick Search, Sort and Hard copy — capable of storing up to 300 complete records in memory (Model B). £9.95</p>
 <p>MURDERS For 16K/32K. Classic Arcade game. With colour and sound. £6.95</p>	 <p>Character Generator For 32K only. Useful utility program enables user to re-define character set using Mode 4. Displays new character in graph form. £4.95</p>
 <p>Zombie Island For 32K. Fight for survival on an island inhabited by hungry, dangerous cannibals, basic and machine code program £7.95</p>	 <p>Row of 4 For 32K Try to outwit your computer opponent in this game of skill. Great graphics Basic and machine code. £6.45</p>
 <p>Programmers We are looking for good quality programs covering games, utilities and education. We pay excellent royalty rates. Please write or phone us on (0708) 60725 Dealer enquiries also welcome.</p>	 <p>MOONLANDER Try to land your Space Capsule on the plateau using the instrument. Manual display, Basic and machine code. £6.45</p>
 <p>ZX Spectrum Disambig Useful Utility Program Fits in 16K. £4.00</p>	 <p>Paralander For unexpanded model, graphics and sound are incorporated into this absorbing battle between you — (the dare-devil) — and the elements. £4.50</p>
<p>Attention Dragon Owners! Software Coming Soon!</p>	<p>We're only a few minutes from your Post Box. So why not try our mail order service. Add £1 p&p per order Make cheques/P.O. payable to: SOFTWARE FOR ALL 72 North Street, Romford, Essex. Tel: Romford (0708) 60725</p>

SOFTWARE SUPERMARKET

YOUR ONE-STOP SHOP FOR THE BEST ZX81 PROGRAMS.

Now you can order the very best ZX81 programs with just one postage stamp. From the many tapes available, we've selected the ones that stretch your ZX81, the ones you'll want to play again and again.

All games need a ZX81 with 16K Ram

- 1. SUPER INVADERS** (Bridge). Everyone should have at least one 'invaders'. A simpler version of this one was "excellent" said *Popular Computing Weekly*. This version's even better. On-Screen scoring. And a league table. £4.95
- 2. INHERITANCE** (Hessell). Intriguing money-making game. Unless you can make enough in Part 1, you can't play Part 2 (on the second side of the cassette). Fascinating, frustrating. Cheap at £4.95 for the two linked games
- 3. ALIEN INTRUDER/HIEROGLYPHICS** (Carnell). Another 2-for-the-price-of-1. "The alien is suitably frightening" said *Popular Computer Weekly*. And of Hieroglyphics "very amusing - shrieks of delight from the kids". Two games for £4.95
- 4. SUBSPACE STRIKER** (Pixel). You're captain of the spaceship Swordfish, lurking in hyperspace, waiting to kill the enemy fleet with your Antimat torpedoes. "Some splendid graphics of the various spaceships... especially good destruction sequence" - *Sinclair User*. £5.50.
- 5. THE ZX ARCADE PACK** (Control Tech.). A brilliant collection of fast moving machine code arcade games. Two kinds of invaders, one traditional, the other swooping, soaring Galaxians. Plus 6 more games, including a great graphic gunfight. Only £4.95
- 6. 3D DEFENDER** (Greye). "Amazing 3D graphics effects are created as the enemy draws closer... another winner" *Sinclair User*. Watch through your spacecraft windows as the alien craft attack in astonishing 3D detail. £4.95
- 7. TRADER** (Pixel). "Outstanding graphics... original and entertaining" - *Sinclair User*. Travel around 6 planets as this 48K game loads in 3 x 16K chapters. Starts with 25 second Test load. £10.50 - but as enjoyable as 3 ordinary tapes!
- 8. 3D MONSTER MAZE** (Greye). "The graphics are incredible" - *ZX Computing*. Brilliant... undoubtedly one of the best ZX programs available" - *P.C.W.* This is one of the classic ZX81 games. £4.95.
- 9. ZX O'HELLO** (M o I). "Recommended without reserve... a superb opponent" - *Your Computer*. The best and latest (version 3.5) of the classic game makes Reversi as challenging as chess. 9 play levels. £6.95.
- 10. ZX CHESS II** (Artic). "Plays well at all levels... the board display is enormous" - *Your Computer*. Simply the best ZX Chess. All legal moves, 7 play levels. (5 respond within 3 minutes). Originally £15. Now only £9.95.

To order, complete coupon below and post to:
Software Supermarket, 87 Howard's Lane, London SW15 6NZ.
PROGRAMMERS! If you would like us to evaluate your software for possible future inclusion, please send cassette, price list.

POST TO: SOFTWARE SUPERMARKET, 87 Howard's Lane London SW15 6NZ
I have a 16K ZX81. Please send me the programs indicated below.
I enclose a cheque/PO for £ _____ made payable to Software Supermarket.

Name _____
Address _____
Postcode _____

U.K. ADDRESS ONLY. FOREIGN ADDRESS ADD 20p per £

PROGRAM	PRICE	NO ORDERED	TOTAL PRICE
1. SUPER INVADERS	£4.95		
2. INHERITANCE	£4.95		
3. ALIEN / HIEROGLYPHICS	£4.95		
4. SUBSPACE STRIKER	£5.50		
5. THE ZX ARCADE PACK	£4.95		
6. 3D DEFENDER	£4.95		
7. TRADER	£10.50		
8. 3D MONSTER MAZE	£4.95		
9. ZX O'HELLO	£6.95		
10. ZX CHESS II	£9.95		

SOFTWARE SUPERMARKET (crg1)

BEFORE YOU BUY YOUR MICRO!

COMPUTER, PRINTER, DISC DRIVES & ACCESSORIES

ALMOST EVERY MAKE OF POPULAR COMPUTER STOCKED
AT PRICES WELL BELOW RECOMMENDED RETAIL

GIVE US A RING ON 01-441 2922 AND SAVE £££'s WITH THE LOWEST PRICE GUARANTEE

All products carry a 1 year guarantee (parts & labour)
Pay an extra 10% for a 2 year guarantee

Shelves
of
Computer
Books

Spares & repairs on
all products, even if
you didn't buy from
Comp Shop

EXPRESS
MAIL ORDER
SERVICE

New
products
arriving
daily

'Phone
your order
to
reserve

Many items
over stocked
on Sale Offer

INSTANT CREDIT
just pay the
deposit by Credit
Card and
take it away

SATISFYING PRICE
CONCIOUS CUSTOMERS
FOR NEARLY 5 YEARS

P.S.
Hopeless
on Software

COMP SHOP

"Europe's Largest Discount
Personal Computer Stores"

TELEPHONE SALES
OPEN 24 hrs. 7 days a week
01-449 6596

MAIL ORDER SHOP

14 Station Road, New Barnet,
Hertfordshire, EN8 1QW
(Close to New Barnet BR Station,
Moorgate Line)
Telephone 01-441 2922 (Sales) 01-449 6596
Telex 298755 TELCOM G
OPEN (BARNET) 10am 7pm Monday to
Saturday



BEFORE YOU BUY YOUR MICRO!

