

JUNE 1982
75p

COMPUTER & VIDEO GAMES

OWL
THE BBC MICRO
MAGAZINE
ISSUE ONE INSIDE



**WORLD
CUP
MANAGER**

EVERYONE'S A WINNER
In our Atari Games Centre
World Cup Competition

**SOLVE OUR FREE PUZZLE
AND WIN A BBC MICROCOMPUTER**

THE BEST ADD-ON MEMORY MADE FOR YOUR COMPUTER



VIC 20
ZX81
ATOM
VIDEO GENIE

TRS 80
PET
UK 101

VIC: The VCR-20 is an ultra low power (CMOS) 20K RAM plug-in cartridge, retailed at £64.00 ready built and tested. We can also supply with only 4K of RAM, ready-built at £24.00 and as many extra 2K RAM chips (HM6116) as you require at £5.00 each. No PSU required, black/beige cover.

The VCS is a cartridge simulator and combines the advantage of the motherboard with two slots and the 8K battery back-up CMOS RAM. This emulates cartridges and adds 8K to RAM. Available in ready-built form £44.00.

ATOM: The DUO-1 is the latest 64K memory add-on designed for the Atom, combining very low power consumption (200mA at +5V) and RAM power. This runs, loads and saves 64K basic programs. Ready-built and tested £70.00. No PSU required.

ZX81: The SPECIAL RAMPACK is the nicest around, only 3in x 4in cased in a black trim matching case, offers 56K of RAM to make together with the 8K Sinclair ROM the most powerful system in that size. No PSU required. Ready-built £60.00.

32K RAM CARD: 48340 bytes free ... for TRS 80 and Video Genie. No PSU required. Ready-built £46.00.

64K DRC MODULE FOR PET & UK101: Ready-built £80.00.

ALL ORDERS GENERALLY EX-STOCK

PLEASE CONTACT OUR SALES OFFICE FOR FURTHER INFORMATION

All prices are correct at time of going to press — Prices include VAT at 15% and p&p for the UK — Quantity discount available for export and dealers — Order by phone: ZX81, TRS-80, Video Genie and Z80 based: Southend (0702) 613081 — Vic, Atom, Pet, UK101 and 6502 based: Southend (0702) 618144. Telex: 995337 G AUDCOM. Access and Barclaycard. All mail to: **Audio Computers, 87 Bournemouth Park Road, Southend-on-Sea SS5 2JJ.**

News & Reviews

GAMES NEWS18

Fight the nightmarish Jelly Monsters, search for the sword of peace and hold on to your clothes on a trip into the sleazy side of life.

VIDEO SCREENS22

Take to the ice with the tough hockey teamsters and find out about a brand new Home Arcade centre and its batch of games.

ARCADE ACTION30

Monkey around with King Kong and watch out for strange things at the bottom of the garden, plus our regular pinball column.

REVIEWS70

Take a ride on the Microtrain and why not take a Rubik's Cube on the journey?

Listings

WORLD CUP MANAGER32

Are you the football brain which could take Honduras to the World Cup Championships? Or will the Sharp's soccer style prove too good? Recommended to football lovers everywhere.

TROLLS GOLD42

Can you beat the Apple Troll and steal his golden treasure?

SPEEDBOAT46

Brave a log-filled torrent in your floating VIC-20. A well-thought-out game set on a river journey for those of you with nimble fingers and a quick brain.



SAVE THE PRINCESS50

In days of old when knights were bold... can you rescue the Acorn Atom maiden in distress and keep her from the clutches of Bad Baron Megabyte? Brave Knights only need apply.

SINCLAIR SELECTION54

Two ZX81 games — one in 1K and another for all you 16K owners.

HELICOPTER LANDER57

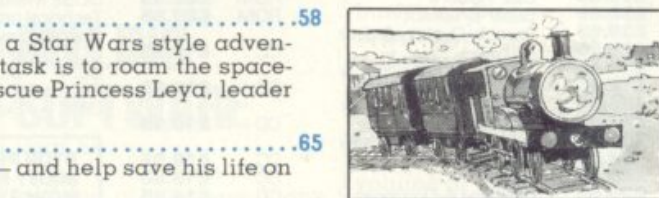
Your job is to land a Pet helicopter on an oil rig in a choppy North Sea. A new twist to the popular "landing" series of games.

DOG STAR ADVENTURE58

Strike back at the Empire in a Star Wars style adventure for Tandy owners. Your task is to roam the spaceship of General Doom and rescue Princess Leya, leader of the Forces of Freedom.

BOING65

Bounce around with Barney — and help save his life on the Atari.



Cover: Model — Dorian Cross Photograph — Geoff Howes

World Cup

Halftime in the World Cup semifinals and you're 2-0 down to Czechoslovakia...

If you thought that was the kind of pressure which could only be put on Ron Greenwood this summer, you hadn't reckoned with our World Cup Manager game. It runs on the Sharp MZ-80K but without a PEEK or a POKE so anyone with enough memory should be able to convert it.

Your task is to try and win the World Cup, with Brazil it's hard. With El Salvador, it's heartbreaking — but just about possible.

This is your chance to get Over the Moon or Sick as a Parrot even before the World Cup proper kicks off. Page 32.

Features

MAILBAG5

More of your views on view.

COMPETITION9

Win a BBC microcomputer by solving our Beat the Bug cover puzzle on a computer. And an Atari T.V. games centre is up for grabs.

BUGS13

The Bugs hit the World Cup trail.

BRAINWARE17

Teasers to test your brain power.

CHESS25

More mind boggling problems from the board of Max Bramer.

GO27

Program your ZX81 to play the ancient strategy game.

ADVENTURE29

Castaway on the Savage Island with Keith Campbell.

PRACTICAL PROGRAMMING66

Top-down structuring with Ted Ball.

GRAPHICS69

The importance of curves discussed by Gary Marshall.

KIT KORNER73

All about the kit built Acorn Atom.

DOWN TO BASIC76

Moir Norrie tells you how to store data.

HARDCORE80

Our games-oriented review of the Commodore Vic-20.

SOFTWARE GLOSSARY .83

Editor Terry Pratt, Assistant editor Elspeth Joiner, Editorial assistant Susan Cameron, Design Linda Freeman, Production editor Tim Metcalfe,

Advertisement manager Rita Lewis, Advertising executive Neil Wood, Advertisement 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, Farmdon 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. Published and distributed by EMAP National Publications Ltd. Printed by Eden Fisher (Southend) Limited.

© Computer & Video Games Limited ISSN 0261 3697.

Cover: Model — Dorian Cross Photograph — Geoff Howes

THE WEST END
ATARI PERSONAL COMPUTER
CENTRE



Ex-demo models
Few only. Full
Guarantee.
£259



ATARI 400A COMPUTER

16K RAM, full features at an economic price.

£299.00

ATARI 800 COMPUTER

16K to 48K RAM, superb construction
modular design, full stroke keyboard. **£599.00**

£599.00

ATARI 810 DISC DRIVE



88K data storage on a 5 1/4 inch floppy disk

£365.00

ATARI 739 80 COLUMN PRINTER



Dot matrix printer with 6 typefaces plus graphics capability

£550.00

ATARI 410 CASSETTE DECK



Digital track plus audio track for simultaneous commentary on some programmes.

£55.00

ATARI 822 THERMAL PRINTER



Bi-directional 40 column printer

£265.00

We stock full range of accessories inc:- RS232 Interface Module, 16K RAM Expander Modules, Joysticks, Paddles, Cables etc.

All prices include VAT

LONDON'S LARGEST STOCKS OF ATARI SOFTWARE

We carry vast stocks of all available software suitable for the ATARI Personal Computers. Our staff will be pleased to assist you in selecting the computer programmes for your machine.

| | | | | | | | | |
|----------------------|------|---------------|--|------|---------------|-----------------------------|------|----------------|
| Educational | | | Basketball | ROM | £29.95 | Telink 1 | ROM | £19.95 |
| Pilot | ROM | £54.00 | Blackjack | CC | £8.95 | Mortgage & Loan | CC | £13.95 |
| Invite to program 1 | CC | £15.95 | Computer Chess | ROM | £29.95 | Viscalc | DISK | £119.95 |
| Invite to program 2 | CC | £22.95 | Missile Command | ROM | £29.95 | Home Financial Management | CC | p.o.a. |
| Invite to program 3 | CC | £22.95 | Space Invaders | ROM | £29.95 | Manuals | | |
| Conversation French | CC | £39.95 | Star Raiders | ROM | £29.95 | DOS2 Manual | CC | £5.95 |
| Conversation German | CC | £39.95 | Super Breakout | ROM | £29.95 | Technical notes | CC | £17.95 |
| Conversation Spanish | CC | £39.95 | Humpty Dumpty & Jack and Jill | CC | £19.95 | Operating system listing | CC | £11.95 |
| Conversation Italian | CC | £39.95 | Hickory Dickory Dock & Baa, Baa Black Sheep | CC | £19.95 | DOS1 Listing | CC | £3.95 |
| Music Composer | ROM | £35.95 | British Heritage Jigsaw | | | CC = Compact Cassette | | |
| Touch typing | CC | £15.95 | Puzzles | CC | £19.95 | ROM = Plug-in ROM cartridge | | |
| Calculator | DISK | £24.50 | European Scene Jigsaw | | | DISK = Floppy Diskette | | |
| Graph it | CC | £13.95 | Puzzles | CC | £19.95 | | | |
| Statistics 1 | CC | £13.95 | Puzzles | CC | £19.95 | | | |
| States and Capitals | CC | £9.95 | Darts | CC | £19.95 | | | |
| Capitals of Europe | CC | £9.95 | Cribbage & Dominoes | CC | £14.95 | | | |
| Assembler/Editor | ROM | £39.95 | Snooker & Billiards | CC | £19.95 | | | |
| Microsoft Basic | DISK | £59.95 | Tournament Pool & 8 Ball | | | | | |
| Video easel | ROM | £24.50 | Pool | CC | £19.95 | | | |
| Games | | | Jumbo Jet Pilot | CC | £29.95 | | | |
| Energy Czar | CC | £9.50 | Submarine Commander | CC | £24.50 | | | |
| Hangman | CC | £9.95 | Supercubes & Tilt | CC | £14.95 | | | |
| Kingdom | CC | £9.95 | Commercial | | | | | |
| Scream | CC | £17.50 | Word Processor | DISK | £95.95 | | | |
| Asteroids | ROM | £29.95 | | | | | | |

**STOP PRESS:
MANY MORE PROGRAMMES
NOW AVAILABLE INCLUDING:**

| | |
|--------------------|---------------------|
| Caverns of Mars | Rings of the Empire |
| Eastern Front 1941 | Forest Fire |
| Ghost Hunter | Intruder Alert |
| Galactic Chase | Scott Adams |
| Crypts of Terror | Adventures 1-12 |
| K-rzy Shootout | Peckman |

The West End Atari Centre.
REW Video Products Ltd., 114-116 Charing Cross Rd.,
London WC2. Tel: 01-240 3386.



Access, Barclaycard, Amex, Diners plus Instant Credit Terms.





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

SINCLAIR'S NEW BABY

Dear Sir,

I have heard a good deal about the coming of a Sinclair ZX82 microcomputer. Is it going to be out this year and if so will it be compatible with the ZX81. If we ZX81 users can't upgrade our machines into ZX82s, then how much will this new one cost. Please can you help as I have read so many confusing reports about this machine.
T. Robinson,
Saffron Walden,
Essex.

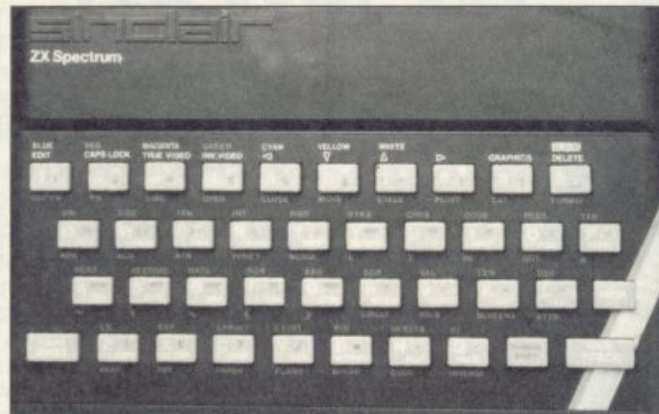
Editor's reply: The ZX Spectrum has already gone into production at the rate of 20,000 units a month. Clive Sinclair said it would be available to the public within a fortnight of ordering the machine.

It is on sale in two versions. The 16K memory computer sells at £125, while the 48K machine costs £175 inclusive of VAT. If you want to upgrade the 16K version you can do so by buying an internal expansion board which will cost about £60.

The ZX Spectrum isn't compatible with the ZX81 at present, but all the 81 software will run on the new computer with minor variations. It is only slightly larger than the ZX81 with a calculator type keyboard instead of the sensory keys featured on the ZX81.

The ZX Spectrum incorporates high resolution colour graphics, more memory capacity, a sound generator, a 40 key ASCII keyboard and upper and lower case.

Not only is it compatible with ZX81 software it also has a special port for linking up the Sinclair



The Sinclair Spectrum

printer, and can be plugged directly into an ordinary PAL television set.

Clive Sinclair claims the Spectrum is more powerful than most of the microcomputers now on the market — including the B.B.C. models A and B.

The most interesting part of the new computer is the disc drive called the ZX Microdrive, which will be available for the machine in a few months time. Measuring about 4" x 4" it will provide data storage on floppy discs, and the units can be stacked onto each other giving extra capacity.

Although there is no software specially for the Spectrum at present Sinclair plans to introduce some later.

SELLING SOFTWARE

Dear Sir,
I am writing to enquire whether or not there is any law preventing the sale of software from a private residence. I have written several enjoyable 16K ZX81 games — including a graphics-adventure — a home management program and a wages calculation program, which I am considering selling on

tape, from home, or if some law prevents this, to a software purchasing company, the quality hopefully being high enough for them.

Please could you tell me how much, on average, these companies pay, and if there is any law concerning the first part of my letter?

Gary Coxon,
Caverswall, Staffordshire.

Editor's reply: The only thing that could affect your private sales is the mortgage or rental agreement covering the residence. It might be wise to check this. At the same time you could find problems with the local rating authority if they consider that the volume of business has changed the basic use from residential to business.

However, I doubt if you'll do enough business to worry them, or the VAT man either. You could find problems though if the volume of trade caught the eye of the tax man.

DEALER'S DILEMMA

Dear Sir,

In recent months, we have advertised our Byg Byte 16K Ram Pack in your

magazine and in this advertisement we stated that delivery could be expected within 28 days.

However, during the past six weeks, many people who have ordered these Ram Packs have had to wait longer than the stated 28 days due to circumstances beyond our control. Over 25 per cent of the initial batch which we despatched were damaged beyond repair by the Post Office and this has necessitated our having the packaging redesigned which caused the delay.

J. G. Lane,
Computer Aided
Printing Services,
Petersfield, Hampshire.

AUNTIE'S MICRO

Dear Sir,

I have received your magazine since the first issue, and have noted that there have been no programs dedicated to the B.B.C. micro.

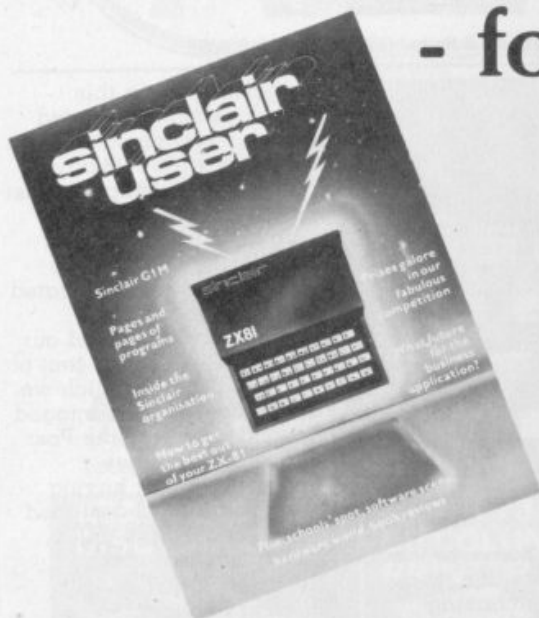
At the moment I am awaiting delivery of my model B, and feel that it is a great pity that this micro seems to have been overlooked within your pages.

K. Stephenson,
Cockermouth,
Cumbria.

Editor's reply: After a slow start, there are now enough B.B.C.

Microcomputers finding their way out to the public to justify publishing listings for this machine. Far from "overlooking" the machine we have been very conscious of the need to cover it but felt we had to wait until sufficient machines were available. Turn to the centre of this magazine Mr Stephenson for our first look at what is going to be a very popular microcomputer.

The best enhancement yet for the ZX enthusiast - for just £9!



What is the best way to guarantee that you never become bored with your Sinclair computer?

The answer is to subscribe to Sinclair User ... written specifically for owners of ZX 80's and ZX 81's. Sinclair User is the latest monthly from ECC Publications - pioneers of Practical Computing, WHICH COMPUTER?, and Computer & Video Games. Whether you bought your system yesterday or are an old hand, you are probably an enthusiast for your machine. And your biggest problem is likely to be obtaining all the information to satisfy your interest. We promise that Sinclair User will be devoted entirely to quenching your thirst for information.

Issue one is Published on 1 April and is an absolute must for Sinclair devotees. So make sure **you** guarantee that you get **your** copy by taking out a subscription **now**.

As the name suggests, the content will be geared specifically to helping the user. There will be pages of information on available hardware and software. Our expert writers will analyse established products to help

you make the right choice. There will be exclusive pre-release snippets on products which are about to hit the market. Our aim is to make Sinclair User invaluable and we will chronicle applications which are of special interest.

For example, in the first issue we will look at business applications and we visit a school where the pupils are having the time of their lives using their Sinclairs. Each month we will carry eight pages of programs. Another must for every user is our first-rate helpline service. And we intend to carry as much information as possible about clubs.

Last but not least let us say that the best way you can guarantee you like the magazine is by participating yourself. Don't forget to ask us your queries; send in your programs - for which we will pay £10 if we publish and be sure to tell us if you are using your ZX 81 in a special way. Send in your club news and tell us of any interesting people out there in userland. And just in case you need further convincing, look at the editorial plans for the first six issues.

Can you continue to get the most out of your ZX without reading the Sinclair User? So why not fill in the subscription order form **today**?

Editorial Plans

April

Hardware overview
Software overview

May

The Sinclair 16K RAM dissected
Adventure games programs

June

Disks - a look into the future
Graphics software

July

The ZX81 memory map analysed
Debugging programs

August

The Sinclair printer and its alternatives
Chess programs

September

Enhancements for the enthusiast (e.g. colour, sound, high resolution, speech)
Business software for the ZX81

sinclair user

Send to: ECC Publications, 303/1 Islington Green, London, N1.
Overseas rates: Europe £18, Outside Europe £24 (including air-mail postage) Cheques should be made payable to ECC Publications.

Subscription Order Form

I wish to start a subscription to Sinclair User. I understand that I may cancel my subscription at any time and you will refund the balance.

☐ I enclose a cheque for £9 for 12 issues (UK only - including postage)

☐ Please charge my credit card

Card Name _____
Name _____
Address _____
Signed _____
Date _____



MAILBAG



CRASHING PROGRAMS

Dear Sir,
I happen to be one of the many people who received a ZX81 for Christmas. When I key-in one of the games for the ZX81 and start playing, the system quite often crashes, why? If it is because it needs a larger heatsink then tell me what a heatsink is and where to get one.

When trying to program a Breakout game, I managed to get a ball bouncing around the place and get a bat at the bottom but then I ran out of memory. Could you please put in your magazine an article on saving space specially for the 1K ZX81?

Also on the side of the ZX81 there are some holes for plugs, two of them are for recording but the cassette recorders I have access to have a five-pin socket. Could I take the ZX81 apart and fit a new five-pin socket? I already have a line.

I. Sabone,
Walmer,
Kent.

Editor's reply: You don't say whether you are using a RAM pack. If not, then there is something wrong with the system and it should be exchanged. If yes, then make sure that it is well supported and does not get moved whilst in use. A momentary disconnection at the rear will lose all data.

The ZX81 needs a fairly high input/output voltage for record/load. A five-pin DIN socket, as you describe, would probably not give an adequate signal. You must use a tape recorder with phono sockets — just like the ones on the computer.

GETTING IT TAPED

Dear Sir,
I am the satisfied owner of a ZX81, finding it more than ample for a home computer. I now wish to purchase a tape recorder solely for use with the ZX81 and wonder if you

could advise me on the best machine to buy.

I would be interested to know if the Vic cassette unit would be compatible with the ZX81 and if I could expect better reliability than with ordinary tape machines.
P. Mooney,
Orpington,
Kent.

Editor's reply: There are several cassettes on the market, but if you want to be sure about compatibility it is best to get one which was built for use with the ZX81. The ECR81 Enhanced Certified Recorder is available from Monolith Electronics at 5/7 Church Street, Crewkerne, Somerset.

I know better than to say that it is impossible to interface the Commodore cassette unit onto the ZX81 but it would be difficult in the extreme. The unit was built especially for Commodore products. It is best, and more reliable, to use the recorders recommended by Sinclair. If you want a list of these you should get in touch with Sinclair Research.

OF REMS AND ROMS ...

Dear Sir,
I am only 13 years old and I took up computing when I first saw your excellent magazine in my newsagents.

I have a few questions to ask. In programs containing machine-code I have seen the particular machine-code routine stored in REM statements but I thought that REM statements were ignored by the computer, so how is the machine-code carried out?

I am thinking of purchasing a new 4K graphic ROM module from DK'Tronics. I have heard that it contains a full set of Space Invaders graphics characters, and I am wondering if you could print an Invaders' program for people with this ROM?

Would it be possible to adapt my ZX81 to colour? If not I would like you to congratulate the artist who

drew the picture in the Sinclair advertisements, because it is extremely realistic!

Would you please tell me which is better, the Sinclair ZX81 or the Acorn Atom. This is a source of excessive arguments between myself and my friends. I don't care what answer you give but please give one!

I think the ZX81 is extremely good value for money because you can buy a ZX81 complete with 16K-byte RAM pack and printer for approximately £170.00 and this is just over the price of a ready assembled 2K Acorn Atom.

Also, although the Sinclair manual is very comprehensive, is there any book I could get which goes into everything?

One last question, is it possible to get a keyboard for the ZX81 with a case that it can fit inside. I like this idea because I think it will look better and improve your programming speed.

M. Sacaloff,
Bury,
Lancashire.

Editor's reply: The ZX81 has an interesting way of using REM statements when in line 1 of a program. Any data after the REM are put into a special buffer in the memory.

No doubt when a number of people have purchased the DK'Tronics ROM sufficient programs will become available.

The extra cost involved in adapting your machine to colour would probably not justify the adaption. If Sinclair bring out a colour machine later this year it will probably use ZX BASIC — so upgrading to that would be a better bet.

There are so many books on the ZX81, and most of them leave much to be desired. You will probably have to buy three, or four, to cover most of the possibilities available.

If you look through this, and other magazines, you will see at least six manufacturers of keyboards. Most supply cases to take the ZX81 boards, and at around £30.

PROGRAMS ON SCREEN

Dear Sir,
The Games News, Arcade Action, Video Screens and Software Reviews of your magazine are really good and so are the drawings but couldn't we have some photographs of the actual program while it is running? This could also help would-be buyers on which hardware to buy.



Finally, who is the little man holding the book on your January issue with the big snout?
Mr D. Sinden,
Stroud,
Kent.

Editor's reply: Game graphics have not always been as exciting and colourful as we might wish. And our early decision to use illustrations instead of screen photographs was based on a belief that through drawings we could capture more of the theme a programmer originally hoped to portray before he was forced to compromise because of limited graphics facilities.

Screen graphics are now reaching new standards and in the future we will not be sticking so rigidly to the illustrations-only policy.

The characters featured on our covers are entirely fictional and any resemblance between the little man with the big snout and persons, living or dead, is entirely coincidental.

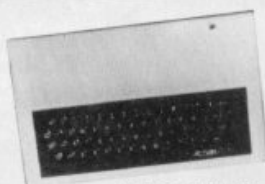
TECHNOMATIC LTD

Dept. C&VG,
17 Burnley Road,
London NW10 1ED.
Tel: 01-452 1500/450 6597

Please add 40p P&P + 15% VAT
BARCLAYCARD & ACCESS
CARDS ACCEPTED.
MINIMUM TELEPHONE ORDER £5.

Retail Shops:
15 Burnley Road,
London NW10.
305 Edgware Road,
London W2.

YOUR ONE STOP SHOP FOR PERSONAL COMPUTERS, ACCESSORIES, SOFTWARE & COMPONENT REQUIREMENTS



ATOM

Basic built £140, Expanded 12K +12K £180 (£3 p&p/unit)
1-8A 8V ATOM PSU £7 3A 5V regulated PSU £22 (£1.50 p&p).

HARDWARE

1K Ram (2 x 2114 low power) £2 F.P. ROM £20. Buffers:
74LS244 £0.70, DP8304 £4.50, 81LS95 £0.90, Via 6522 £5.00.

CONNECTORS

BUS: Plug £3.50, skt £3.50, PRINTER: Plug £2, skt £2, VDU:
Plug £0.90, skt £0.90, Centronix Type 36 way connector £6.50

MEMORY EXPANSION

8K SRAM + up to 16K eeprom or 16K SRAM can be populated
as you progress. PCB: £11.50 (incl. interfacing data).
64K Dynamic RAM card (expandable to 128K). Fits inside the
case. Std 1.8A PSU adequate. Built £95.00 p&p 75p.
ATOM colour encoder card £39.00.

ATOM DISK PACK: ● 40 Track s.s. 5¼" disc drive ● psu to run both the disc pack and a fully expanded ATOM ● Disc controller
card with 4K DOS ROM ● Complete with connector and cable ● Full operating instructions & manual £299 + £6 carr.

SEIKOSHA GP100A PRINTER

● Full graphics capability ● All modes can be mixed ● 116
ASCII Char ● Double width char. ● 10" wide paper ● Self test
printing £199 + £8 carr.

EPSON MX 80 F/T

● 80 CPS Bidirectional Travel ● High Res Graphics ●
Condensed, emphasized, enlarged char. F/T 1 £350 F/T 2
£360 + £8 carr.
(F/T 2 has been recommended for BBC Micro)
12" BMC Monitor Green Screen £140 + £6 carr
14" Colour Monitor Chassis mounted £165 + £6 carr
14" Colour Monitor in A1 cabinet £190 + £6 carr.

SOFTWARE/FIRMWARE

Toolbox-ROM: Many new exciting commands incl. uprating
cassette read/write level to 1200 baud and visual indication
whilst loading. Price incl. instruction manual £25.00.

ATOMSOFT

Games Pack 1-10, Maths Pack 1-2, Soft VDU, Chess, Desk
Diary, Fourth, Data Base etc. £10.00 each. Word Processor
ROM and manual £26.00
Fruit Machine, Break Out, Disassembler UFO Bomber, Pinball
£3.50 each. 747 Fit Simulator, Invaders, Galaxian, Chess
£7.00 each.
BOOKS (no VAT): "Getting Acquainted with your Atom"
£7.95. "Atom Magic" £5.95. "Atom Business" £6.95. P&p/
book 70p.

ATOM SOUND BOARD

Board plugs into ATOM bus. Programmable sound generator
allows full audio frequency output, plus two parallel and one
serial ports. On board ROM with demo program. Can be
connected directly to hi-fi system.
Complete kit £35.00 + £1 p&p.

ATOM VISION

Ultrasonic transducer driven by a stepper motor under soft-
ware control. Many exciting applications including robotic
vision, computer tracking, measurements etc. See April PE
for detailed information.
Complete kit £46.00 + £1 p&p.

SEND FOR OUR DETAILED ATOM LEAFLET

ZX81

UPGRADE YOUR ZX81 WITH A PROFESSIONAL KEYBOARD

One piece 47 key full travel keyboard module fully built with flexible connectors
ready to plug into ZX81. No soldering or desoldering necessary £33 + £1 p&p.
An attractive anodised custom made case to house our keyboard and the ZX81
pcb £13.00 + £1 p&p.



Your ZX81 could look like this

EXPANSION ACCESSORIES:

MOTHERBOARD: This board provides the most economical and reliable way of fitting two add-on boards plus the RAM PACK.
On board voltage regulator drives all external boards and overcomes the overheating problems £10.50. Female to female
connector £5.50 (to connect ZX to motherboard). Female to male £5.50 (to allow remote positioning of RAM pack and other
add-ons).

3K STATIC RAM BOARD for ZX80/81 £16.00. 16K RAM PACK £26.

HIGH RES GRAPHICS BOARD (256 x 192 Pixels) 6K RAM on board. Resident software in ROM provides extremely fast hi-res
facilities which include MIXED TEXT and GRAPHICS. Screen can be copied to printer £75 + £1.50 p&p.

ZX SOFTWARE

DEFENDERS, ASTEROIDS, £5.50 each. INVADERS/PLANETOIDS, NIGHTMARE/MUSIC, DRAGON MAZE/LIFE £6.05 each.

CONSTELLATION £7.00, DICTATOR £7.80, STAR TREK, BUMPER 7 £4.30 each and more
WIDE RANGE OF ZX BOOKS IN STOCK. SEND FOR OUR DETAILED PRICE LIST.

ADD 40p P&P + 15% VAT on all orders

ITION COMPETITION COMI

Can you Beat The Bug on our give-away front cover puzzle and win a BBC Microcomputer?

A much-sought-after BBC micro will be despatched to the winner of our Beat-the Bug competition.

The puzzle can be done without a computer. Just punch out the small tokens on the bottom of the card and place them on the puzzle as indicated. Then the task is to move the data from computer Z into computer A and replace it with the data from computer A.

But there is a Bug floating about to make things awkward. The rules of the puzzle are:

- Move two pieces of data first, then move the Bug.
- From here data and Bug are moved alternately.
- Data can only move towards its destination.
- Only one piece can occupy a location at any time.
- The Bug can move in either direction.
- Moves are along the lines to neighbouring locations.

It may look deceptively easy but it does take some careful thinking to work out the answer. More importantly it should take a good deal of careful thought before attempting a program to solve it. It is more difficult than the four octagons puzzle we set you with in our first issue. The response to that first puzzle took us by surprise — we weren't expecting 800+ solutions — but this time we think we're ready for you.

We are working out a reasonable time to solve the puzzle so please write on your program how long it takes to come up with the answers.

The objectives are first: to produce the best program to solve the puzzle; to find out how many solutions there are; to find out how many distinctly different solutions there are (discounting reflections and rotations) and what the shortest solution is. Finally to discover if it is possible to get the Bug to end up in the middle or not.

The program will be judged on the following criteria: Does it run correctly (bug free)? Does it find the solutions? How fast does it



find a solution? Does it find all solutions and how quickly? Concise programming. Good use of memory space. Imaginative algorithms. Is it self contained? Presentation.

Write the program on any sort of computer, or just in plain Basic and send it as a listing or a cassette to us before June 16. We will include a way of solving the puzzle next issue — just to prove that it is possible.

Send it in to Computer & Video Games, Durrant House, 8, Herbal Hill, London EC1R 5JB. The judges' decision is final and no correspondence can be entered into.

Make sure you include a name and address and the time the program takes to find one solution. Also be sure to let us know what machine it runs on.

The 15 places in our special free Starweb game were very swiftly filled after the May issue found its way into the newsagents.

Our 15 computer moderated gamers are: David Johnson of Stoke, Paul Kershaw of Littleborough, Steven Draper of Sudbrooke, Marcus Rowland of Westbourne Park, Paul Hardy of St Annes, Anthony Shepherd of Barnsley, Keven Stubbs of Stockport, D.P. Goodman of Stevenage, Jenny Parsons of Stirlingshire, I.C. Spicer of West Norwood, Richard Moore of Wolverhampton, Stephen Loughran of London NW6, Mark Woolrich of Wheatley, Angie Bradley of Birmingham and Bernard Andrews of Manchester.

For the many people who entered but were not lucky, we are looking into the possibilities of running a much larger computer moderated game in the Autumn.

**NEXT
MONTH**

Pacman gave arcade managers plenty of food for thought. In America it was the first video

game which proved attractive to women and brought a family touch to the video industry.

In such a male-oriented world as the video industry we wondered if British arcade owners will follow the American business thinking which has since spawned Ms Pacman! Are women worth exploiting? We find out in July.

Imhotep the pyramid builder is our featured game next issue. Upon the desert of the east, the first pyramid was raised and the strain on the entire country was great indeed, can you guide your workforce of 1000s to success in the desert?

Casino Royale, Solitaire and Missile Command also feature — as our games listings.

The Prestel page features a long look at the recent competition to produce a Sinclair downloader. Find out about Telesoftware — it could change the face of personal computing.

The Spectrum will always be the Sinclair '82 to owners of that company's earlier models. It's potential is obvious but is it going to take over from the ZX81 and, if so, how quickly? Our July issue will include a 16 page supplement for Sinclair owners.

From those who still haven't exhausted the possibilities of their ZX80, to those who have a yearning for a Spectrum. Something for every Sinclair user and everyone who has been keeping more than one eye on this innovative company.