COMPUTER, PRINTER, DISC DRIVES & ACCESSORIES

ALMOST EVERY MAKE OF POPULAR COMPUTER STOCKED
AT PRICES WELL BELOW RECOMMENDED RETAIL

GIVE US A RING ON 01-441 2922 AND SAVE ££'s WITH THE LOWEST PRICE GUARANTEE

All products carry a 1 year guarantee (parts & labour)
Pay an extra 10% for a 2 year guarantee

Shelves
of
Computer
Books

EXPRESS
MAIL ORDER
SERVICE

Spare & repairs on
all products, even if
you didn't buy from
Comp Shop

Many items
over stocked
on sale offer

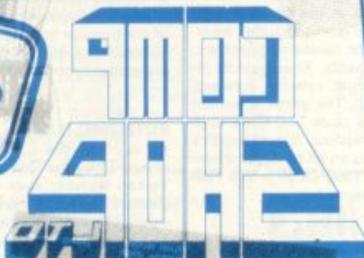
Phone
your order
to
reserve

New
products
arriving
daily

SATISFYING PRICE
FOR NEARLY 5 YEARS
CONSCIOUS CUSTOMERS

INSTANT CREDIT
just pay the
deposit by Credit
Card and
take it away

p.s.
Hopeless
on software



"Europe's Largest Discount
Personal Computer Stores"

TELEPHONE SALES
OPEN 24 hrs. 7 days a week
01-449 6596

14 Station Road, New Barnet,
Hertfordshire, EN5 1QW
(Close to New Barnet BR Station,
Moorgate Lane)
Telephone 01-441 2922 (Sales) 01-449 6596
Telex 288755 TELCOM G
OPEN (BARNET) 10am-7pm Monday to
Saturday

MAIL ORDER SHOP



SHARP MZ-80K/MZ-80A/MZ-80B, TI994A TRS 80, VIDEO GENIE, BBC, VIC20 (16K), ATARI, DRAGON 32, COMMODORE 64, NEW BRAIN CASSETTE BUSINESS SOFTWARE by Dale Hubbard

All programs cassette based. All are menu operated and completely 'user friendly'. Each complete with demonstration file where appropriate and explanatory manual outlining the facilities and how the program works.

DATABASE

A complete electronic filing cabinet/card index system. Use as you would a catalogue or Kardex. Operations include sort, search, list, delete, total, line print, add record, change record etc. So many applications in business use, i.e. employee data, suppliers file, customer file, telephone directory, price lists etc. etc. Complete with demo file and bound manual. **£19.95**

INVENTORY CONTROL SYSTEM

All the necessary for keeping a rigidly accurate stock control. Extensive facilities include automatic stock number allocation with user-allocated reference number if required, quick stock summary, full stock summary, stock cost price, stock sell price, minimum stock level, re-order quantity, supplier, supplier telephone no., financial reporting, including overall gross profit margin, cost of new purchases, total of stock at cost and sell etc. etc. Complete with demo file and bound manual. **£19.95**

MAILING LIST

The ultimate mailing list program with facilities to store details on file and print or screen information selectively by user defined codes, in user defined format to suit printer and paper/labels. All the usual routines and more, including sort, search, delete, add, change etc. etc. Complete with demo file and bound manual. **£19.95**

INVOICES/STATEMENTS

Now you can produce crisp, clean and accurate company invoices and statements with your computer and printer. This one is very adaptable in terms of formatting and allows you to design your own form set-up to suit you. Naturally all calculations are automatic and all aspects of VAT are catered for as well as credit and settlement terms messages and other user defined messages. May also be used for credit notes, has inbuilt file for customers name and address details on cassette to save laborious typing each time. A must for your business. **£19.95**

SPECIAL OFFER all 5 for £79.95 inc. VAT & p&p.
SPECIAL OFFER MZ-80A computer with all programs £500 + VAT.

ACCOUNTS

A gem of a program, all cassette based, with the following features:

Daily Journal	Sales Ledger
Credit Sales	Purchaser Ledger
Cash Sales	Bank Account
Credit Purchases	Year to Date Summary
Purchases - other	

A fully interactive program suitable for all businesses. Files can be saved and loaded and totals from one file carried forward to another on cassette. Particularly useful from a cash flow point of view, with an immediate accessibility to totals for debtors and creditors. Bank totally supported with entries for cheque numbers, credits and, of course, running balance. Complete with demo file and bound manual. **£19.95**

Access  Welcome
Please state machine type when ordering.
Send cheque, registered cash, PO or Access Number to:

GEMINI MARKETING LTD

9, Salterton Road,
Exmouth,
Devon EX8 2BR
Tel: (03952) 5832

Phone us with your Access order for immediate despatch!

ARCADE QUALITY SOFTWARE FROM LLAMASOFT!!

Spectrum ATARI 400/800 VIC-20 ZX81

SPECTRUM

GRAPHICS CREATOR (16K)

NOT just another character editor! This one allows you to define not only the 21 user definable characters, but also allows you to change the entire 96 character ASCII set. Creates BYTES files ready for you to load into your own programs. Includes advanced Reflect, Invert, Field commands etc. Complete with full documentation. If you are at all serious about SPECTRUM graphics, then bin the BIN statement and use Graphics Creator with its easy on-screen cursor editing. **£2.95 + 50p P&P.**

BOMBER (16K)

Yes, a full feature version of the popular game 'Blitz', supplied for the 16K or 48K Spectrum. **For only £2.95 + 50p P&P.**

ROX III (16K)

Blast the falling meteors as they invade your planet, cruise missiles are your only defence in this world of disaster. If they break through the crust of your planet then your life support systems will fail. A very addictive game with fast action and great graphics. 16K or 48K Spectrum **only £2.95 + 50p P&P.**

LLAMASOFT SOFTWARE



Dept. CV3,
49 Mount Pleasant,
Tadley, Hants
RG26 6BN.
Tel: 07356-4478
Trade enquiries
welcome.

SUPERDEFLEX (48K)

The idea of this new game is to bounce "Sid", the space invader, around the screen into the power pods, keeping away of course from the devil who chases you around the screen. Steer with your Deflex shields, but beware the mines or you may be buried alive! Superb graphics and fantastic sound on the 48K Spectrum only. **Only £4.95 on cassette + 50p P&P.**

VIC-20

DEFENDA

Yes, this is the full feature version of the popular arcade game for the VIC 20 as demonstrated at the third Commodore Computer Exhibition at the Cunard Hotel earlier this year. The game includes swarms, baiters, pods, landers, bombers, mutants and humanoids. The controls include up, down, thrust, reverse, forward, fire and smart bomb. The game is written entirely in machine code and uses high resolution colour graphics. It uses joystick controls and requires an 8K or larger memory expansion unit. **Only £8.00 + 50p P&P includes full documentation.**

TRAXX M/C 8K + EXPANSION

This is the VIC 20 version of the brand new arcade game 'Amidar', a cross breed between the now famed 'Pacman' and the game 'Quix'. All in machine code, fast and fun with joystick controls, uses Hi-Res colour graphics. 8K or larger memory expansion needed. **Only £8.00 + 50p P&P complete with instructions.**

RATMAN!