Keep an eye out for our July issue at the newsagent or order your copy now.

I would like to take out an annual subscription. I enclose a cheque/P.O. for £10, (£20 overseas) for twelve issues. Computer & Video Games, Bretton Court, Bretton, Peterborough PE3 8DZ.

Name _____

Address _____

**Computer
& Video Games.**
The magazine that makes computers fun.

PROGRAMS BY POST FROM

Software City

* Compare our prices
* Compare our range

All prices include VAT. P&P FREE

ATARI PROGRAMS

| | | | |
|--------------------------------|------|-----|--------|
| Eastern front 1941 | CAS | 16k | £24.95 |
| Caverns of Mars | CAS | 16k | £28.95 |
| Galactic chase | CAS | 16k | £15.50 |
| K-Razy shoot out | ROM | 16k | £28.95 |
| Ghost hunter | CAS | 16k | £19.50 |
| Crypts of terror | CAS | 16k | £28.95 |
| Star Raiders | ROM | 16k | £27.95 |
| Missile Command | ROM | 16k | £27.95 |
| Asteroids | ROM | 16k | £27.95 |
| Super Breakout | ROM | 16k | £27.95 |
| Pilot | ROM | 16k | £49.95 |
| Microsoft Basic | DISK | 32k | £55.95 |
| Assembler / Editor | ROM | 16k | £36.95 |
| Atari Word Processor | DISK | 48k | £91.95 |
| Forest fire | CAS | 24k | £15.50 |
| Rings of the Empire | CAS | 16k | £15.50 |
| Intruder alert | CAS | 16k | £15.50 |
| Mountain shoot | CAS | 16k | £11.99 |
| Sunday golf | CAS | 16k | £11.99 |
| Star trek 3.5 | CAS | 32k | £15.95 |
| Waterloo | DISK | 40k | £31.95 |
| Airstrike | CAS | 16k | £15.95 |
| Outlaw / Howitzer | CAS | 24k | £13.95 |
| Avalanche | CAS | 16k | £13.95 |
| 747 Landing simulator | CAS | 24k | £13.95 |
| Anthill | CAS | 8k | £10.99 |
| Adventures by Scott Adams 1-12 | CAS | 24k | £15.99 |
| Angle Worms | CAS | 8k | £11.99 |
| Lunar lander | CAS | 16k | £11.99 |
| Moving maze | CAS | 16k | £9.75 |
| Alpha Fighter | CAS | 24k | £11.75 |
| Murder at Awesome Hall | CAS | 16k | £12.49 |
| World War III | DISK | 40k | £19.49 |
| Beneath the Pyramids | DISK | 40k | £19.49 |
| Midway Campaign | CAS | 32k | £11.50 |
| Tanktics | CAS | 24k | £16.75 |
| B-1 Nuclear Bomber | CAS | 16k | £11.50 |
| North Atlantic Convoy | CAS | 16k | £11.50 |
| Nukewar | CAS | 16k | £11.50 |
| Planet Miners | CAS | 24k | £11.50 |
| Lords of Karma | CAS | 40k | £13.75 |
| Empires of the Overmind | CAS | 40k | £19.75 |
| Conflict 2500 | CAS | 32k | £11.50 |
| Acquire | CAS | 16k | £13.75 |
| Display Lists | CAS | 16k | £13.45 |
| Horizontal / Vert. Scrolling | CAS | 16k | £13.45 |
| Player Missile Graphics | CAS | 24k | £19.45 |
| Basics of Animation | CAS | 16k | £13.45 |
| Page Flipping | CAS | 16k | £13.45 |
| Sound | CAS | 16k | £13.45 |
| Memory Master Map | | | £4.95 |

ATARI

JUST IN FROM THE USA!

Crash, Crumble and Chomp!
You are one of six different monsters let loose to destroy the city. Can they stop you? Hi-res colour, sound over 100 possible scenarios. 48 page manual. **£19.95**
CASS. DISK 32k

Ricochet
Fast action strategy game that allows you to put pressure on your opponent. 5 game variants. 4 levels of skill. **£14.95**
CASS 16k DISK 32k.

Dragons Eye
Adventure game with real time battle graphics. **£19.95**
DISK 48k

Star Warrior
Superb graphics interplanetary adventure game. **£27.95**
CASS. DISK 32k

Temple of Apsahai
Award-winning graphic adventure game. **£27.95**
CASS. DISK 32k

Rescue at Rigel
You have only 60 mins to save the prisoners. **£19.95**
CASS. DISK 32k

Invasion Orion
10 space battle scenarios or create your own. **£17.95**
CASS. DISK 32k

Datestones of Ryn
20 mins of fighting and chasing to retrieve the gems. **£13.95**
CASS. DISK

VIC-20

| | |
|---|--|
| Bombs Away | |
| Fly your bomber across the landscape and avoid the anti-aircraft fire. Release your bombs and try to destroy the enemies gun positions. £7.95 | |
| Home Finance | |
| Calculate payments, interest rates, remaining balances, future balances, annuities and investments. Calculates any unknown given the other variables of the classic interest formulas. Screen prompts step you through each calculation after selecting your purpose from a master menu. £9.95 | |
| Reversal | |
| The VIC acts as the board and judge in a two player strategy game. Flank your opponents pieces and see them convert to your colour. Excellent game of strategy and skill. VIC acts as your opponent. 8k expansion required. £10.95 | |
| Target Moon | |
| Another hand / eye coordination game involving a manoeuvrable cannon which you use to shoot down various targets. Excellent use of colour and sound. £7.95 | |
| Capture | |
| Draw the robots into the landmines and electrified fences while avoiding their sole purpose which is to capture you. Who will win? £7.95 | |
| Math Drill | |
| Generates simple addition and subtraction problems for the young user. Uses giant numbers on the screen and rewards correct answers with a colourful display. £7.95 | |
| Biorhythm | |
| 8k expansion required. Enter your name and birthdate and the day you wish your chart to begin. The VIC will plot three weeks of biorhythms for you on the screen and then pause until you tell it to proceed or start a new chart. Your physical, intellectual and emotional cycles are plotted in different colours which really create an interesting and informative display. £9.95 | |
| Household Inventory | |
| 8k expansion required. This program will create and manage a household inventory for insurance purposes. Tracks purchase date, cost, description and location. Will total values and print to screen or printer. £14.95 | |
| Data Manager | |
| 8k expansion required. Allows you to create and manage your own data base. You can define the number of items in a record and add, change, display, delete, search, sort, print, etc. Your data can be stored on cassette when not in use. £17.95 | |
| Stock Portfolio Manager | |
| 8k expansion required. Tracks last 6 values of each stock and plots trend curves on screen. Provides complete analysis of your portfolio including number owned, purchase date, cost, value, appreciation, yield, etc. £17.95 | |
| Moon Lander | |
| This game allows the 'Astronaut' to take over the controls of a Lunar Excursion Module as it is making its descent to the moon. The program provides information via screen displays depicting amount of propulsion, fuel remaining, height and descent speed. In addition the LEM is displayed as it descends to the surface. If the astronaut is not careful, the module can be damaged or even totally destroyed upon impact. £7.95 | |

Wrap
This is a two player game requiring manual skill and dexterity as you attempt to trap your opponent and force him to 'Crash'. The VIC will act as your opponent if you desire. **£7.95**

Bricks
This game requires skill as you attempt to knock out the various coloured bricks without missing the returning ball. The deeper you succeed in breaking into the wall the higher the value of your score until you break through and truly increase your score. See who can get the highest score. Joystick version. **£7.95**

Blackjack
Las Vegas style blackjack with the VIC serving as dealer. Two players can play against the house (VIC) utilizing such strategy as 'Doubling Down' and controlling your bets. Each card is displayed on the screen in full colour. The VIC provides an easy way to develop your 'SYSTEM' before actually going to the tables. **£7.95**

Tennis
The standard game of Paddle tennis with the option of the playing one or both sides of the net. Excellent use of the colour and sound capabilities of the VIC. **£7.95**

Slots
Try your hand at this 'One Armed Bandit'. See the wheels spin and the handle pull utilizing the VIC's colour and sound capabilities. You can really get arm weary pumping in your money. **£7.95**

Alien Raiders
The Aliens are invading the Earth and it is up to you to destroy them before they land. The tension increases as you try to accumulate a high score. Joystick version. **£7.95**

Just a small selection from our immense range is shown here. Send for our full price list of Software, Peripherals and Accessories. New titles being added all the time.

ORDER BY POST FROM:

VIC-20 PROGRAMS

| | | |
|---------------------------------|-----|--------|
| Introduction to Basic (Part 1) | CAS | £13.95 |
| Avenger | ROM | £18.95 |
| Star Battle | ROM | £18.95 |
| Super Slot | ROM | £18.95 |
| Jelly Monsters | ROM | £18.95 |
| Alien | ROM | £18.95 |
| Super Lander | ROM | £18.95 |
| Road Race | ROM | £18.95 |
| Amok | ROM | £18.95 |
| Simple Simon | CAS | £6.75 |
| ViCalc | CAS | £6.75 |
| A-maz-ing 3k EX. | CAS | £8.50 |
| Master Wits | CAS | £6.75 |
| Kiddie Checkers | CAS | £6.75 |
| Wall Street | CAS | £6.75 |
| Alien Blitz | CAS | £6.75 |
| Skymath 3k EX. | CAS | £6.75 |
| Space Division 3k EX. | CAS | £6.75 |
| Invader Fall | CAS | £6.75 |
| The Alien 3k EX. | CAS | £6.75 |
| Star Wars | CAS | £6.75 |
| Spiders of Mars | CAS | £6.75 |
| Hangman - Hangmath | ROM | £23.75 |
| Mathhurdle - Monster Maze | CAS | £7.75 |
| Seawolf - Bounce out - Vic Trap | CAS | £8.50 |
| Code maker - Code Breaker | CAS | £7.75 |
| Ski-run | CAS | £7.75 |
| Dune Buggy | CAS | £9.50 |
| Car Race | CAS | £9.50 |
| Super Worm | CAS | £9.50 |
| Charset - 20 | CAS | £7.75 |
| Vicmen | CAS | £7.75 |
| Vicgammon 3k EX. | CAS | £6.75 |
| Code Breaker | CAS | £6.75 |
| Cosmic Battle | CAS | £4.75 |
| The Worm | CAS | £5.75 |
| Jungle | CAS | £5.75 |
| Space Defence | CAS | £5.75 |
| | CAS | £10.95 |

PLEASE SUPPLY ME WITH THE FOLLOWING PROGRAMS

FOR ATARI 400 ☐ ATARI 800 ☐
VIC-20 ☐
I ENCLOSE CHEQUE FOR £
PRICES INCLUDE VAT. POSTAGE AND PACKING.
PLEASE SEND ME YOUR LIST OF SOFTWARE, PERIPHERALS AND ACCESSORIES. ☐

NAME _____

ADDRESS _____

Software City

GALASET LTD 30, BAYFORD RD.
LITTLEHAMPTON, WEST SUSSEX CV9 3JH

ITIONCOMPETITIONCOMI

WHO'S GOING TO WIN THE WORLD CUP?

In conjunction with the Silica Shop, we are hoping to add a little more spice to your World Cup viewing this summer.

There's a chance to win an Atari 2600 T.V. Games Centre complete with the soccer cartridge, or a £100 to spend at the Silica Shop, one of the leading stockists of T.V. and electronic games.

All you have to do is pick out the World Cup champions, runners-up and the beaten semi-finalist which wins the third place play-off.

If you are spoilt for choice, there will be no shortage of soccer pundits eager to give you their views on the matter.

And you only have to enter to be sure of winning something! For on top of that first prize and two consolation prizes of Atari soccer cartridges or £30 vouchers, there is a £3 voucher for everyone who enters. This can be spent at the Silica Shop 1-4 The Mews, Hatherly Road, Sidcup, Kent or by mail order.

We're not eligible to enter but if you want our advice it's: Scotland, England and Northern Ireland (but not necessarily in that order). But you may want to choose another combination.

And if, in the unlikely case, that our three make early exits from the competition, then you'll



still have some interest in following the World Cup through to its well-televised end.

You could even key-in our own World Cup Manager game and check to see if your prediction runs true to form.

We have included three World Cup questions which will be used as a tie-break if the result of the competition is so predictable that more than one reader guesses correctly. And we need to know whether you want an Atari system and cartridges or would prefer a voucher, so please fill in all the entry form below and send it off to the Silica Shop. To receive a £3 voucher, include a stamped addressed envelope with your entry.

COMPETITION RULES

- 1) No employees of Computer & Video Games, Silica Shop, or their relatives may enter the competition.
- 2) All entries must be on the original coupon, not a copy thereof. Entrants must complete the entire entry form to be eligible.
- 3) All entries must be postmarked no later

than June 12th 1982. Any entry which is incomplete, illegible or late will be disregarded by the judges.

- 4) The judge's decision is final and no correspondence will be entered into. In the event of a tie the first correct entry drawn will be the winner.
- 5) Only one prize per entry will be awarded and no cash alternative will be offered.
- 6) Vouchers are redeemable either by visiting, the Silica Shop, 1-4 The Mews, Hatherley Road, Sidcup, Kent or by mail order. Vouchers are valid up to 30th October 1982.
- 7) Winners will be notified by post. A list of winners will be printed in the September issue of Computer & Video Games.

WORLD CUP COMPETITION

Using your skill and judgement write down who you think will finish

WINNERS

RUNNERS-UP

THIRD PLACE

in this year's World Cup competition?

1) Which country currently holds the World Cup?

2) Which is the only country to have won the World Cup three times?

3) Who is the only player to have scored three times in a World Cup Final?

Do you already own a T.V. game?
If so which system do you own?

If you win would you rather have the Atari TV Games Centre and cartridges or the voucher?

Game ☐ Voucher ☐ (please tick)

Name:

Address:

Post Code:

Send your entry, enclosing an S.A.E. to:
World Cup Competition,
Silica Shop Ltd., 1-4 The Mews,
Hatherley Road, Sidcup, Kent
DA14 4DX.

Closing date for entry is Friday
June 12 1982.

BRAINWARE ANSWERS

The answer to our May Mind Routines problem is Question one, 5011; Question two, there is no solution to this one; Question three, 4,630,907,663.

The correct solution to last month's Nevera Crossword is printed right and the winners' names will be published in next month's issue.

For more puzzles to tax your brain turn to page 17 for this month's Mind Routine and Nevera Crossword.





THE SYMBOL OF VALUE

| NASCOM | |
|--------------------------|---------|
| KITS | |
| Nascom 1, with | |
| NAS-SYS 1 less PIO | £112.50 |
| Nascom 2, no user RAM | £202.50 |
| BOARD LEVEL | |
| Nascom 1, with | |
| NAS-SYS 1 less PIO | £126.00 |
| Nascom 2, no user RAM | £238.50 |
| CASED SYSTEMS | |
| Nascom 3, no user RAM | £338.40 |
| 8K user RAM | £36.00 |
| 16K user RAM | £90.50 |
| 32K user RAM | £103.50 |
| 48K user RAM | £117.00 |
| POWER SUPPLY | |
| Kit form | £29.25 |
| MEMORY CARDS | |
| RAM B memory card | |
| with 16K RAM - kit | £72.00 |
| RAM B memory card | |
| with 16K RAM board | £90.00 |
| Additional 16K RAM | £13.50 |
| Additional 32K RAM | £27.00 |
| I/O BOARDS | |
| I/O boards for 3 x PIO, | |
| 1 x CTC, 1 x UART | |
| (kit) ex PIO | £40.50 |
| PIO for above I/O | £10.80 |
| CTC for above I/O | £12.60 |
| UART for above I/O | £14.40 |
| DISC SYSTEMS | |
| Nascom single disc drive | |
| (350KB) incl. FDC card | £423.00 |
| Nascom dual disc | |
| drive (350KB each) | |
| incl. FDC card | £616.50 |
| NAS DOS disc op system | £40.50 |

| SOFTWARE | |
|------------------|--------|
| NAS-SYS 1 ROM | £10.80 |
| NAS-SYS 3 EPROM | £18.00 |
| ZEAP 2.1 for NAS | |
| SYS in 4 x EPROM | £26.30 |
| ZEAP 2.1 for NAS | |
| SYS on tape | £22.50 |
| 8K microsoft | |
| basic in ROM | £18.00 |

| ATARI | |
|------------------------|--|
| 800 Computer | |
| 400 Computer | |
| Recorder | |
| Disk Drive | |
| 16K RAM | |
| Joysticks (pair) | |
| Blank Diskettes (5) | |
| Assembler Editor | |
| Space Invaders (ROM) | |
| Star Raiders (ROM) | |
| Missile Command (ROM) | |
| Asteroids (ROM) | |
| Invitation to | |
| Programming (1) | |
| Invitation to | |
| Programming (3) | |
| Touch Typing | |
| Conversational French | |
| Conversational German | |
| Conversational Spanish | |

| TAPES | |
|---------------------|--------|
| Blank C12 | £5.00 |
| Tapes (6 mins/side) | for 10 |

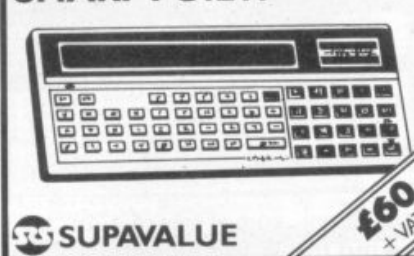
SHARP MZ80K (48K RAM)



SUPAVALUE

£326
+ VAT

SHARP PC1211



SUPAVALUE

£60
+ VAT

ATARI 800 (16K RAM)



SUPAVALUE

RING FOR OUR
SUPA LOW PRICES

CBM VIC

VIC 20
VIC Cassette Unit
VIC Printer
VIC Disk Drive
3K RAM Cartridge
8K RAM Cartridge
16K RAM Cartridge
Programmers Aid
Machine Code
Joystick

VIC SOFTWARE
Introduction to Basic
Avenger (ROM)
Super Slot (ROM)
Alien (ROM)
Super Lander (ROM)
Road Race (ROM)

BOOKS

Computers for Everyone £6.00
Science & Eng £11.60
Prog Apple II Ed £8.95
Apple BASIC Data £4.95
File Programming £11.50
Make a success of
Micro-computing in
your Business £11.50
Inside BASIC Games £11.50
Intro to PASCAL £8.05

RING FOR SUPA LOW PRICES.

| | |
|-------------------------|--------|
| PASCAL H'book | £13.95 |
| Program the Z-80 | £11.95 |
| Your First Computer | £7.75 |
| 6502 Applications Book | £7.25 |
| Advanced BASIC | £8.95 |
| Apple II User's Guide | £11.10 |
| Basic BASIC | £8.95 |
| BASIC Business Software | £7.05 |
| BASIC Computer Games | £5.95 |
| BASIC Comp Progs | |
| in Science & Eng | £8.55 |
| BASIC with style | £6.95 |
| BASIC A self | |
| teaching guide | £5.95 |
| CP/M User's Guide | |
| (Osborne) | £10.10 |
| Game Playing with BASIC | £8.20 |
| Getting acquainted with | |
| your Acorn Atom | £7.95 |
| Instant BASIC | £8.75 |
| Micros Vol 0 | |
| Beginner's Book | £3.50 |
| Micros Vol 1 | |
| Basic Concepts | £10.10 |
| Microsoft BASIC | £8.75 |
| More BASIC Games | £6.25 |
| Mostly BASIC | |
| Applies Apple II | £7.95 |
| Mostly BASIC | |
| Applies PET | £7.95 |
| Programming a | |
| Micro - 6502 | £8.05 |

YOU'LL VALUE OUR EXPERIENCE
YOU'LL VALUE OUR PRICES

ACCESS & BARCLAYCARD WELCOME - HIRE PURCHASE & PART EXCHANGE AVAILABLE
ALL PRICES EXCLUDING VAT & D.E.

SRS MICROSYSTEMS
161 Bramley Road, Oakwood, London N14 4XA.
Telephone: 01-363 8060.
Open Mon-Sat. 9-5.30.



ARCADE ACTION

for TRS-80
Model I & III

AND

VIDEO GENIE

Dealer enquiries
welcome

WITH
SOUND



Don't forget if you can write good software
for TRS 80, Pet, Apple, then we can offer
top royalties for marketing both in Europe
and the U.S.



WITH
SOUND

AIR ATTACK

Presenting a new dimension in
Arcade games: The THIRD, Defend
an East Coast Town against
Fighters, Bombers and V.1's.

It's the best Arcade style
game available,
anywhere

£12.95

TRS-80 Model I & III. Level 2 Cassette 16k

FROG RACE

Afrogs life is a hard one; They've
built a six lane Motorway right next
to the crocodile infested river, that
you must cross to get home!

Can you help a poor frog
out, and maybe pick-up a
girl-frog on the way.

£5.95

TRS-80 Model I & III Level 2. Cassette 4k & 16 k

WITH
SOUND



MOONBASE RESCUE

Somewhere in the Dagma system
a group of Astronauts need your
help. Can you steer your L.V.A.
down through showers of meteors
to the moons surface and return to
dock with the Mother Ship.

TRS-80 Model I
Level 2 Cassette 16k

£8.95

*All prices include
VAT and P/P.

ALGRAY SOFTWARE

Algray House, 33 Bradbury Street,
Barnsley, South Yorkshire S70 6AQ

Telephone: (0226) 83199



INSIDE THE MICRO...



PROGRAM POWER PROGRAM POWER

ATTENTION ALL ACORN

ATOM

OWNERS!

Look
Special Low
Prices

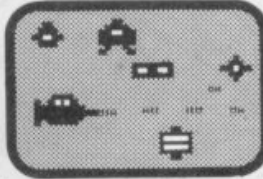
QUALITY PROGRAMS FROM BRITAIN'S LEADING ATOM SOFTWARE HOUSE



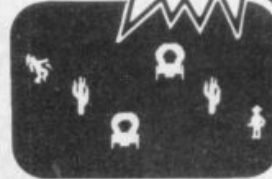
CHess (12K)
Improved graphics, plays black or white, mid game level changes, look ahead up to 8 moves, offensive, normal & defensive play. 10 sub levels, castling, 'En passant' by player. Rejects illegal moves. Take back moves & action replay with take over. Set up problem games. **£7.95**



AIR ATTACK
Command an East Coast anti-aircraft battery. Destroy enemy fighters, bombers and doodle-bugs. Ingenious graphics depict planes approaching, veering and flying off. Search the sky and scan the landscape through 360 degs. **GOOD SOUND, GREAT ENTERTAINMENT £7.95**



SPACE FIGHTER (6K + 3Kgr)
Super High speed 'Defender' game. 5 types of intelligent aliens. Repeating laser cannon, smart bombs, hi-score, rankings, bonus points, 6 skill levels. Exciting sound effects. **£7.95**



COWBOY SHOOT-OUT (12K)
Full feature, two player, arcade shooting game. Cactus plants, wagons, animated cowboys. Superb graphics and sound. **£6.95**

Adventure

ALL THE EXCITEMENT, INTRIGUE AND FRUSTRATION OF A MAIN-FRAME ADVENTURE! **12K**
Explore the tortuous forests, dark caverns & castle dungeons. Beware the maze of twisting tunnels and the desert wastelands. Outwit the predators. Rescue the PRINCESS and carry off the treasures.

Great skill & imagination are required to play this excellent game & you may still never exhaust all the possibilities.

By devising methods of condensing messages, the author has been able to include many features which would otherwise be available only on much larger computers. Start your adventure now — **£7.95**



ALSO FEATURED IN OUR EXTENSIVE RANGE ARE—

WARLORDS (12K) Another High-speed arcade game with the medieval touch. Defend your castle and destroy your opponents. Play against computer or other player. Exciting graphics **£6.95**

MUNCHYMAN (6K) Outrun the munchers (or puckmen). Eat your way to a high point score and confrontation with the SUPERMUNCHERS **£4.95**

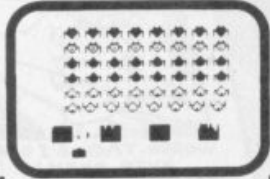
3D ASTEROIDS (6K + 2Kgr) Steer through the rolling, hurtling asteroids. Excellent real life graphics **£5.95**

MARTIANS (12K + VIA) Use your force field to stop them landing. Beware the imposters **£6.95**

LUNAR LANDER (12K) Superb version of this arcade game, including long and short range scans limited fuel supply **£6.95**



ASTROBIRDS (12K)
NEW version of this incredible GALAXIAN type game. Fantastic sound effects. Screaming missiles & swooping bird men. NOW DOUBLE SPEED OPTION. The best game on the market. **£7.95**



INVADER FORCE (12K)
Terrific version of 'Space Invader' 4 types of invaders, mother ship, great sound, hi-score, 6 skill levels. **£7.95**

PROGRAMMER'S TOOLBOX

(PACKED 4K EPROM) **£24.50**

★ 1200 BAUD CASSETTE OPERATING SYSTEM
★ VISIBLE LOAD & SAVE

| | | | |
|------------------|-----------|---------------|--------|
| ● TRACE (X) | READ | ON ERROR | HEX |
| ● LTRACE | DATA | RENUMBER X, Y | IHXX |
| ● STEP | RESTORE | AUTO X, Y | OFF |
| FIND | ELSE | CURSOR X, Y | VECTOR |
| VAR | WHILE | BEEP X, Y | ZERO |
| LVAR | ENDWHILE | KEY X | POP |
| DELETE X, Y DUMP | INKEY \$X | | STOP |

(● VIA chip required)
Suitable for any memory size.
Greatly enhances ATOM existing facilities

Now available from many Atom Dealers.

ROM SELECTOR BOARD

Suffering from congestion? (PROGRAMMER'S TOOLBOX, WORD PROCESSOR etc.) Switch between up to 4 ROMs located at Hex A000. Assembled and tested unit with compact, professionally produced PCB and good quality components. Fits easily into the Utility Socket (IC 24). **Only £19.50**

★ **WRITTEN ANY PROGRAMS!** ★
★ **WE PAY 20% ROYALTIES FOR ATOM, NASCOM & BBC MICRO PROGRAMS** ★

SPECIAL OFFER

Deduct **£1** per cassette when ordering two or more.

Please add 55p order P & P + VAT at 15%

Send SAE for our Full Catalogue

PROGRAM POWER

PROGRAM POWER
5 Wensley Road
Leeds LS7 2LX
Tel. (0532) 683186



SALE ELECTRONIC GAMES



ATARI T.V. GAME
THE GAME WITH 50 CARTRIDGES
R.R.P. £129.95 (inc. VAT)
OUR PRICE
£78.22 + VAT
(= £89.95 inc. VAT)
The Atari is supplied with a free mains adaptor, a pair of paddles, a pair of joysticks and a combat cartridge and is the most popular television game on the market and has a range of over 40 different cartridges. In addition to the standard Atari range we also now stock the new Activision cartridges which are currently on special offer reduced from £18.95 to **£16.95 inc. VAT**

ATARI CARTRIDGES
20% OFF R.R.P.
Atari Soccer £29.95
NOW £23.95
Activision Dragster £18.95
NOW £14.95
Activision Boxing £18.95
NOW £14.95

ATARI OWNERS CLUB — Why not join our **FREE** Silica Atari Owners Club and receive our bi-monthly newsletter with special offers and details of the latest new cartridge releases. Telephone us with your name and address and we will add your name to our computer mailing list.

MATTEL INTELLIVISION
THE ULTIMATE T.V. GAME
R.R.P. £229.95 (inc. VAT)
OUR PRICE
£156.48 + VAT
(£179.95 inc. VAT)
6 NEW CARTRIDGES JUST RELEASED:
ASTROSMASH • SNAFU • BOWLING
SPACE ARMADA • BOXING
TRIPLE ACTION
All 19 current cartridges + the six new ones above now retail at £19.95 — **Silica special offer price £17.95 inc. VAT**

The Mattel Intellivision is the most advanced T.V. game in the world with a range of over 25 different cartridges all at our special offer price of £17.95. This game uses a 16-bit microprocessor giving 16 colours and three-part harmony sound. The picture quality is incredible with 3D effects and realistic animation. An add-on keyboard will be available in the Spring 1982 to convert the Mattel into a full home computer with 16K RAM which will be fully expandable and programmable in Microsoft Basic. Other accessories will be added later in the year. The normal price of the Intellivision + free soccer cartridge is £229.95 but our special offer price is £179.95 inc. VAT saving you £50.00.

MATTEL OWNERS CLUB — Why not join our Mattel Owners Club and receive our regular newsletters containing details of all the latest cartridge releases. Telephone us with your name and address and we will add your name to our computer mailing list.
FREE 16 PAGE CARTRIDGE CATALOGUE — If you are interested in owning a Mattel, we now have available a 16 page catalogue describing the latest six cartridges to be released, as well as a new Mattel colour leaflet with brief descriptions of all 25 cartridges. Telephone us for further details.

T.V. GAME CARTRIDGES

We specialise in the whole range of T.V. games and sell cartridges for the following games: **ATARI • MATTEL • ACETRONIC • PHILIPS • DATABASE • ROWTRON • INTERTON • TELENG**. Let us know if you own any of these games and we will let you have details of the range of cartridges available.
Attention **INTERTON & ACETRONIC** owners we have over 75 assorted used cartridges in stock all with 1 year guarantee — **SPECIAL OFFER £8.95 each**

We also have a number of secondhand games and cartridges.

HAND-HELD GAMES
EARTH INVADERS
These invaders are a breed of creature hitherto unknown to man. They cannot be killed by traditional methods — they must be buried. The battle is conducted in a maze where squads of alien chase home troops. The only way of eliminating them is by digging holes and burying them.
R.R.P. £26.95 **NOW £18.95 inc. VAT**

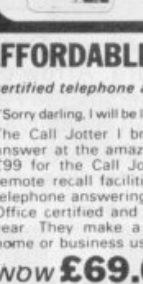


PAC MAN 2

Pac Man 2 is based on the latest pub game. It is a two-colour game of strategy, tactical pursuit and destruction pitting PacMan against the large Ghosts. The object of the game is for Pac Man to attain as high a score as possible by capturing and destroying Ghosts, Bugs and Energizers without being himself destroyed by the Ghosts. Pac Man 2 incorporates the most modern and complex status displays ever produced and is now on release for the first in the UK offering an ideal present.

R.R.P. £34.95 **NOW £24.95 inc. VAT**

SPACE INVADERS
Based on one of the most popular arcade games, Space Invader™ packs in lots of action with multi-shaped, brilliant LED vessels, including attack ships, bombs, defenders, missile rockets and a beam force cannon, plus exciting electronic sound effects. The attack ships attempt to bomb the ground defenders as they are moving. You manoeuvre the missile rockets — avoiding alien bombs — and destroy the invader force as quickly as you can. Progressive degree of difficulty. Includes automatic digital scoring. For ages 6 to adult.
R.R.P. £24.95 **NOW £16.95 inc. VAT**



ELECTRONIC CHESS

Liquid crystal battery chess computer with 100-200 hrs battery life and two levels of play. Comes with separate chess board and pieces.
R.R.P. £24.95
NOW £5 OFF
SALE PRICE
£19.95
(inc. VAT)

GRADUATE CHESS
A deluxe version of the electronic chess set with integral chess board. The ideal portable chess set — see illustration.
NOW £29.95
INC VAT

FIDELITY MINI-SENSORY CHESS COMPUTER

The very first chess computer of its price to offer a portable computer with integral sensory board. Battery (6-8 hrs) or mains operated. This is a modular game and additional plug-in modules are planned for 1982 for advanced chess, popular openings, greatest master games, draughts and reversi.

MINI-SENSORY COMPUTER WITH STANDARD CHESS MODULE WAS £54.50 **NOW £49.95 INC VAT**

Silica Shop are one of the country's leading specialists in Chess Computers and now stock a range of more than 20 Chess Computers, including Challenger 7/10/voice, Sensory 8 and Sensory Voice, Diplomat, System 3, Morphy, Great Game Machine, Voice Champion, and the new Scicys Mark V.

COLOUR CARTRIDGE T.V. GAME
Semi-Programmable T.V. game
4 cartridges
+ main transformer
NOW £43.50 OFF
R.R.P. £73
SALE PRICE £29.50 inc. VAT

BACKGAMMON COMPUTER
Silica stock a wide range of Backgammon computers from £29.95 upwards. Special offers now available on Gammonmaster.
Was £99.95
NOW £48.95 inc. VAT

CALL JOTTER — THE AFFORDABLE ANSWER

The Post Office certified telephone answering machine



"Sorry darling, I will be late home — Love John"
The Call Jotter 1 brings the affordable answer at the amazing price of £69 (or £99 for the Call Jotter 2 with built-in remote recall facilities). These amazing telephone answering machines are Post Office certified and guaranteed for one year. They make a thoughtful gift for home or business use.