Another amazing game from Llamasoft!! You are the man under attack by the deadly rats as they fall from the sky. You must dodge the arrows to get to the rats and then squash them with your hammer before they dig under the platform on which you stand, and mutate into devils. Fast action with really fun graphics to make an extremely addictive game. 8K or larger memory expansion needed. Uses Hi-Res colour graphics, in machine code. **Only £5.00 + 50p P&P complete with instructions.**

BREAKOUT/DEFLEX

Unexpanded package a full feature version of the popular arcade Breakout plus a new concept in computer games, Deflex!! Both programs on one cassette **only £3.95.**

BLITZKRIEG (3.5K)

As seen at the Commodore show and reviewed by the Daily Telegraph. Fly your Vulcan Bomber over the enemy city and destroy the buildings. 25 levels of play, uses Hi-Res colour graphics and plays Rule Britannia between waves. **Only £4.95 complete with instructions.**

GAME GRAPHICS EDITOR

Create your very own custom characters for the unexpanded VIC 20, up to 64 characters with facilities such as reflect and save on cassette etc.

SOFTKEY 24

This program, designed to run on the VIC 20 with any memory size gives you the facility of 24 key words on your function keys. Key words include peek, poke, run, save, list, for next etc. Both programs on one cassette **only £6.00 + 50p P&P with full documentation.**

ATARI 400-800

TURBOFLEX

Superb ultra-fast and totally new ball game unlike any you have seen before. Uses ATARI's unique features to the full. Incorporates superb colour/sound effects and uses Player/Missile graphics. Tables top 10 scores along with Scorer's name. **£6.00 + 50p P&P.**

GRAPHICS/CHARACTER CREATOR

Now you can define your very own custom character sets, or edit the existing sets. Results are fully displayed on screen in modes 0, 1, 2. Special features include reflect, invert, save character sets etc. Supplied on cassette with data sheet **only £8.00 + 50p P&P.**

ZX81

CENTIPEDE (16K ZX 81)

The ORIGINAL game from the ORIGINAL author. This is the identical program to that being sold by other companies for three times our price. The game has received ecstatic reviews in the computing press. Program has 30 speed levels and ever increasing Centipede hordes. Tables top 10 scores and their names. Why wait to pay more? **Only £1.95 + 50p P&P.**

Please add 50p P&P with all orders



Calisto Computers Ltd.

119 JOHN BRIGHT STREET
BIRMINGHAM

021-632 6458



ATARI 400 with Basic language **249.95**
without Basic language **£199.95**

ATARI 800 with Basic language 16K **£499.95**

ATARI 810 Disc Drive with DOS II **£299.95**

ATARI 410 Cassette Recorder **£49.99**

ATARI 400 32K **£339.90**

ATARI 800 with Basic language 48K **£579.95**

32K UPGRADE for ATARI 400 **£89.95**

850 Interface Module **£135.00**

GAMES

ASTEROIDS	ROM	£29.95
BASKETBALL	ROM	£24.50
MISSILE COMMAND	ROM	£29.95
PAC-MAN	ROM	£29.95
SPACE INVADERS	ROM	£29.95
SUPER BREAKOUT	ROM	£24.50
CENTIPEDE	ROM	£29.99
SUBMARINE COMMANDER	ROM	£34.99*
JUMBO JET PILOT	ROM	£34.99*
SOCCER	ROM	£29.99*
KICKBACK	ROM	£29.99*
MOUNTAIN SHOOT	16k (c)	£12.50
DEFLECTIONS	16k (c)	£12.50
ANGLE WORMS	16k (c)	£12.50
LUNAR LANDER	24k (s)	£12.50
REARGUARD	16k (c)	£16.50
REARGUARD	(d)	£16.50
JAW BREAKER	(c or d)	£23.95
FROGGER	(c or d)	£31.50
PROTECTOR	32k (c or d)	£23.00
CHICKEN	16k (c or d)	£23.00
DODGE RACER	16k (c or d)	£19.25
KRAZY SHOOTOUT	ROM	£29.95
SHOOTING GALLERY	16k (c)	£16.75
RACE IN SPACE	16k (c)	£16.75
GHOST HUNTER	16k (c)	£19.95
GHOST HUNTER	(d)	£19.95
ALIEN SWARM	16k (c)	£21.95
ALIEN SWARM	(d)	£25.50
HOTFOOT	16k (c)	£7.50
GALACTIC CHASE	16k (c)	£15.95
GALACTIC CHASE	(d)	£20.25
AIR STRIKE	16k (c)	£19.95
AIR STRIKE	(d)	£19.95
SHAMUS	16k (c) or 32k (d)	£21.80
NAUTILUS	32k (c or d)	£21.80
CLOWNS & BALLOONS	16k (c or d)	£21.80
TUMBLEBUGS	24k (d)	£21.80
TRACK ATTACK	32k (d)	£21.80
PACIFIC COAST HIGHWAY	16k (c or d)	£21.80
CANYON CLIMBER	16k (c or d)	£21.80
SHOP LIFTER	48k (d)	£21.80
PREPPIE	16k (c) or 32k (d)	£19.95
APPLE PANIC	32k (d)	£21.80
SLIME	24k (c)	£21.80
SNOOKER & BILLIARDS	16k (c)	£19.99*
DARTS	16k (c)	£19.99*
GHOST ENCOUNTERS	16k (c or d)	£19.95
FIGUREFUN	16k (c)	£14.99*
COMPUTE 4 and REVERSI	16k (c)	£14.99*
OWARI & RUII & COW	16k (c)	£14.99*
EASTERN FRONT	16k (c)	£24.50

ADVENTURE GAMES

ADVENTURELAND	24k (c)	£16.50
PIRATE ADVENTURE	24k (c)	£16.50
MISSION IMPOSSIBLE	24k (c)	£16.50
VOODOO CASTLE	24k (c)	£16.50
THE COUNT	24k (c)	£16.50
STRANGE ODYSSEY	24k (c)	£16.50
MYSTERY FUNHOUSE	24k (c)	£16.50
PYRAMID OF DOOM	24k (c)	£16.50
GHOST TOWN	24k (c)	£16.50
SAVAGE ISLAND PART I	24k (c)	£16.50
SAVAGE ISLAND PART II	24k (c)	£16.50
GOLDEN VOYAGE	24k (c)	£16.50
ZORK I	(d)	£30.95
ZORK II	(d)	£30.95
DEADLINE	(d)	£39.50
BOMB HUNTER	16k (c)	£17.95
CAVES OF DEATH	32k (c)	£19.95