Call Jotter 3 illustrated **NOW £69.00 inc. VAT**
TWIN TAPE £139

RADOFIN TELETEXT
Plug the adaptor into the aerial socket of your colour TV and receive the CELESTIAL and ORACLE television information services.
THIS NEW MODEL INCORPORATES
• Stereo image reproduction
• Four RGB Colour
• Main menu RBC & B4
• Broadcast type, volume, channel, change
• "Green" display to render the unit to watch normal. To programme Gold played, in-out, hour, the channels.
ADD-ON ADAPTOR
WAS £199 inc. VAT
SALE PRICE £124 inc. VAT

FOR FREE BROCHURES — TEL: 01-301 1111



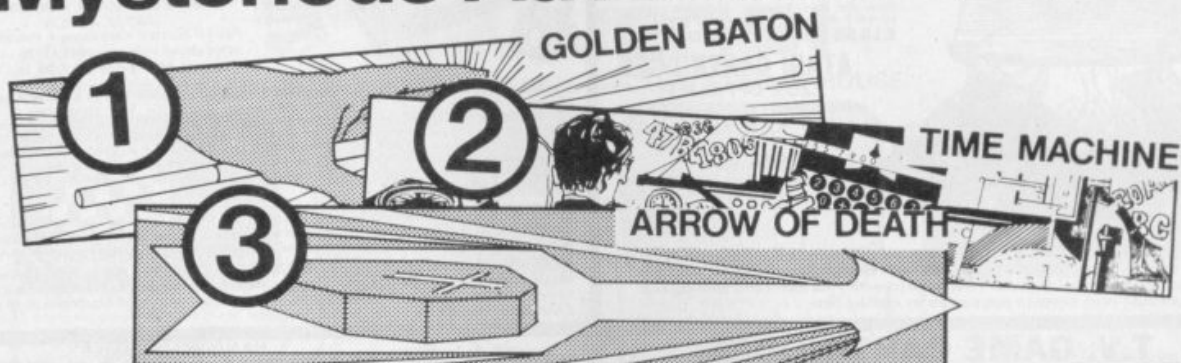
For free illustrated brochure and reviews on our range of electronic games, please telephone 01-301 1111. Free delivery service available. To order by telephone please quote your name, address and ACCESS (BARCLAYCARD) number, and leave the rest to us. Post and packing free of Charge. Express 48 hour delivery service available.
• **CALLERS WELCOME** — Demonstrations daily at our Sidcup shop, open from 9am-5pm Monday-Saturday-Early Closing Thursday 7pm — Late Opening Friday 8pm.
• **2 YEAR GUARANTEE** — All goods are covered by a full year's guarantee and many are further covered by our exclusive Silica Shop 2 year Guarantee.
• **MONEY BACK UNDERTAKING** — If you are unsatisfied with your purchase and return it within 7 days we will give you a full refund.
• **AFTER SALES SERVICE** — Available on all machines out of guarantee.
• **COMPETITIVE PRICES** — We are never knowingly underpriced.
• **HELPFUL ADVICE** — Available on the suitability of each machine.
• **CREDIT FACILITIES** — Full credit facilities available over 12, 24 or 36 months at competitive rates of interest.
• **PART EXCHANGE SCHEME** — Available on second hand machines.
• **CREDIT CARDS WELCOME** — Access, Barclaycard, Drivers Club, American Express.
SILICA SHOP LIMITED CVG0682
1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX
Telephone: 01-301 1111 or 01-309 1111



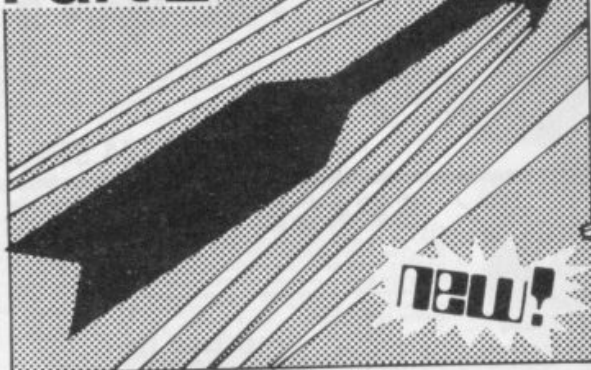
INNOVATIVE TRS 80-GENIE SOFTWARE

from the professionals

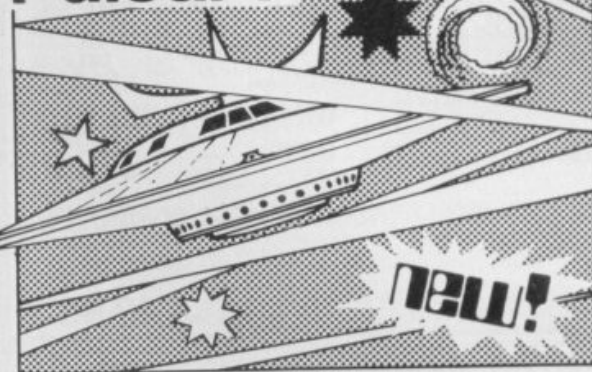
Mysterious Adventure ★★ ★



Arrow of Death Part 2



Escape from Pulsar 7



NOW — The second part of Arrow of Death plus a new Adventure! Escape from Pulsar 7 is the first space Mysterious Adventure. Arrow of Death Part 1, already said to be one of the best 16K Adventures written, is surpassed by the Part 2 edition. Arrow 2 carries on from Arrow 1 but is self-sufficient. In Pulsar 7 you will be delivering Redennium ore to an outer galaxy when you pick up an interesting creature for the intergalactic zoo on your home planet, but what happens when the ore and the animal inadvertently come together?

For the TRS-80 or Video Genie Tape £10.50 inc. V.A.T. & P. & P.
Disk £14.00 inc. V.A.T. & P. & P.



MOLIMERX LTD

A J HARDING (MOLIMERX)

1 BUCKHURST ROAD, TOWN HALL SQUARE, BEXHILL-ON-SEA, EAST SUSSEX.

TEL: [0424] 220391/223636

TELEX 86736 SOTEX G

TRS-80 & VIDEO GENIE SOFTWARE CATALOGUE £1.00 [refundable] plus £1 postage.



Brainware



MIND ROUTINES

Finding the pathway through this alphabet maze should set your braincells buzzing.

Each square contains a letter and a number. The number shows how many squares can be travelled to reach the next destination. You only "visit" a square when you stop at it and take its numeric value for your next move.

Starting from square S (labelled Start) and moving either horizontally or vertically — not diagonally — by the number of squares indicated, you must visit each square on the diagram once.

No square should be visited more than once and you must finish at the G (labelled Goal) square.

For example your path could start: SXDIF...

What path should you take to achieve your goal?

| | | | | |
|---|------|---|-------|---|
| 3 | 2 | 1 | 1 | 4 |
| A | B | C | D | E |
| 1 | Goal | 3 | 3 | 3 |
| F | | H | I | J |
| 3 | 3 | 2 | 1 | 1 |
| K | L | M | N | O |
| 4 | 2 | 2 | 1 | 3 |
| P | Q | R | Start | T |
| 1 | 2 | 2 | 4 | 4 |
| U | V | W | X | Y |

WIN OUR CHAMPAGNE

The champagne winners for our April issue are hemispheres apart. We have one far from and one close to, home.

The Mind Routines winner is Mr J. Devine from Westville 3630,

Natal in South Africa, who correctly pointed out that the number of stolen bags was 1789.

The Nevera Crossword winner was Mr S. F. Rischer of Russell Court, Woburn Place, London WC1 who was first out of the hat with a correct entry.

Bottles of champagne are on the way to them both.

Two more bottles of champagne are up for grabs this month for the first two correct answers out of the hat for this Mind Routines puzzle and the crossword below.

Please send your entries to Computer & Video Games, Durrant House, 8 Herbal Hill, London EC1R 5JB to reach us before June 13.

The answers to our May issue's Brainware problems can be found on page 11.

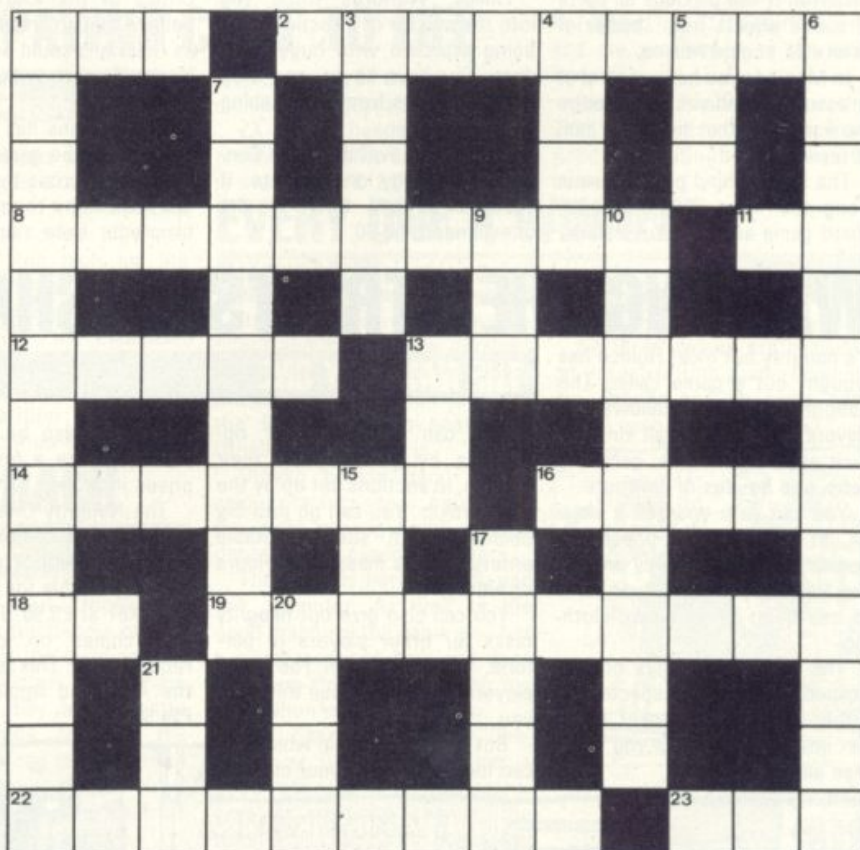
NEVERA CROSSWORD

ACROSS

1. Lettuce function (3)
2. Getting the program working with gravity on the end of the french insect drink (9)
8. Game for a school teacher's brain (10)
11. Ego initialisation of data (2)
12. Ten inside ten buck and one for I terminator (4, 1)
13. Jubilee LF CR? (7)
14. Flags produced by Vic (7)
16. Jump the beginning of the program (5)
18. Toot missing the ducks race (2)
19. Take off the centre forward in naval warfare game (3, 7)
22. Syntactical significances not at charges (9)
23. Annoy the glitch (3)

DOWN

1. Letter sent by modem (13)
3. Gateway to the program? (5)
4. Comic proceed after break (4)
5. Pint without quiet function (3)



6. Play Wizard's Quest for example, going around coming high class King (2, 11)
7. Circular motions mixed into rotas (9)
9. Anger clipping point from the wire (3)

10. Enterprising crystal (9)
13. Our latin GINO system content (3)
15. Polish and erase (3)
17. Go-a singular ?? (1, 4)
20. One piece of hardware (4)
21. Basically assign or rent (3)

NEW PRODUCTS NEW PRODUCTS NEW PRODUCTS NEW GAMES NEWS

MASTERMIND THE DEFEAT OF WARLORDS

VICSOFT 7

Control Technology have just brought out seven good quality games programs on one cassette.

The first of these is Breakout — an extremely colourful version of the game with good sound effects.

Deathrace 2000 is the second game on the cassette. It is based on the film of the same name. During the game you have the unfriendly task of knocking down as many pedestrians as you can.

Sounds is a menu-driven program and is for more serious use than the other games on the cassette. It can produce all sorts of sound effects from sounds of nature to engine noises.

In Moniods you have control of an astronaut and you must dodge the asteroids that hurtle by him at terrific speed.

The Mastermind program runs along the lines of the original board game and is in full colour.



Squash could turn you into a champion or make you feel like a born loser — just like the real thing.

Finally, Warlords turns you into the master of a castle that is being attacked with huge boulders. You have to try and stop these boulders from demolishing your castle.

Vicsoft 7 is available from Control Technology on cassette. It costs £5.95 and runs on the unexpanded Vic-20.

BEWARE THE WANDERING WUMPUS ...

WUMPUS

The Wumpus is a deadly creature which lives in a cave system and no-one has ever seen a live specimen.

This is because the revolting Wumpus must be successfully tracked down and shot before the hunter actually sets eyes on him.

Suddenly the Wumpus is a very sought after creature. It smells abominable, but that can help the Wumpus hunter.

The object of Sharpsoft's new

version of Wumpus is to search for and kill the Wumpus. But your quest is made more difficult by deep pits and Superbats.

At any time you may tumble into a pit and plunge to your death.

If you manage to miss the pits a Superbat may swoop down and pick you up. Once again you could find yourself falling into a pit, or into the open mouth of the Wumpus.

One concession you are given is an "I smell a Wumpus" warning when you are one or two rooms from the beast.

When you encounter the Wumpus you have one chance to shoot it with your crooked arrow, or die in the attempt.

Wumpus comes from Sharpsoft and the cassette costs £5.85.

SURPRISING ATTACKERS

ZX GALAXIANS

Critics of the ZX81 would not believe that an arcade game such as Galaxians could be transferred to the Sinclair — but now it has happened.

ZX Galaxians has all the usual features of the game. The Galaxians move across the screen and you have to hit them with bullets from your base ship at the bot-

tom of the screen.

The Galaxians swoop down in random formations and drop bombs, trying to destroy you. You have four lives which are indicated on a scoreboard at the right of the display.

The board also shows you who has scored the greatest number of hits in a game. The Galaxians also have the knack of surprising the player. One minute you think that you have nearly finished them off and the next more Galaxians arrive.

If you manage to score more points than anyone else has the computer will ask for your name and will display it in the highest score box until someone else beats it. The graphics are very good.

ZX Galaxians runs in 16K and is available on cassette from Artic Computing. It costs £6.95.

WALKING THE STREETS OF SHAME

THE NAUGHTY ONE

It's naughty but nice! Holdco has brought out a game called The Naughty One which allows the players to indulge in all kinds of illicit activities in bars, gambling dens, and houses of ill-repute.

You can earn yourself a slave or get parts of your opponents bodies. But paper money will not buy what you want — you have to use items of your own clothing.

The bank manager is no pin-striped figure of respectability either. He is a pawnbroker. If you get into debt with him you could lose all your clothes.

You can undress your opponents by gambling for their clothes, in auctions set up by the pawnbroker. You can go into big business with such profitable enterprises as massage parlours or worse.

You can also give out naughty tasks for other players to perform. But be careful. The other players can do all these things to you.

But this is a game in which you can lose more than your clothes.

You could also be seduced — and there are a few other surprises in store.

The Naughty One is produced by Holdco. It comes in two versions. The mini or cassette version is available for the Atari and the ZX81 at £9.50. The maxi version comes on diskette and requires 48K. This is available for the Atari and Apple II. It costs £24.50.



NOW FIND A FRIENDLY MONSTER . . .

SWORD OF PEACE

The king of a far off country has died and as his heir you must prove your worth by going down into a maze that is crawling with monsters.

Artic Computing's *Sword of Peace* is a classic adventure game. You must move around the maze, entering sets of move co-ordinates, to find the objects of state. These include the Orb of State, the Robes of State, and the Sceptre — and finally the *Sword of Peace*.

The game is played on several different levels. When you find an object you are automatically



transferred to the next level of the maze.

The monsters are divided into two categories good and bad. You can actually have a good

vampire! To begin the game you are given a series of four spells which you can use against bad monsters.

Your first two encounters with

good monsters are very advantageous. Firstly, you are given a direction metre. This tells you the number of moves you are away from an object. Nothing is ever that easy though.

The direction metre only gives you one number to use. For a co-ordinate fix you need two, so you do not know whether you are moving in the right direction.

This is remedied in your second encounter with a good monster. It will give you a direction metre which shows two numbers. This shows you the number of moves you need to make in each direction before coming across the object. Combined with the first metre it is invaluable.

Good monsters can also teach you spells. They are not guaranteed to work and you can lose a lot of points during battle. When you have been through all the levels of the maze, and have all the Objects of State you can exit and are proclaimed as the new king.

Sword of Peace runs on the ZX81 16K, and is available from Artic Computing. The cassette costs £6.95.

HOW THE KINGS AND PAWNS COME TO LIFE

Many people have complained about the graphics capability of the ZX81. Now the seemingly impossible has happened. You can play high resolution chess on a Sinclair.

ZX Chess needs a few pieces of hardware to produce the graphics but the effect is really startling. The board display shows in clear detail actual chess pieces as they look on a real board and not just capital letter representation.

The hi-res graphics version

ZX CHESS

need three pieces of hardware. These are the Quicksilver motherboard, connector, and character generator. The price of these items is not too high for the effects that you can produce.

It is also possible to play ZX Chess 2 without the enhanced graphics. There are seven levels of play. Four of these can be used within competition time limits. You get the option to play black

or white using all the legal moves including en passant.