GAMES SOFTWARE

COMPUTER CHESS	ROM	£24.50
VIDEO EASEL	ROM	£24.50
STAR FLITE	32k (c)	£16.50
STAR FLITE	(d)	£20.25
SUNDAY GOLF	16k (c)	£12.50
GALACTIC TRADER	32k (c)	£16.50
GALACTIC EMPIRE	32k (c)	£16.50
MISSION ASTEROID	(d)	£22.25
WIZARD & PRINCESS	(d)	£29.50
ULYSSES & THE GOLDEN FLEECE	(d)	£31.95
CROSSFIRE	(d)	£23.95
MOUSATTACK	(d)	£31.50
THRESHOLD	(d)	£31.95
ACTION QUEST	(c or d)	£19.50
ANALOG ADVENTURE	(d)	£18.99
CRYPTS OF TERROR	16k (c)	£21.95
CRYPTS OF TERROR	(d)	£25.50
CRUSH, CRUMBLE, CHOMP	32k (c)	£22.45
RICOCLET	16k (c)	£14.95
STAR WARRIOR	32k (c)	£29.95
TEMPLE OF APSHAI	32k (c)	£29.95
UPPER REACHES OF APSHAI	32k (c)	£14.95
RESCUE AT RIGEL	32k (c)	£22.45
INVASION ORION	24k (c)	£18.75
DATESTONES OF RYN	32k (c)	£14.95
MURDER AT AWESOME HALL	16k (c)	£12.95
TOURNAMENT & BALL POOL	16k (c)	£19.50
DARTS	16k (c)	£19.50
CRIBBAGE & DOMINOES	16k (c)	£19.50
BRITISH JIGSAW PUZZLES	16k (c)	£19.50
EUROPEAN JIGSAW PUZZLES	16k (c)	£19.50
NURSERY RHYMES I	16k (c)	£19.50
NURSERY RHYMES II	16k (c)	£19.50

ACCESSORIES

16k RAM BOARD (800)	£40.00
16k RAM BOARD (800)	£65.00
32k RAM PACK (800)	£115.00
32k UPGRADE (400)	£89.95
DOS 2 MASTER DISKETTE	£21.95

BOOKS AND MANUALS

DE-RA ATARI	£18.00
MASTER MEMORY MAP	£4.95

GENERAL SOFTWARE

WORD PROCESSOR	£99.95
INVITATION TO PROGRAMMING 1	£15.95
INVITATION TO PROGRAMMING 3	£22.95
CONVERSATIONAL FRENCH	£39.95
CONVERSATIONAL GERMAN	£39.95
CONVERSATIONAL ITALIAN	£39.95
CONVERSATIONAL SPANISH	£39.95
MINI WORD PROCESSOR 32k (c)	£9.95
KIDS 1 16k (c)	£9.95
KIDS II 16k (c)	£9.95
BOBS BUSINESS 16k (c)	£9.95
GRAPHICS MACHINE (d)	£13.50
PLAYER PIANO 16k (c)	£9.95
MICROPAINTER	48k (d) £25.50
GRAPHIC MASTER	48k (d) £29.10
GRAPHIC GENERATOR	32k (d) £18.20
S.A.M.	32k (d) £43.70
ABUSE	48k (d) £14.50
HOME FINANCIAL MANAGEMENT	16k (c) £19.99*
MICROSOFT BASIC	48k (d) £59.99

TUTORIALS

DISPLAY LISTS 16k (c)	£13.95
HORIZONTAL & VERTICAL SCROLLING	16k (c) £13.95
PAGE FLIPPING	16k (c) £13.95
BASICS OF ANIMATION	16k (c) £13.95
PLAYER MISSILE GRAPHICS	32k (c) £19.95
SOUNDS	16k (c) £13.95

BUSINESS AND UTILITIES

CCA DATA MANAGEMENT	(d) £101.00
TEXT WIZARD	(d) £99.95
3-D SUPERGRAPHICS	40k (c or d) £39.99
K-DOS	£53.95

*AVAILABLE MID-NOVEMBER

To: CALISTO COMPUTERS LTD, 119 JOHN BRIGHT STREET, BIRMINGHAM.
PLEASE ACCEPT MY ORDER FOR THE FOLLOWING PROGRAMS:-

-
-
-
-
-

Cheque No. for £ enclosed.

Please debit my credit card ACCESS/VISA No.

Phone orders welcome on 021-632 6458. Signed

Calisto Computers Ltd.

Despatch to:

Name:

Address:

SPECIALISTS IN MICROCOMPUTERS AND SOFTWARE

119 JOHN BRIGHT STREET, BIRMINGHAM B1 1BE

Telephone: 021-632 6458

'COMPUTER MAGIC' gives you more fun and games.