ZX Chess needs 16K and is produced by Artic Computing and is available at £12.99.

EVERY ONE A WINNER!

OTHELLO, CHEQUERS AND CASINO

Kuma Computers are really confident about their new versions of the three oldies for the Sharp MZ-80K. They want to know who the first person to beat their Othello or Draughts is.

Othello boasts good quality colour graphics representation of the eight playing board and 64 double sided playing counters.

The game is between you and the computer. As well as the good graphics the game also has a quick response time and does not keep the player waiting too long when making a move.

The Sharp version of Chequers, or Draughts, also has a good response time. The colour graphics are good, showing the traditional checkered board and pieces.

Finally, Casino is a new version of a game of Craps. Craps is essentially an American game which is played in the glittering casinos of Las Vegas.

If you fancy yourself as a gambler and cannot afford the airfare to

L.A. then this game is for you.

All three games are available on cassette from Kuma Computers. Othello and Chequers cost £10.50 each. Casino is £5.50.

Illustrations: Jon Davis



THE EMPIRE STRIKES BACK

THE FALL OF THE ROMAN EMPIRE

Nero fiddled while Rome burned — but now there is a chance for you to change that city's history.

The Fall of the Roman Empire transports you back to Europe during the dangerous days of 401 AD. It allows you to play at being a Roman emperor for 30 years, or turns.

You have control of the vast legions of Rome and the cities that you have gained by conquest. The people of those cities must pay taxes to you.

The only problem that you have is the little matter of invading Huns, who launch attack forces at you from Germany.

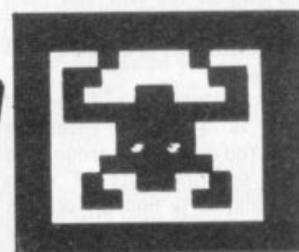
They attack your troops and cities, murder the people of your cities and burn the buildings.

From those cities that escape the Huns you may raise taxes to pay for damage done by the attackers. You can also replenish your battle weary troops, building them up for another confrontation with the enemy.

The game gives you 30 years in which to either rise or fall. You could find yourself reliving rather than changing history.

The Fall of the Roman Empire is supplied by Program Power and runs on the Acorn Atom. The cassette is available for £6.95.

MAZOGS



A MAZE ADVENTURE GAME FOR sinclair ZX81

MAZOGS is a brand new game for the 16K ZX81, unlike any other game you've seen on the ZX81. This is without doubt the best game available for this computer, and if you don't believe us, ask somebody who has seen it, or go down to your local computer shop and ask for a demonstration.

MAZOGS is a maze adventure game with very fast-moving animated graphics. A large proportion of the program is written in machine code to achieve the most amazing graphics you have ever seen on the ZX81.

You will be confronted by a large and complex Maze, which contains somewhere within it a glittering and fabulous Treasure. You not only have the problem of finding the treasure and bringing it out of the maze, you must also face the guardians of the maze in the form of a force of fearful Mazogs. Even if you survive their attacks you could still starve to death if you get hopelessly lost. Fortunately, there are various ways in which you can get help on this dangerous mission.

There are three levels of difficulty, and the game comes complete with comprehensive instructions. The cassette on which the game is supplied is of the highest quality, and loading is guaranteed.

Mazogs is available from Bug-Byte and most good computer shops at £10.00 inclusive.

BUG-BYTE SOFTWARE

100 The Albany, Old Hall Street, Liverpool L3 9EP

Please send me

| Qty | Item | Price |
|-----|--|-------|
| | Bug-Byte "MAZOGS" Cassette For £10.00 inclusive | |

I enclose cheque/P.O. ☐

OR Please debit my:

Access 5224

Barclaycard 4929

Expiry Date:

Name:

Address:

Code:

Dealers Discounts
Available.
ACCESS/BARCLAYCARD
ORDERS WELCOME ON
24-HOUR ANSA PHONE
051-227 2642



CVG-6-82

NEW PRODUCTS NEW PRODUCTS NEW PRODUCT GAMES NEWS

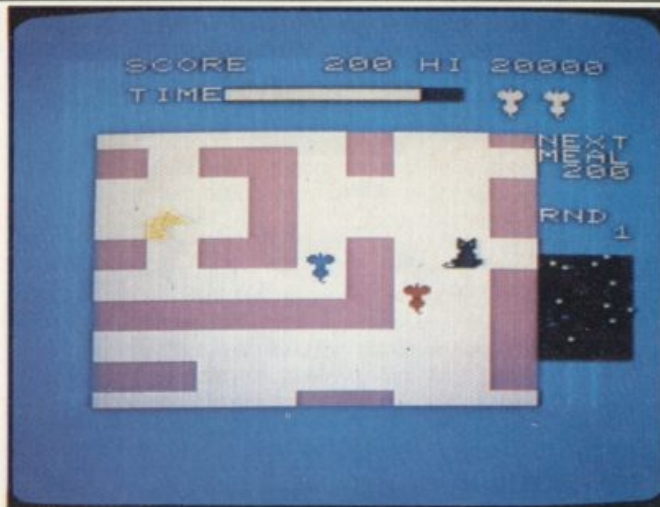
DON'T GET RATTY IN THIS MAZE

RAT RACE

When it comes to sniffing out a ripe gorgonzola, there's a new breed of Commodore mouse which is positively radar equipped.

Mind you, he has to be to survive in the dangerous mazes of Rat Race. One of the most compulsive and well conceived computer games around, Rat Race owes a great deal to the arcade game Rally X. Only the theme has been changed. Instead of racing cars the combatants in Rat Race are a lone mouse and deadly rats and cats.

The mouse's aim is to survive long enough to consume every cheese in the maze. And he sets off at a cracking pace with three rats in close pursuit. To throw the rats off his trail he can lay a false scent which confuses them and gains him time. But use it sparingly as it takes up valuable time.



There are 10 cheeses in the maze, the first is worth 100 points, the second 200 and so on. But there is one super cheese which is worth twice the normal value and it is advisable to eat this one first as it doubles the score for all the remaining cheeses.

When all 10 cheeses have been eaten the mouse is given a bonus score for remaining time.

But you couldn't have a mouse game without a sprinkling of cats.

The black cats are sprinkled

through the maze, and although stationary, they must be avoided or they will cost you one of your three lives.

An ordinary mouse could not be expected to live for long in this environment but the Mousus Commodorous has evolved a sophisticated radar system which displays the whereabouts of cheeses and rats.

The game comes in cartridge form for the VIC-20 and is produced by Commodore. It is available from its dealer network at £17.35 plus VAT.

JELLYMEN ARE A REAL NIGHTMARE

JELLY MONSTERS

Children's parties will become a much more sinister affair after playing the game Jelly Monsters.

The VIC-20 version of Packman goes under this name and features the monsters on its cover — and a pretty nightmarish bunch they are too.

With a maze full of dots, four monsters and four large energising dots, the game follows the Packman format.

The small dots are worth 10 points each, the large dots are 50 points each and whenever one of these is eaten, the chasing Jelly Monsters turn blue and you have a brief respite from their constant pursuit.

This is your opportunity to chase and eat them.

This is a Commodore cartridge for the VIC-20 and joins a growing library of games in this form, presently standing at eight. Also new out are Road Race and Star Battle.

Road Race gives you a set time to travel as far as possible up a winding road, marked only by posts on either side. It is similar to the night driver arcade game.

Star Battle is the equivalent of Galaxians with a hovering group of bat-like space creatures flying in formation at the top of the screen and a lone laser base firing from the bottom.

The Commodore plug-in ROM cartridges cost £17.35 plus VAT.

ESCAPE FROM A DOOMED PLANET

Watch out for this mammoth new game for the Apple II. Called Time Zone it lives on six diskettes and allows the player to travel in time over several million years.

The Earth is threatened with a war that it cannot survive. As a citizen of the planet you await your doom outside your house. The year is 1981 AD.

Near the house is a meadow

TIME ZONE

which you go to investigate. There is a strange round object in the middle of the meadow. You walk up to it and look round it cautiously.

There is a door in the side of the object. No-one seems to be watching so you gently push the door open. Suddenly reality

becomes blurred and you find that you are in time capsule. You could be transported anywhere.

The makers say that the game could take anything up to a year to play as both sides of the diskettes are used in the game, so you would need a lot of time on your hands in order to play it properly.

Time Zone is available from SBD software and costs £49.95.



BECOME A KING OF THE ICE

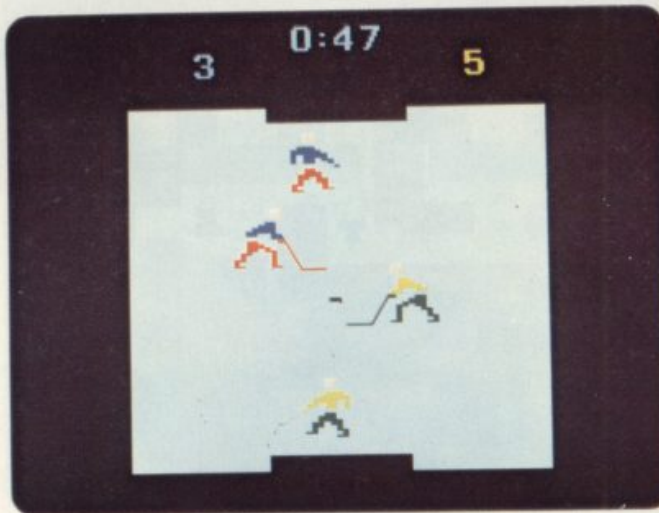
ICE HOCKEY

Experience the excitement and rough and tumble of ice hockey and without collecting the bruises.

Ice Hockey sticks to the traditional idea and comprises of two teams playing with a puck on the ice rink. It's quite possible for the players to finish the game in a bloody fight — which often happens in real life games! It's even more likely with the absence of a referee and without any penalties given to the teams.

Both teams have a goalie providing defence and a forward player to perform the attacking role. The puck can be passed from player to player and each one can shoot from various angles.

The players have a number of tricks up their shoulder-padded sleeves to outwit and out ma-



noeuvre their opponents. They can knock each other down in an unsubtle attempt to take possession of the puck, they can tackle in a variety of ways by body checking, and tripping, and they can also use their stick handling technique to win the ball.

There are also game variations allowing you to speed up the

movement of the puck for an extra test or slow it down.

Ice Hockey is produced by Activision for use with the Atari Video Computer System and will be on sale from stockists in June. It costs £26.95, which is more expensive than others because of the extra memory used in writing the game and the greater sophistication achieved.

ATTACK OF THE ALIEN MARAUDERS

GALAXIS

An advancing troop of alien marauders armed with deadly laser weapons are attacking your space fighter. You must destroy the aliens before they get your ship.

In *Galaxis* you must fight off wave after wave of invading creatures.

This game is a version of the arcade game *Galactica*. Your ship is given three chances to build up the highest score possible. A series of invaders move across the top of the screen and suddenly peel off in formation swooping down towards you.

Mother ships also join up the invading ranks and these perform a similar swooping action in an effort to out-maneuvre your space fighter.

Bonus ships are given when you reach a certain number of points and the game gets more difficult as it progresses. The more aliens you blast out of the sky and the more waves you complete the faster the subsequent attack will be.

This is the latest game out for the Interton VC4000 television games centre. It's a 4K ROM cartridge and can be found at Interton stockists for £19.95 from June.

POWER IS THE NAME OF THIS GAME . . .

A world war is being waged with one country trying to conquer the earth.

Two armies battle it out both on the video screen and on a board in this second game in the Master Strategy series for the Philips G7000 games centre.

In *Conquest of the World* a knowledge of strategic playing is vital. The object of the game is for the two opponents to capture as much enemy territory as poss-

CONQUEST OF THE WORLD

ible, using armies made up of tanks, battleships and submarines not to mention troops.

This is the follow up cartridge to *Quest for the Rings* in which you use a game board to position your armies and work out logistics, while you watch land and sea battles take place on the screen.

The theme of this war game is a confrontation between the world's super powers in a bid to achieve world dominance. Representing the real life relationships of countries during the

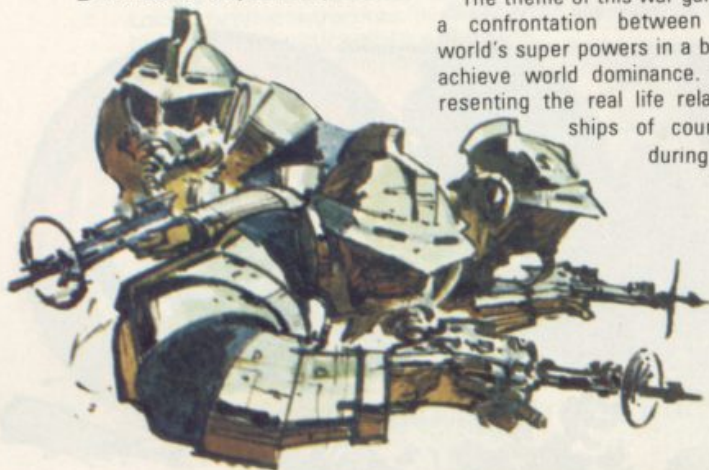
early 1980s is the board, mapping out the lie of the land and the deployment of forces. Using the game board you can keep track of the whereabouts of all your troops.

When one of the players has conquered the other and achieved the position of world leader the game is over.

Conquest of the World is scheduled for a June release by Philips in the UK.

The price will be £30.00 approximately.

Illustrations Jon Davis



ARCADE ACTION FOR ADVENTURERS AND SPACE ACES

Atari is sticking to the winning idea of producing versions of popular arcade games.

Defender is scheduled for release during the summer months and is a rendering of the arcade favourite. Planning to attract fans of the original game Atari is bringing out a similar version which will sell for £29.95. One of the more expensive games but it should be one of the more sophisticated.

Yar's Revenge should coincide with Defender's release date if

DEFENDER, YARS REVENGE, EUTOPIA, SPACE WALK

things go according to plan. This game is for gamers with a taste for Adventure, but further details are still under wraps.

It promises to be a test for experienced Adventurers though and also falls into the more expensive price bracket.

A game shrouded in mystery is due out from Ace for the Intellivision television games centre. Called Eutopia it tells of the story of two islands positioned in the

middle of an ocean. The object of the game is to take command of the two islands, thwarting the opponents positions.

You have at your disposal numbers of men who can be deployed at various tasks. Your men can either build tactical plants or build shipping fleets.

For each conquest you make points are up for grabs. Depending on the condition of the frame, or the playing area, the score

differs. To further your cause you, as the ruler, can plant troops on the opposition territory. Ace expects to sell this cartridge for £24.95.

Likewise Space Walk, the other forthcoming addition to the Intellivision software series. With four levels of skill to test your space adroitness you can blast various meanies from the skies.

There are a number of alien ships and beings for you to fight — including the deadly space ameoba, and the rainbow bubbles which are filled with a lethal astrogas.

Both these games should be in the shops by the end of July, both retailing for £24.95. G7000 owners should keep their eyes peeled for a new addition to the games range. Already out in America, Monkeyshines is a game set to be a barrel of fun.

WHEN THE WEST WAS WILD!

STAMPEDE

You'll feel right at home on the range in front of your video screen as you attempt to lasso a stampeding herd of cattle.

That's the idea in a newly released Activision game for the Atari video computer system. Out in the Wild West the number of cattle you owned represented your wealth. In this game you have to keep that number high.

You control a cowboy riding the range equipped with a lasso. He can only ride on the left hand side of the screen and at the press of a button he unleashes his lasso to capture a steer.

This requires a good deal of hand and eye co-ordination to judge the distance to successfully rope a steer correctly. The screen is filled with multicoloured cows stampeding the range and for each one you lasso you score a varying number of points.

Don't let any of them dash past your mounted cowboy and escape his rope, it means lost points. Your cowpoke can stop the galloping cattle either by roping them or by riding up close to a cow and nudging her back.

Mavericks in the herd make things more difficult. They don't move at all so are bound to wander off to the left hand side of the screen eventually. These yearlings must be lassoed or



you miss out on points.

The magic score to reach is 1,000. Then you automatically receive a bonus horseman. Go for the black mavericks to quickly build up your points as they are worth more than others.

The cows move at different speeds and there are interesting features written into the game. When your cowhand's pony runs into a stray steer he'll give an almighty buck, and if he stumbles on a rock he'll trip up.

Various skill levels are available and on the higher levels the cows move so quickly it really does become a stampede. The Stampede is available from Activision stockists for £19.95.

FAMILY FAVOURITES

Keep your eyes open for a new home games centre dedicated to arcade games.

Called the Hanimex Home Arcade Centre it will be on sale at the end of June.

Swindon based Hanimex is launching its new system with a total of 17 games cartridges, six of which are versions of money-spinning arcade favourites.