TITLE	DISK £	APPLE DISK	ATARI DISK	TRS-80 DISK	CASS £	ATARI CASS	TRS-80 CASS
Hazard Run	22.75	-	16K	-	19.95	16K	-
Beta Fighter	16.50	-	16K	-	13.95	16K	-
Cyclod	20.50	48K	48K	-	-	-	-
Match Racers	20.50	-	16K	-	-	-	-
Pathfinder	23.95	-	32K	-	-	-	-
Ali Baba & the Forty Thieves	23.00	48K	32K	-	-	-	-
Snake Byte	20.50	48K	32K	-	-	-	-
Space Castle	-	-	-	-	11.50	-	16K
Scarfan	-	-	-	-	11.50	-	16K
War	19.95	48K	32K	-	-	-	-
Pool 1.5	23.95	48K	48K	-	-	-	-
Threshold	27.60	48K	40K	-	-	-	-
Penetrator	17.25	-	-	32K	17.25	-	16K
Action Quest	20.50	-	16K	-	20.50	16K	-
Deadline	34.50	48K	32K	-	-	-	-
Caverns of Mars	29.00	-	16K	-	-	-	-
Crypts of Terror	23.95	-	16K	-	20.50	16K	-
Alien Swarm	23.95	-	16K	-	20.50	16K	-
Intruder	23.95	-	16K	-	20.50	16K	-
Ghost Encounters	20.50	-	16K	-	20.50	16K	-
Galactic Empire	17.25	48K	-	32K	11.50	-	16K
Galactic Trader	17.25	48K	-	32K	11.50	-	15K
Galactic Revolution	17.25	48K	-	32K	11.50	-	16K
Mousattack	27.60	48K	40K	-	-	-	-
Adv.1. Adventureland	-	-	-	-	14.50	24K	16K
Adv.2. Pirate Adventure	-	-	-	-	14.50	24K	16K
Adv.3. Mission Impossible	-	-	-	-	14.50	24K	16K
Adv.4. Voodoo Castle	-	-	-	-	14.50	24K	16K
Adv.5. The Count	-	-	-	-	14.50	24K	16K
Adv.6. Strange Odyssey	-	-	-	-	14.50	24K	16K
Adv.7. Mystery House	-	-	-	-	14.50	24K	16K
Adv.8. Pyramid of Doom	-	-	-	-	14.50	24K	16K
Adv.9. Ghost Town	-	-	-	-	14.50	24K	16K
Adv.10. Savage Island I	-	-	-	-	14.50	24K	16K
Adv.11. Savage Island II	-	-	-	-	14.50	24K	16K
Adv.12. Golden Voyage	-	-	-	-	14.50	24K	16K
Shattered Alliance	27.60	-	48K	-	-	-	-
Raster Blaster	20.50	48K	32K	-	-	-	-
Bug Attack	20.50	48K	32K	-	20.50	24K	-
Clowns & Balloons	20.50	-	32K	-	20.50	16K	-
Shooting Arcade	20.50	-	32K	-	20.50	16K	-
Pacific Coast Highway	20.50	-	32K	-	20.50	16K	-
Apple Panic	20.50	48K	32K	-	-	-	-
Hi-Res Adv.1. Deadly Secrets	23.95	48K	40K	-	-	-	-
Zork I	27.60	48K	32K	-	-	-	-
Zork II	27.60	48K	32K	-	-	-	-
Canyon Climber	20.50	-	16K	-	17.25	16K	-
Tumble Bugs	20.50	48K	24K	-	-	-	-
Sea Dragon	17.25	-	-	32K	16.50	-	16K
Eliminator	17.25	-	-	32K	16.50	-	16K
Preppie	20.50	-	-	32K	17.25	-	16K
Rear Guard	17.25	48K	24K	32K	16.50	16K	16K
Track Attack	20.50	48K	32K	-	-	-	-
Star Blazer	23.95	48K	40K	-	-	-	-
Vault of Cymarron	-	-	-	-	27.60	-	16K
Combat	19.95	48K	24K	-	13.95	24K	-
Lunar Lander	15.00	-	32K	-	12.50	24K	-
Doctor Goodcodes Cavern	20.50	-	48K	-	-	-	-
Crossfire	20.50	48K	32K	-	20.50	16K	-
Jawbreaker	20.50	48K	16K	-	20.50	16K	-
Hi-Res Adv.0. Mission Ast.	13.80	48K	32K	-	-	-	-
Hi-Res Adv.1. Mystery House	17.25	48K	-	-	-	-	-
Hi-Res Adv.2. Wiz & Princess	22.75	48K	32K	-	-	-	-
Hi-Res Adv.3. Cranston Manor	23.95	48K	-	-	-	-	-
Hi-Res Adv.4. Ulysses	23.95	48K	40K	-	-	-	-
Space Eggs	20.50	48K	32K	-	-	-	-
Sneakers	20.50	48K	32K	-	-	-	-
Alien Defense	-	-	-	-	11.50	-	16K
Fortress	-	-	-	-	11.50	-	16K
Micropainter	27.60	48K	48K	-	-	-	-
Delux Invaders	23.95	-	16K	-	-	-	-
Probe One: The Transmitter	24.50	-	40K	-	-	-	-
The Warlocks Revenge	24.50	-	32K	-	-	-	-
Temple of Apshai	27.60	48K	32K	32K	27.60	32K	16K
Star Warrior	27.60	48K	32K	32K	27.60	32K	16K
Rescue at Rigel	20.75	48K	32K	32K	27.60	32K	16K
Nautilus	20.50	-	32K	-	20.50	32K	-
Chicken	20.50	-	16K	-	20.50	16K	-
Maze of Death	16.95	-	24K	-	13.95	16K	-
Mar Tesoro	19.95	-	32K	-	13.95	24K	-
Alien Hell	16.95	-	24K	-	13.95	16K	-
Treasure Quest	-	-	-	-	12.50	16K	16K
Armoured Patrol	17.25	-	-	32K	16.50	-	16K
Conquest of Chesterwood	17.25	-	-	48K	16.50	-	16K
Tigers in the Snow	-	-	-	-	27.60	32K	16K

(Please allow up to 28 days delivery. All prices include P & P and V.A.T.)

COMPUTER MAGIC.

57 Poland Street, London W1V 3DF.
(MAIL ORDER ONLY - NO CALLERS PLEASE)

GAMES CENTRE

The Largest Selection
of Games in the World

We stock

**ATARI 400/800
SINCLAIR ZX81
ZX SPECTRUM
VIC-64
DRAGON MICRO**

22 OXFORD STREET · LONDON W.1.

(near Tottenham Court Road)

and also at

439 OXFORD ST. W.1.

(opposite Selfridges)

184 REGENT STREET, LONDON W.1.

(2 mins from Oxford Circus)

254 REGENT STREET, LONDON W.1.

(at Oxford Circus)

52 WESTERN ROAD, BRIGHTON



ACORN ATOM

Somewhere in the Old Country House, the famous AFRICA DIAMOND was hidden. Legend has it that possession of the gem will give countless wealth and even magical powers! However, to take the gem is no easy task! Vampires, dwarfs, wild dogs, to name a few, have taken over the house, and will welcome you with open jaws! All this makes the AFRICA DIAMOND a true test of cunning, intelligence and wit. Are you smart enough to take the gem? After all, the most you have to lose is your life!

RAMTRONICS

An advanced adventure game written for the ACORN ATOM. AFRICA DIAMOND was written to give you a full 10K of program power for the regular expanded ATOM, in doing so AFRICA DIAMOND has used techniques new to ATOM programs.

THE AFRICA DIAMOND

Please rush me AFRICA DIAMOND. I enclose cheque/PO for only £5 (fully inclusive). Payable to Ramtronics.

Name

Address

.....

Send to:

RAMTRONICS, P.O. BOX 173, LONDON SE24 9QZ

4 from 8



CAVES OF DEATH
3D mazes with a heart attack round each corner. 32K Cassette or Disk **£19.95**



BOMB HUNTER
Find all the bombs before they explode. But watch out for the Guard Robots and Lasers. 16K Cassette or Disc **£16.50**



SKY SNAKES
Play the Computer or a friend. Try to defend the earth from the hissing snakes. 16K Cassette **£9.95**



MURDER AT AWESOME HALL
A new "Who Dun It" Each time you play (game includes on screen floor plan). 16K Cassette **£12.95**

For ATARI* 400/800 Computers. *Indicates trade mark of ATARI INC
DEALER ENQUIRIES WELCOME

CHANNEL 8 SOFTWARE

51 FISHERGATE,
PRESTON,
LANCASHIRE,
ENGLAND.
TEL: (0772) 53057.

STOP PRESS ZX81

16K RAM

NEW LOW PRICE!

£19.95

FULLY COMPATIBLE, BLACK CASE, GOLD CONNECTOR.

■ ASSEMBLED _ TESTED _ GUARANTEED. ■

Cheque/POs to:
PLESSIS ELECTRONICS, CASTLE HOUSE, OLD RD,
LEIGHTON BUZZARD (beds), LU7 7RG.

PLEASE ADD. £1.55 P.P

AS REVIEWED IN "ZX COMPUTING" (sept 82)

ZX81 Workstation...

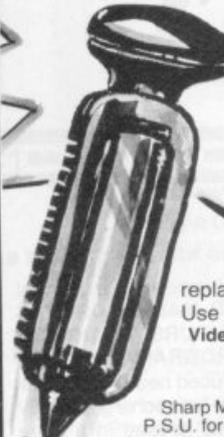


NEW MODELS.
FULL KEYBOARD
& PRINTER
VERSIONS
AVAILABLE

... is a stylish and ergonomic plinth for the ZX81. It raises and tilts the TV to avoid eyestrain, holds the 16K RAM in place and hides the wiring and power supply. This very professional unit costs £15, a built-in power switch is £3, plus postage at £2.00, inc. VAT.

Peter Furlong Products, Unit 5, South Coast Road Industrial Estate, Peavehaven, Sussex BN9 8NA.
Telephone 07914-81637 for C.O.D. and Credit Card Sales.

JOYSTICKS



The Video Command Hand Controller is shaped like a jet fighter joystick. It is rugged, reliable and comfortable with a very fast response. A rapid fire button is mounted on the side.

Use Type J3022 with our interfaces, parallel I/O Boards (eg ZX-81) or, as a direct replacement for Atari and Vic Joysticks. Use Type J3001 with PET Computers.
Video Command Joystick **£12.95**

Joystick Interfaces

Sharp MZ-80K (MZ-80 I/O Not Req'd.)	£18.50
P.S.U. for MZ-80K Interface	£3.50
Acorn Atom (Kit incl. VIA & Connectors)	£15.50
ZX-81 (Assembled PCB)	£16.50
Apple II	£9.50
Sharp MZ-80A (available shortly)	POA

MZ-80K SOFTWARE TAPES — each £4.50

JOYSTICK SYSTEM: 3 games + M/C Routine for use in your own programs.

INSIDE INFO: Provides details about the MZ-80K not given in the manual (eg. Sound effects)

DICTIONARY: A text program to aid the conversion of programs written in Pet Basic to run on the MZ-80K. **£18.50**

Floppy Discs (10) inc free Lib. Case **£17.50**
Listing Paper (2000) 9" x 11 1/2"

Please add £1.00 p&p + VAT to all orders
Allow 21 days for Delivery

MICROSPEC LTD.

143 Balmalloch Road, Kilsyth G65 9PH.
Tel. (0236) 821473

Push your Sinclair to the limit



A GREAT CHESS GAME FOR YOUR ZX81 OR SPECTRUM*

ZX CHESS II

A new improved version, with a faster response time, seven levels of play, analysis option and in addition a recommended move option. **£9.95**
Spectrum Chess **£13.95**

ZX CHESS I

Very popular machine code program, with six levels of play and an analysis option. Available for ZX81. **£6.50**

PLUS! ZX 1K CHESS
An incredible game in 1K for only **£2.95**

*Spectrum Chess 48K

ZX81 ARCADE GAMES



GOBBLEMAN — Escape from munching ghosts to eat power dots and then gobble up the ghosts. Similar to classic arcade game. **£3.95**

NANTIR RAIDERS — High-speed, quick action arcade game with four separate groups of attackers. **£3.95**

GALAXIANS — Swooping attackers, explosions and personalised scoring. **£3.95**



UTILITIES:

TOOLKIT — Nine powerful new functions for your ZX81 (including: re-number lines (goto, gosub), program merge, string finding and replacement). **£5.95**

SPEC BUG — A 30 in 1 machine code tool and disassembler for your ZX Spectrum. **£6.95**

ASSEMBLER — Full editor assembler and monitor giving an extremely powerful tool for writing and running machine code programs on your ZX81 and Spectrum. Includes user manual. **£9.95**

ZX BUG — A 30 in 1 machine code tool and disassembler for your ZX81. **£6.95**

LOW COST ADDITIONAL RAM PACKS

16K Ram Packs	£29.50
32K Ram Packs	£38.95
64K Ram Packs	£64.95

ADVENTURE GAMES



ESPIONAGE ISLAND

(Adventure D)
While on a reconnaissance mission your plane loses control and you are forced to land. Can you survive and escape with the island's hidden secret? **£8.00**

PLANET OF DEATH (Adventure A)
You find yourself stranded on an inhabited alien planet. Can you reach your ship and escape? **£5.00**

INCA CURSE (Adventure B)
In a jungle clearing you come across an ancient Inca temple. Your mission to enter, collect the treasure and escape alive. But beware! Includes a cassette save routine. **£6.00**

SHIP OF DOOM (Adventure C)
You are unavoidably drawn to an alien cruiser. Can you reach the control room and free yourself? Or will they get you first? Includes a cassette save routine. **£7.00**

ZX FORTH

Supplied on cassette with editor cassette, user manuals and keyboard overlay. ZX Forth combines the simplicity of basic with the speed of machine code all for only **£35.00**.



396 JAMES RECKITT AVENUE,
HULL, N. HUMBERSIDE, HU8 0JA

ALWAYS AHEAD WITH ZX81/SPECTRUM SOFTWARE
Cheques & P.O. made payable to: Artic Computing Limited.
Please state whether your order is for ZX81 or Spectrum.



SPECTRUM SOFTWARE SPECIALISTS

NEW
SAVE IT!
Only **£13.95** + £1.40 p/p

with **battpack**
(Patent applied for)

PROTECT YOUR PROGRAMMES WITH THIS RECHARGEABLE BATTERY PACK

AT LAST! The answer to one of the major problems facing personal computer programmers and users; — **POOR MAINS SUPPLIES CAUSING HAVOC, WHILE YOU SPEND HOURS TRYING TO ENTER YOUR CAREFULLY PREPARED PROGRAMMES.**

Now Adaptors and Eliminators, who have produced nearly 70% of all ZX Mains Adaptors, bring you **BATTPACK** — a rechargeable 9v Ni-Cad battery pack and transient suppressor, housed in a complementary black ABS case that simply plugs into your ZX adaptor in seconds.

BATTPACK ensures the voltage into your ZX computer never drops below 9v, thereby eliminating the possibility of a programme crash because of a split second mains dropout! (One cycle is all it needs!)

BATTPACK also suppresses transients and RFI using carefully selected capacitors. Your ZX Adaptor keeps the **BATTPACK** at full charge even when in use — so its always ready for emergencies. Even in the event of a full power cut **BATTPACK** will run your ZX computer for at least 30 minutes giving you time to save your programme on a cassette or print a hard copy on your ZX printer.