The Home Arcade incorporates the handsets used by the Mattel Intellivision centre. These differ from conventional hand

HOME ARCADE

controllers because they consist of a circular disc with which you make your manoeuvres. Others use a joystick device.

Retailing at around £89 Home Arcade follows in the footsteps of Hanimex's other video games centre, the Interton VC4000. According to Hanimex the new centre is based on a more advanced system than the Interton.

Software for Home Arcade springs initially from a Hanimex team who then pass it on to an American sub-contractor which designs and writes each program. The manufacturing process is taking place at the firm's Swindon factory.

Scheduled for launch in June are versions of Phoenix, Defender, Crazy Climber, Pacman, Galactica and Beserk.

Plans are afoot to continue bringing out new games cartridges for the new games centre which will be of an equally standard and meet public demand. Future releases include Centipede, Jungler and Galaga.

At the same time Hanimex will carry on marketing the Interton VC4000.

Superior Systems Ltd.

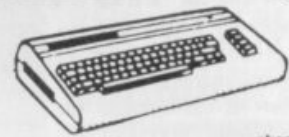
178 West St, Sheffield S1 4ET. Tel. (0742) 755005

ACORN



| | |
|--|-------------|
| Acorn Atom 8K rom, 5K ram, P.S.U. & Colour Board | 199.00E |
| Atom disk pack, 96K single disk drive | 299.00E |
| Atom colour board | 39.00C |
| Atom games pack 1-11 | 10.00 eachA |
| Word pack ROM | 26.00A |
| Forth | 10.00A |
| Forth theory & practice | 6.95A |
| Business | 10.00A |
| Business book | 6.95A |
| Synthesiser | 10.00A |
| Life package | 10.00A |
| Desk diary | 10.00A |
| Database | 10.00A |
| Utility pack I | 10.00A |
| Soft V.D.U. | 10.00A |
| Peeko computer | 10.00 eachA |
| Maths pack I & II | 10.00A |
| Word tutor | 10.00A |
| Adventures | 10.00A |
| Atom chess | 20.00A |
| Floating point ROM | phone |
| B.B.C. ROM pack | 7.95B |
| Magic book | 5.95B |
| B.B.C. basic programming book | 5.95B |

VIC 20



| | |
|------------------------------------|---------|
| VIC 20 computer | phone |
| VIC cassette deck | 39.09D |
| VIC printer | 200.00E |
| Single disk drive | 344.35E |
| Programmers aid cartridge | 30.39B |
| Machine code cartridge | 30.39B |
| 3K RAM cartridge | 26.04B |
| 8K RAM cartridge | 39.09B |
| 16K RAM cartridge | 65.17B |
| Joystick | 6.52B |
| Paddles | 11.74B |
| VIC revealed | 13.00B |
| Intro to basic part I | 10.00B |
| Getting acquainted with the VIC 20 | 7.95B |
| VIC programmers reference guide | 14.95B |
| VIC games ROMs, various from | 17.35B |

| | |
|----------------------------|-------|
| CASSETTE SOFTWARE | |
| Pack Man (high resolution) | 7.50A |
| Submarine | 7.50A |
| Gunman (high resolution) | 7.50A |
| Naval battle | 7.50A |
| Space Invaders | 7.50A |
| Fire Trek | 7.50A |
| Alien Wars | 7.50A |
| Head On | 7.50A |
| VIC Cube | 7.50A |
| Crazy Balloon | 7.50A |

SHARP



| | |
|--|-----------|
| MZ80K (48K) | phone for |
| MZ80A (48K) | best |
| MZ80B (64K) | price |
| MZ80 P3 printer for MZ80K | 360.00E |
| MZ80 IO interface unit for MZ80K | 95.00E |
| MZ80 FB dual floppy disk for Sharp computers | 550.00E |
| MZ80 EU interface unit for MZ80B | 46.00B |
| MZ80 P6 printer for MZ80B | 409.00E |
| PC 1211 pocket computer | 69.50D |
| PC 1500 pocket computer | 139.00D |
| CE 121 cassette interface for PC 1211 | 11.26B |
| CE 122 printer interface for PC 1211 | 60.83D |
| CE 150 4 colour printer for PC 1500 | 125.00D |
| CE 151 4K upgrade for PC 1500 | 39.13B |
| SOFTWARE | |
| Wordpro word processor (tape) | 39.50B |
| Wordpro word processor (disk) | 79.95B |
| Apollo word processor (tape) | 34.95B |
| Database (cassette based) | 29.50B |
| MZ80 calc II | 34.50B |
| ZEN editor assembler | 19.50B |
| ZEN MOD (modifies Zen) | 10.50A |
| ZEN DOS (editor assembler disk) | 37.50B |
| ZEN disassembler | 10.50B |
| Program filing index | 5.50A |

VIDEO GENIE



| | |
|----------------------------|---------|
| Genie I computer | 295.00E |
| Genie II computer | 295.00E |
| EG 3014 expansion unit | 199.00E |
| EG 3015/16 16K RAM card | 91.50C |
| EG 3015/32 32K RAM card | 128.80C |
| EG 400 single disk drive | 215.00E |
| EG 400AT dual disk unit | 375.00E |
| Colour board for Genie III | 35.00B |
| SK2 sound kit | 7.80A |
| Dust cover for Genie VII | 5.00B |
| EG 602 Genie printer | 210.00E |

| | |
|-----------------------------|-------------|
| SOFTWARE | |
| Acquire business game | 11.27B |
| BI nuclear bomber pilot | 9.53B |
| Conflict 2500 | 9.53B |
| Midway Campaign | 9.53B |
| North Atlantic convoy | 9.53B |
| Nukewar | 9.53B |
| Planet Miners | 9.53B |
| Tanktics | 13.88C |
| Adventures (various titles) | 11.97 eachB |
| Adventure Sampler | 8.75B |
| Alien Armada | 8.75B |
| Android Nim | 8.75B |
| Asteroids | 8.75B |
| Accel II basic compiler | 39.95C |
| Battle of Britain | 13.50B |

Postage Rates

a.75p b.1.00 c.1.50 d.2.50 e.5.00

ALL PRICES
EXCLUDE VAT

Prices and offers were prepared many weeks before publication of this magazine, and whilst every possible effort will be made to meet our offers, in some cases, prices may fluctuate and we would advise you to confirm by telephone before ordering.

MAIL ORDER

Please Supply

£

Name

£

Address

£

£

£

£

£

£

Access/Barclay/Cheque
Card No.

P&P+VAT
Total

Code

Tel

CHESS



There is more to chess problems than: What Happens Next? It is also possible to ask: What Has Happened?

I left you with two "retrograde analysis" problems last issue with an invitation to look back into the history of the position.

In figure one, the problem is which side made the last move? As with many retrograde analysis problems, the key to solving it is to ask what was the last move. If you try this you will find that white has no legal last move — e.g. Pawn from b4 to b5 is not a possibility — why? But Black has several — e.g. Kd4-c5. So Black moved last.

It might seem that programming a reverse move generator for Chess is straightforward, but in fact it is extremely awkward.

Suppose that White has a Bishop on c8 say. It could have reached there by an ordinary move or by a capture. Alternatively it could have moved to c8 as a promoted Pawn from c7 or as a capture with promotion from b7 or d7.

A Black Pawn on g6 might — in general — have reached there from f7, g7 or h7 but the one on g6 in figure one has obviously come from f7. How can this obviousness be programmed?

As part of an artificial intelligence (A.I.) project, a researcher in Bristol, Brian Alden, has recently written a program which reasons out the solutions to quite a number of retrograde analysis problems.

Among the routines used by the program are the following:

PCMOV: generates possible reverse moves for a specified side

LEGCHK: checks legality of reverse moves

ISKCHK: tests whether a King is in check

KCHECK: identifies moves which could have placed a King in check

WHPCAP: determines which men could have been captured on a specified square

CPGTOB: tests whether any pieces are constrained by the Pawn structure

The initial version of the program was written in RT-11 Macro for PDP-11 computer and occupied approximately 5K words of memory. A much improved and extended version in POP-2 for a DEC-20 computer is currently being developed. Neither program is commercially available.

As an example of the program in action, here is how it solves last month's second challenge problem.

In figure two, the rightmost Pawn has been carelessly placed between squares g2 and h2. Where should it be? It is White to move and you know there have been no under-promotions.



Fig 1



Fig 2

To arrive at a solution the program performs the following chain of reasoning. Since Black moved last, PCMOV generates all possible reverse moves for Black, namely Nb1-a3, Nb1-d2, Nd1-b2, Nd1-e3, Kc2-d2 and Kc2-b2.

LEGCHK now checks the legality of each of these moves.

- The Knight moves all place the White King in check, so these moves are eliminated.
- Kc2-d2 places the Black King in check by White's Bishop on e1 — detected by routine ISKCHK. Routine KCHECK cannot find any legal way in which White could have delivered check, so the check is imaginary and Black's move is eliminated.
- Kc2-b2 also places the Black King in check. This time KCHECK returns the following possibilities as to how

such a check could occur. The White Rook could have moved to b5 — possibly with a capture. A White Bishop or Queen could have moved from b3 to c2, to uncover check, and then be captured by the Black King. A Knight move from b4 to c2 is impossible, since two White Knights are still on the board and there have been no underpromotions.

The Queen moves from b3 to c2, Rook moves from b3 or b4 to b5 and non-capturing Rook moves from c5, d5 or e5 are eliminated, since in each case ISKCHK returns the information that the Black King is still in check. This leaves only a Rook capture from c5, d5 or e5, or a Bishop move from b3 to c2 as explanations of the check on the Black King.

Next, WHPCAP is used to determine which Black men have been captured on b5.

- The captured man cannot be the Black Queen's Rook, since that piece is found by CPGTOB to be constrained to move on squares a8 and b8 only.
- It cannot be the King's Bishop, since that piece moves on the wrong colour squares.
- It cannot be a Queen or a Pawn, since either case White would have been in check and there is no previous legal move by Black which would eliminate this check.

This exhausts all possible captures on b5.

This leaves only one possibility: Black's last move was with the King from b2 to c2, capturing a White Bishop which has just moved from b3, discovering check.

The home square of this Bishop is f1. If the carelessly placed White Pawn were on g2 the Bishop would be constrained and unable to leave f1 to be captured.

The White Pawn must therefore be on h2 in figure two!

By Max Bramer

ATARI SOFTWARE

DYNACOMP

FOREST FIRE! Using excellent graphics and sound effects, this simulation puts you in the middle of a forest fire. Your job is to direct operations to put out the fire while compensating for changes in wind, weather and terrain. Not protecting valuable structures can result in startling penalties. Life-like variables are provided to make **FOREST FIRE!** very suspenseful and challenging. No two games have the same setting and there are 3 levels of difficulty. **24K (C) £15.99**

NOMINOES JIGSAW: A jigsaw puzzle on your computer! Complete the puzzle by selecting your pieces from a table consisting of 60 different shapes. **NOMINOES JIGSAW** is a virtuoso programming effort. The graphics are superlative and the puzzle will challenge you with its three levels of difficulty. Scoring is based upon the number of guesses taken and by the difficulty of the board set-up. **24K (C) £15.99**

INTRUDER ALERT: This is a fast paced graphics game which places you in the middle of the "Dreadstar" having just stolen its plans. The droids have been alerted and are directed to destroy you at all costs. You must find and enter your ship to escape with the plans. Five levels of difficulty are provided. **INTRUDER ALERT** requires a joystick and will run on 16K systems. **16K (C) £15.99**

CHOMPELO: CHOMPELO is really two challenging games in one. One is similar to NIM; you must bite off part of a cookie, but avoid taking the poisoned portion. The other game is the popular board game **REVERSI**. It fully uses the Atari's graphics capability, and is hard to beat. This package will run on a 16K system. **16K (C) £10.99**

TRIPLE BLOCKAD: **TRIPLE BLOCKAD** is a two-to-three player graphics and sound action game. It is based on the classic video arcade game which millions have enjoyed. Using the Atari joysticks, the object is to direct your blockading line around the screen without running into your opponent(s). Although the concept is simple, the combined graphics and sound effects lead to "high anxiety". **16K (C) £12.99**

SPACE TILT: Use the game paddles to tilt the plane of the T.V. screen to "roll" a ball into a hole in the screen. Sound simple? Not when the hole gets smaller and smaller! A built-in timer allows you to measure your skills against others in this habit-forming action game. **16K (C) £9.99**

MOVING MAZE: **MOVING MAZE** employs the game paddles to direct a puck from one side of a maze to the other. However, the maze is dynamically (and randomly) built and is continually being modified. The objective is to cross the maze without touching (or being hit by) a wall. Scoring is by an elapsed time indicator, and three levels of play are provided. **16K (C) £9.99**

ALPHA FIGHTER: Two excellent graphics and action programs in one. **ALPHA FIGHTER** requires you to destroy the alien starships passing through your sector of the galaxy. **ALPHA BASE** is in the path of an alien UFO invasion; let five UFO's get by and the game ends. Both games require the joystick and get progressively more difficult the higher you score! **ALPHA FIGHTER** will run on 16K systems. **24K (C) £11.99**

THE RINGS OF THE EMPIRE: The Empire has developed a new battle station protected by rotating rings of energy. Each time you blast through the rings and destroy the station, the empire develops a new station with more protective rings. The exciting game runs on 16K systems, employs extensive graphics and sound and can be played by one or two players. **16K (C) £15.99**

SANTA CRUZ/TRICKY TUTORIALS

DISPLAY LISTS: Teaches you how to alter the screen format of small and large text on the screen together and high and low res graphics. **16K (C) £13.95**

HORIZONTAL/VERTICAL SCROLLING: Enables graphics or text to be moved up, down or sideways. You could move only the text on the bottom half of the screen or create a map and scroll smoothly over it. **16K (C) £13.95**

PAGE FLIPPING: Learn how to have the computer draw the next page you want to see while you are still looking at the previous page then flip to it instantly. A very useful program. **16K (C) £13.95**

BASICS OF ANIMATION: This program shows you how to animate simple shapes (with sound) using Print & Plot commands and also has a nice Player/Missile graphics game you can play with. **24K (C) £13.95**

PLAYER/MISSILE GRAPHICS: This program shows you how to create a simple shape called a player, then takes you through over 25 examples to create a complete business application and a small game. **32K (C) £19.95**

SOUND: Unless you have spent many hours experimenting with the four voice channels of the Atari, you will learn a lot from this one. With many examples of special sound effects. **16K (C) £13.95**

THE GRAPHICS MACHINE: Type in simple commands like line, box, circle, polygon, fill and save screen to get hires pictures, you can save and retrieve in seconds. Several demos are included in this great program. **48K (D) £13.50**

PLAYER PIANO: Turns your keyboard into a mini piano. Create your own songs, save on cassette or disc, up to 400 notes in memory. **24K (C) £9.95**

KIDS PROGRAM 1: Three programs on one tape. Maths: test your child's maths skills; Dialogue: talk to your computer; Lost Treasure: search over a small island looking for a treasure. **16K (C) £9.95**

KIDS 2: Three more programs for your children. Spelling Bee, input and test those monthly tests; jumbled up letters give a lot of fun; Touch, follow the computers instructions and stop yourself laughing. **16K (C) £9.95**

ARCADE PLUS

GHOST HUNTER: Rid the mansion on Huckleberry Hill of Ghosts. An exciting, fast action, arcade type game using excellent sound and graphics. **16K (C) £19.95**

SPECTRUM

GALACTIC CHASE: A fast action, arcade type game employing hi-res colour graphics. Wave after wave of attacking aliens must be destroyed in this 'Galaxian' type game. The display is excellent. **16K (C) £16.95**

SCOTT ADAMS ADVENTURES

- | | |
|---------------------------------|----------------|
| 1. ADVENTURE LAND | 24K (C) £16.50 |
| 2. PIRATES ADVENTURE | 24K (C) £16.50 |
| 3. MISSION IMPOSSIBLE | 24K (C) £16.50 |
| 4. VOOODOO CASTLE | 24K (C) £16.50 |
| 5. THE COUNT | 24K (C) £16.50 |
| 6. STRANGE ODYSSEY | 24K (C) £16.50 |
| 7. MYSTERY FUN HOUSE | 24K (C) £16.50 |
| 8. PYRAMID OF DOOM | 24K (C) £16.50 |
| 9. GHOST TOWN | 24K (C) £16.50 |
| 10. SAVAGE ISLAND PART I | 24K (C) £16.50 |
| 11. SAVAGE ISLAND PART II | 24K (C) £16.50 |
| 12. GOLDEN VOYAGE | 24K (C) £16.50 |

NEW NEW NEW

CRYPTS OF TERROR: An excellent graphics based adventure game. Explore 50 crypts, slay the monsters, find the ring and the key to the next level. An excellent, absorbing game employing great colour graphics. **16K (C) £29.50**

MURDER AT AWESOME HALL: Question suspects, search for clues, find the murder weapon, as you wander through the doors of 'Awesome Hall' trying to solve the murder of the Colonel. Good graphics and excellent game features. **16K (C) £14.50**

AUTOMATED SIMULATIONS

Crush, Crumble & Chomp: Breathe fire, terrorise cities, snack on a horrified populace, four metropolises, five objectives, over 100 possible scenarios, hi-res colour graphics. **32K (C) £22.45**

Dragons Eye: An outstanding introduction to fantasy role-playing adventures — combining simplicity with variety and real time battle graphics. Will captivate and entertain for hours. **32K (C) £18.75**

Ricochet: An abstract action strategy game. Challenging, thought provoking and fast moving. Work out the angles, avoid the obstacles. Hi-res graphics. **16K (C) £14.95**

Star Warrior: Walk, jump — even fly — over swamps, forests and mountains with scrolling mad graphics. Excellent graphics. Superb strategy game in which you try to free an occupied planet. **32K (C) £29.95**

Temple of Apsai: Project yourself into the labyrinth. See and touch the treasures, hear and smell the creatures. Discover for yourself the fantasy of Apsai. Excellent, award-winning game. **32K (C) £29.95**

Upper Reaches of Apsai: Continue the adventures of Apsai. Four levels, over 150 rooms, gardens etc. Monsters and evil nobgoblins. This game requires Temple of Apsai to play. **32K (C) £14.95**

Rescue at Rigel: Can you rescue the 10 prisoners before your power pack is depleted? Can you get back to your rendezvous point in time? Can you escape the dreaded clutches of the unmerciful High Tollah. **32K (C) £22.45**

Invasion Orion: One-on-one spaceship combat to full scale Armageddon in this challenging and exciting space tactical warfare simulation. Good graphics and great versatility. **24K (C) £18.75**

Datestones of Ryn: Can you find and retrieve the datestones in the seemingly endless maze of rooms full of horrors. Great adventure role playing game. **32K (C) £14.95**

To: CALISTO COMPUTERS LTD, 119 JOHN BRIGHT STREET, BIRMINGHAM.
PLEASE ACCEPT MY ORDER FOR THE FOLLOWING PROGRAMS:-

1.
2.
3.
4.
5.