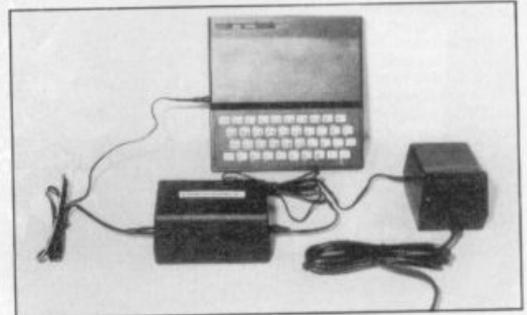
BATTPACK comes complete with all connecting leads and is ready for use.

ORDER NOW — SAVE NOT ONLY YOUR PROGRAMMES BUT ALSO YOUR TEMPER!!

MAIL ORDER ONLY. PLEASE ALLOW 28 DAYS FOR DELIVERY.

FOR ZX 81 AND SPECTRUM COMPUTERS

(AND OTHER MODELS USING 9v DC ADAPTORS)



ADAPTORS AND ELIMINATORS LTD 14 THAMES ST. LOUTH Lincs.
PLEASE SUPPLY _____ (QTY) **battpack** /s
AT £13.95 each PLUS £1.40 p/p
I ENCLOSE CHEQUE POSTAL ORDER FOR £ _____

PLEASE CHARGE MY ACCESS/BARCLAYCARD/TRUSTCARD

ACCOUNT No _____

SIGNATURE _____

NAME | _____ |

ADDRESS | _____ |

_____ |

_____ |

ATARI



LOW PRICE PACKAGE DEALS

400 (exc BASIC)	£173.04
400 (inc BASIC)	£216.52
800 (exc BASIC)	£390.43
800 (inc BASIC)	£433.91

DRAGON 32

32K + COLOUR + HIGH RES. GRAPHICS + SOUND + TYPEWRITER KEYBOARD + SLOTS FOR JOYSTICKS + CARTRIDGES EXPANDABLE TO 64K
ALL FOR **£173.00 + VAT**

NEW ATARI SOFTWARE

Tumblebugs, Canyon Climber, Shooting Arcade, Pacific Coast Highway, Clowns and Balloons, Protector, Chicken, Slime, Apple Panic, Track Attack — ALL AT **£17.35**
Micropainter **£19.56**
Shamus (16K/C) **£17.35**

ATARI PACKAGE DEALS

400 (16k) + BASIC + Recorder + Joystick + Manuals + 5 Blank Cass. + Free Programs	£251.30
400 (32k) + All above items	£307.83
800 (48k) + All above items	£546.96
800 (48k) + Disk Drive + Joystick + 3 Blank Disks + BASIC + Demo Disks + 3 Apx Programs	£734.78

SHARP

MZ80A	£434
MZ80B	£789

VIC 20	£129.50
GENIE 1 & 2	£289
ATOM	from £150

+ PERIPHERALS + SOFTWARE + BOOKS + MAGAZINES + CHESS COMPUTERS + GAMES FOR ZX81 and APPLE

+ ATARI, INTELLIVISION & HANIMEX TV GAMES + CARTRIDGES BY IMAGIC & ACTIVISION



24 GLOUCESTER ROAD

Tel: 698424

BRIGHTON



PLEASE ADD 15% VAT TO ALL PRICES



New Generation Software

PROFESSIONALLY WRITTEN & PRODUCED SOFTWARE FOR THE HOME COMPUTER

From M.E. Evans the author of:-

3D MONSTER MAZE DEFENDER For the ZX81
SPECTRUM

ESCAPE

Can you find the axe to break down the exit door of the maze and ESCAPE. The maze is inhabited by 5 hunting dinosaurs including a TRICERATOPS who has the habit of hiding behind the hedges, and a PTERANODON that soars over the maze to swoop down on you.



Send to NEW GENERATION SOFTWARE
FREEPOST, Oldland Common (no stamp reqd. in UK)
BRISTOL BS15 6BR
or for INSTANT CREDIT CARD sales ring 01-930 9232

PLEASE SEND ME A COPY OF ESCAPE FOR THE 16K SPECTRUM. I ENCLOSE CHEQUE/P.O. FOR £4.95.

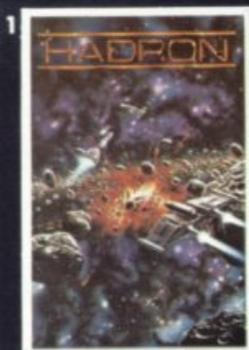
Mr/Mrs
Address
Post Code

ADVERTISEMENT INDEX

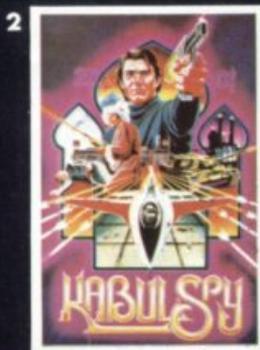
ACORN SOFTWARE	69
ADAPTORS & ELIMINATORS	112
AKHTER INSTRUMENTS	38
ALLRIAN	113
ARCTIC COMPUTING	112
ATARI	29
AUDIO COMPUTERS	6, 84
AUDIOGENIE	67
BI-PAK	12
BULLOCK COMPUTING	109
CALISTO COMPUTERS	95
CHANNEL 8 SOFTWARE	26
CHROMASONIC ELECTRONICS	60, 62, 63
COMMODORE	106, 107
COMP SHOP	46, 47
COMPUTER GAMES LTD	110
COMPUTER MAGIC	102
COMPUTERSHACK	95
COMPUTER SUPERMARKET	78, 79
COMSERVE	84
CPS GAMES	87
CURRY'S	4
DIGITAL FANTASIA	4
DK TRONICS	22, 23
DRAGON DATA	90
EAST LONDON ROBOTICS	67
E&E ENTERPRISES	105
ELECTROEQUIP	103
ELTEC SERVICES	110
FULLER MICROSYSTEMS	92
P. FURLONG PRODUCTS	19
GALAXY VIDEO (KENT) LTD	114
GAMER	110
GAMES CENTRE	74
GEMINI ELECTRONICS	108
GEMINI MARKETING	78
GREVE J K	113
HENRY'S RADIO	79
IBEX SYSTEMS	OBC
IMAGIC	97
IMPACT	92
I J K SOFTWARE	113
JENNINGS	42
JUPITER CANTAB	76
KANSAS CITY SYSTEMS	96
KAYDE ELECTRONIC SYSTEMS	90
KEMPSTON MICRO ELECTRONICS	76
LANDAU ELECTRONICS	115
LEISURE COLLECTION	90
LEISURONICS	67
LEVEL 9 COMPUTING	67
LLAMASOFT SOFTWARE	108
MAPLIN ELECTRONICS	50, 51
MICROMANIA	84
MICROSPEC	111
MIKRO-GEN	103
MR MICRO	114
NEW GENERATION SOFTWARE	69
ORWIN M	87
PANCOM	94, 95
PARKER GAMES	82
PIXEL PRODUCTIONS	111
PLESSIS ELECTRONICS	54, 98
QUICKSILVA	110
RAMTRONICS	74
SHIVA PUBLISHING	34
SILICON CHIP	70, 71
SINCLAIR RESEARCH	13, 14, 15
SPECTRUM	105
SOFTWARE FOR ALL	105
SOFTWARE SUPERMARKET	103
SRS MICROSYSTEMS	103
STACK COMPUTER SERVICES	86
TEXAS INSTRUMENTS	82
TITAN PROGRAMS	102
VISION STORE	102

LEISURE CENTRES FOR BRAINS

Announcing a new range of Electronic Entertainment from one of today's most advanced computer companies.



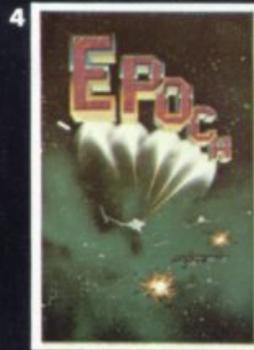
1 **HADRON**
In HADRON, there are over a dozen enemies from five different classes. Many of the objects actually rotate as you approach them, creating astonishing 3-D effects. **£19.95**



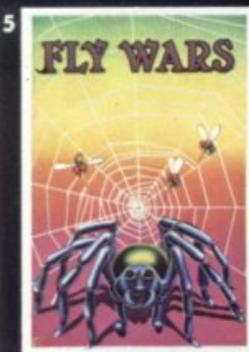
2 **KABUL SPY**
You set out to secure the secrets of the imprisoned Professor Eisenstadt. The in-depth plot, extensive vocabulary and colorful graphics make Kabul Spy a most intriguing adventure game. **£19.95**



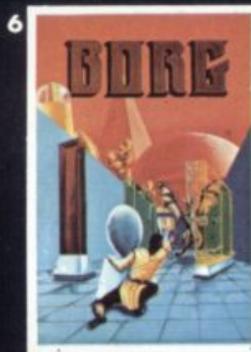
3 **MINTSTAIR**
Take Theseus' place in the labyrinth and you will travel through 16 different three-dimensional mazes. Armed with a laser sword, you will encounter a myriad of fanciful and frightful creatures. **£19.95**



4 **EPOCH**
You are the last survivor of your starship crew on a suicide mission. Your one-man Space Cruiser has only one weapon — a limited quantity of very powerful atomic missiles. **£19.95***



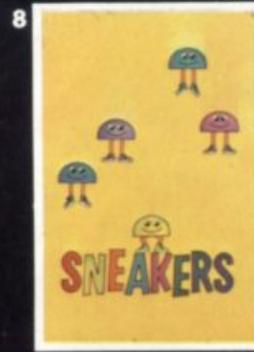
5 **FLY WARS**
Was the Spider able to destroy the Fly-Fighters, evade the B.S. and repair the damaged web??? Fly back in time with us and join the Alliance. See how well you do as the Spider-Fighter. **£17.95**



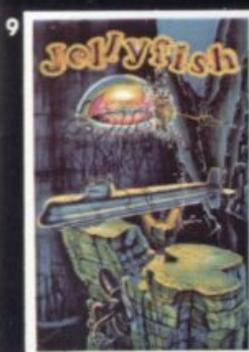
6 **BURE**
There are ten rooms full of chambers and passages and they are all protected by this Drageroo that Grud created. It has wings and heat sensors and it can't be shot! **£17.95**



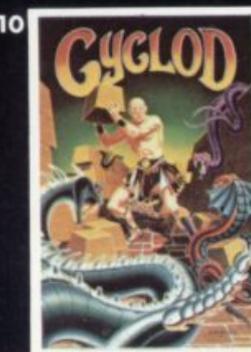
7 **ORBITRON**
Enemy forces are advancing from all directions and begin to place Killer satellites in orbit around your station. And then, look out for the meteors! **£17.95**



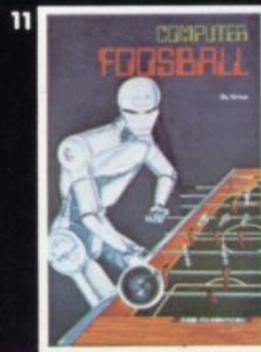
8 **SNEAKERS**
Sneaker's popularity is based on its seemingly endless variety of challenges. The game features some of the most animate and colorful characters to ever attempt to stomp you into submission. **£17.95**



9 **JELLYFISH**
"As if it wasn't dangerous enough battling the Russians, now it's the Jellyfish too! We shot them, but they break into smaller pieces and keep coming. They've got to be nuclear mutants!" **£17.95**



10 **CYCLOD**
Cy-clo-d (sikläd) n. A mythical creature apparent in many legends. In Sirius legend, the video representation of a game wherein an eyeball fights snakes with bricks. **£17.95**



11 **COMPUTER FOOTBALL**
You say you have a sudden urge to play Football? Now, you and up to three of your friends can play Football at home. Divide into Grud and Robot teams and bash the ball around the screen. **£17.95***



12 **DARK FOREST**
Dark Forest is a game of strategy which pits you against Trolls, Magicians, Sea Serpents, Specters, Gruds and up to five other players. You can choose from any of eight levels of difficulty. **£17.95**

1	2	3	4	5	6	7
8	9	10	11	12	13	



Please tick appropriate boxes.

To: The Leisure Collection, P.O. Box 6, Uxbridge, Middlesex, UB8 1JQ.
I enclose a cheque/postal order for £ _____ or please debit my
Access/Barclaycard Account Number _____
(All prices include P & P and VAT.)

Signature _____

Name _____

Address _____

To order by phone, ring (0895) 59836 and quote your credit card no.

THE LEISURE COLLECTION

A division of Zynar Ltd,
122, High Street, Uxbridge, Middlesex, UB8 1JT.

All games require Apple II with 48K and one Apple disk drive.
Games marked* require games paddle.



13 **PHANTOMS FIVE**
While you try to make your bombing run, you have to avoid being hit by anti-aircraft fire and fight off enemy aircraft as well. **£17.95**



Travel into tomorrow with IMAGIC....and add a new dimension of excitement to your Atari Video Game System. Intriguing game concepts, advanced graphics, sensational sound effects, plus the ultimate in non-stop action for video entertainment. Enjoy the new generation of challenging cartridges from IMAGIC.



Contact us today for full details.

Distribution Centre: Hales Limited, Ripon Way, Ripon Road, Harrogate, North Yorks. HG1 2AU. Telephone 0423 501151/6 Telex 57953 Adam G

A Member of The Adam Leisure Group Limited