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

GO TO WORK ON THE ZX81

Go is in essence very simple. It comes as no surprise therefore that the basics of the game are easy to program.

The short ZX81 BASIC program shown allows you to use your T.V. screen as a Go board. The program is no advance on the traditional board. It is merely a starting point for better things to come!

The most obvious extension is to add in the rules of play. A major element, capture, takes place when stones are closely surrounded by the opposing force. Wouldn't it be nice if we could make the program remove captured stones automatically?

At first sight this seems straightforward enough — the program must check that a single stone or a group — adjacent stones of the same colour — has no further liberties — adjacent vacant points. But as with many programming exercises, there are logic traps just waiting for the unwary!

First, we must consider more than one group, each independently. In fact up to four groups can, in theory, be captured by a single move. This extreme case is shown in the first two diagrams.

A second tricky problem is how to get the program to identify all the stones of a group without missing any. Then it's even trickier to get the program to recognise when it can stop looking!

The best solutions are often the simplest. Only if the program proves slow in practice need it be "polished". One simple method of detecting a group relies on copying that group on to an entirely fresh array — call it the "capture" array — the same size as the board array.

The code for detecting a group should be written as a subroutine. Then it can be used for each potentially captured group

BY ALAN SCARFF

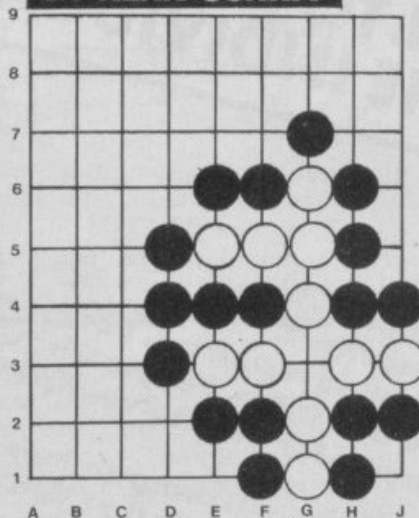


Fig 1

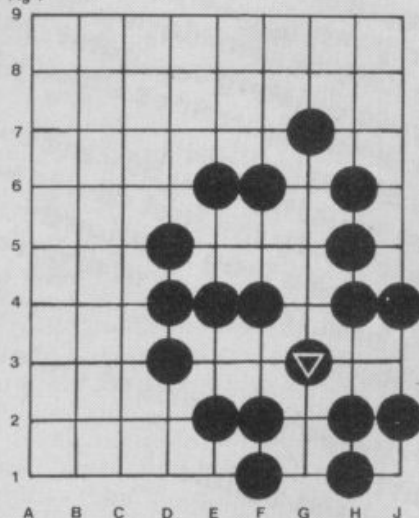


Fig 2

DETECTIVE WORK...

The Detection Subroutine

STEP 1: Clear the capture array. Put the stone which is nominated by the main routine, on the array.

STEP 2: For the last stone placed on the capture array, examine its adjacent intersections on the board array in the order North, East, South and West. If any adjacent intersection is found to be vacant, exit from the subroutine with a "not-captured" result. If any adjacent intersection is found to hold the same colour stone, i.e. it extends the group, then put this stone on the capture array and start STEP 2 afresh. If, however, neither a vacant intersection nor an extension to the group is found, proceed to the next step.

adjacent to the last stone played.

The subroutine can detect when it should stop and return to the main routine by using a repetitive process of "sweeping" its capture array. At each sweep it will either find another adjacent stone to extend the group, or it will not, in which case it can stop!

Having used the subroutine to detect a captured group, it can also be used to check if the last move has attempted to capture itself. Such a move is illegal. This can be indicated by generating a noise or whatever else you consider appropriate!

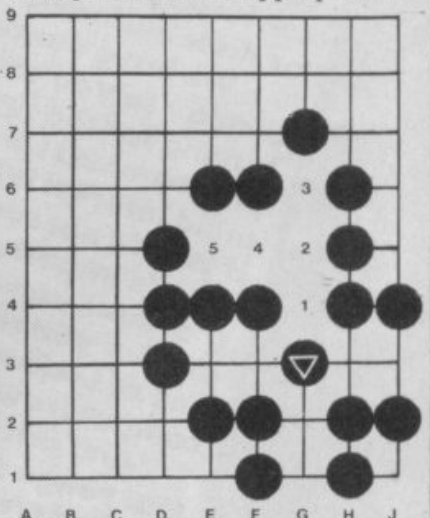


Fig 3

STEP 3: Examine the adjacent intersection on the board array for each stone on the capture array. If a new stone of the same colour is found, put it on the capture array and go back to STEP 2. If after examining all the intersections, no new extension is found, return to the main routine with a "captured" result.

Figure 3 shows the order of detection of the stones in one of the captured groups. STEP 1 puts stone 1 on the capture array. STEP 2 places stones 2 and 3. STEP 3 sweeps the capture array to find and place stone 4. STEP 2 then places stone 5. Finally STEP 3 fails to find a fresh extension to the group and so returns with the list of captured stones.

WE DON'T SELL TO BUSINESS WE SELL TO THE INDIVIDUAL

We sell to the individual — whether enthusiast or novice. People who cannot afford to make a mistake. People who are often confused, whether buying for themselves their children or their business.

We have our computers and programmes on open display so you can try them out whether you are buying for the first time or considering new programmes for your existing computer. In fact our main interest is in the programmes which you can rent if you're not sure about buying.

It's important to us that you buy the computer that suits you as it's only the first step in what for us and for you should be a long relationship. We carry one of London's best selections of programmes for the computers we stock.

And prices?

Our range of computers starts at under £200.

And credit?

Just ask for written details.

SEE THE FUTURE NOW AT

THE MICRO-AND VIDEO-PALACE

62-64 Kensington High Street London W8 (opposite Barkers) Phone 01-937 8587

Adventure

DIAMONDS AND CLAWS

Now that we have covered the basics of Adventure programming — pardon the pun! — we are ready to have a look at some of the intricate parts.

When you first started writing your game, no doubt the word SCORE seemed very remote from your problems. Nevertheless, most Adventure games have a SCORE feature, the score usually being based on the number of treasures deposited in a special treasure storage location.

Let us code a score feature awarding say 10 points per treasure deposited in location LT.

First it will be necessary for the treasures to be recognised and not confused with "ordinary" objects. If obvious descriptions like DIAMOND or GOLD BAR are used, the player is probably in little doubt, but the computer won't be terribly impressed.

Therefore, all treasures in the object array should be grouped together in a block, say from 0\$(n) to 0\$(n+m). The command SCORE can then execute a routine like:

```
SC = 0 : REM SC is score - zero to start count
FOR I = (n) TO (n+m)
IF P(I) = LT THEN SC = SC+10
NEXT
Q1$ = "You have scored"; SC :
GOTO (start)
```

If the treasure descriptions are less obvious, like AMBER CLAW, then even the player may be in doubt as to its value.

A way round this is to identify each treasure with a special symbol such as an asterisk or a diamond alongside its description, for example *AMBER CLAW*.

Thus, treasures no longer have to be grouped together in the array, although doing this will still help to reduce the scan of the object array. We can now have:

```
SC = 0
```

```
FOR I = 0 TO (n) : REM Object array has (n+1) elements
IF P(I) = LT AND LEFT$(0$(I),1) = "*" THEN SC = SC+10
NEXT
```

```
Q1$ = "You have scored"; SC :
GOTO (start)
```

No doubt you are wondering if you will now have to type "*DIAMOND*" to reference a diamond that's a treasure. You don't, but I will explain the way round this next month.

A couple of points to beware of. The treasure stores will be frequently visited once discovered, and could well become a depository for all sorts of rubbish as well as treasures.

When this location is visited and the objects present are displayed, towards the end of the game the display variables may not have sufficient capacity to contain all the objects, or the amount of string space available for the concatenation of these objects may be insufficient.

This may result in truncation of the object/treasure list, or cause the program to "hang up" whilst the machine searches for free string space, possibly breaking with an Out of String Space error.

If the variables won't hold all the objects, establish more variables, then work on the string space problem — increase it by a hundred or so. This may now lead to an Out of Memory error, in which case revert to the working version of the string space, and restrict the number of objects that can be deposited at the location by limiting them to treasures only.

To do this you will need to modify the DROP routine to detect the asterisk, and if not found reply with a message like "SORRY, ONLY TREASURES MAY BE DROPPED HERE".

Meanwhile, to round off the SCORE routine, don't forget to bring the game to an end if all treasures are home, by following the NEXT line by:

```
IF SC = 100 THEN (clear screen):
PRINT
"Congratulations, you have won" : END
```

Scott Adams' adventures are always full of mystery and excitement, and have set something of a standard on the Micro Adventure scene. So it's about time we had a look at another of his works.

Savage Island, part one, is one of the most devious games that I have played. The object is not to collect treasures, but to obtain the password needed to commence part two. Who could resist buying the sequel after such a struggle?

At the outset, one finds oneself on a deserted beach on a tropical island. A stroll around reveals an impenetrable jungle, a plain, a shark-infested ocean and an extinct volcano.

It all seems like a very routine exploration job. Even after working out how to keep at bay the bear who inhabits the cave at the top of the volcano — a problem that you will spend hours sweating over — things seem to be going quite well... except for the lingering sense of



unease after having examined the stone head back on the beach.

But it's easy to forget about that, trying to survive hurricanes and investigating bangs and bumps in the night.

Is the island all it seems? Where are those vital tools we became certain we needed some two months ago and still haven't found?

There is indeed something very sinister afoot, and it seems our old chortling friend from Pirate's Island is lurking around somewhere. So startling is the finale to this first part, that having been clever enough to get the password, I can't wait to find out what happens in part two.

Savage Island is published by Adventure International and versions are available for TRS-80, Video Genie, Apple, Exidy Sorcerer, And Atari computers.

BY KEITH CAMPBELL

TIPS ON DONKEY KONG

DON'T MONKEY AROUND WITH KING KONG!

King Kong certainly grossed plenty of money at the box office and now he's doing it again in the arcades.

The mammoth monkey is the star of Donkey Kong (also to be found under the name of Crazy Donkey) the arcade circuit's current money-spinner.

There are four screens to this game which features an attempted rescue, by a cartoon character known as Jump Man, of a young lady in Kong's clutches.

For the beginner the game offers a rather confusing array of possible tactics.

The first screen shows Kong rolling barrels down a tilted array of girders, up which Jump Man must run to rescue his lady.

Points are scored for jumped over or hammer-squashed barrels, but these are not as significant as the time bonus given for reaching the top of the screen — so give that priority.

The hammer is a double edged weapon, crushing barrels in the hands of a wielder but liable to disappear at the most misfortunate moments and also preventing you from climbing.

Golden rules for this first wall known as: "Stairway to the Stars".

STREET TALK

Although the name of the game is Donkey Kong, human perversity dictates that the hairy gorilla throwing things down from the top of the screen, should be nick-named "The Monkey".

Donkey Kong is a rich playground for people who like coining nick-names. "Conveyor belts" is a pretty common term for the moving stairways which give the hero a lift to the top of the screen or shunt him unexpectedly sideways.

When the Jumpman goes on the rampage with the hammer, I have overheard the phrase: "Give 'em some steel". And the big stairway in the third screen is



are: don't wait beneath the edge of a girder — you can't jump a falling barrel — and try to use the right hand side of the screen — Kong drops things straight down on the left. Don't forget that you can always hide halfway up a ladder if in trouble.

The second screen seems more difficult but can be negotiated quickly for a big time bonus.

Little fires and things which can best be described as pies, form Kong's main threats in this screen of conveyor belts. For a fast time, run along the bottom of the screen to the right and go up to the first level.

Leap on the conveyor belt when there's a gap and you'll find yourself travelling along to the fire — fatal — but there is a ladder above you and that is the way to safety. If you miss, it is possible to move along the conveyor belt the wrong way by running jumps.

Up to the next level and some pie jumping needs to be done to get underneath the extending and contracting ladder. Wait until it extends to the top — and Kong is not too close — to make your break for home and a high bonus.

The third screen features lifts running up and down a central structure. Take the lift up to collect as many objects —

umbrellas, chickens and the like — as you dare then down and jump to the staircase. Watch the falling missiles until you are sure of their pattern. Make your dash beneath them as they move to their furthest point from you.

The final dash for home is a question of finding the safe spots beneath the bouncing projectiles. These are just above the penultimate ladder and one centimetre away from the final ladder. Strategic waits here will see you safely home.

The fourth wall can have no set strategy as it is very random. Eight cork-like plugs are the key features which must be collected. These have the added bonus of restricting the fires' movement. When all eight have been collected the screen has been conquered and they can be done in any order.

Use the hammer on this wall to squash the four fires on the middle level.

After this the game repeats but becomes faster and harder. Remember: the longer you take the faster the fires get and beginners should watch out for a good time bonus at the top right hand corner of the screen: 4-5,000 is reasonable, but some machines offer only 2,000 and prove very difficult.

TIME TO TALK TURTLE

TURPIN

Turpin is an everyday tale of pond survival with a sprinkling of Russian roulette thrown in as well.

The hero figure is a turtle whose mission is to see six baby terrapins home to the turtle house.

There are eight mystery locations around the screen which make up a maze and the six baby terrapins are hidden away beneath these.

The catch is that two deadly Snapper turtles are also hiding out beneath these locations.

The Snapper's must be avoided which is easy at first as they roam the screen at random. But when they turn blue later they pursue the player.

The player can drop an egg bomb to stun a Snapper turtle but he only has three of these at the beginning of the game although three more are granted each time the player turtle crosses the centre star.

To earn a new screen the player must deliver all six terrapins to the turtle house.

Turpin is a new maze-chase game which definitely should be placed in the "cute" category. Fine graphics on a deep-blue pond background and the Snappers look suitably vicious.

Points are scored for: delivering a terrapin, 150; piggybacking a terrapin, 100; eluding a Snapper turtle, 80; and stunning a Snapper, 50 points. A bonus player turtle is awarded for over 5,000.



DIG THESE CRAZY MONSTERS

When it seemed that maze games were in danger of turning up one of their own dead ends, a new innovation has emerged.

The do-it-yourself-maze game goes under the name of Dig-Dug and features a kind of super allotment where all the action takes place.

The hero is a gardener, who comes complete with his own spade and a healthy appetite for "greens".

The screen shows a cut-away

DIG-DUG

view of the land and the player controls the gardener as he digs out a maze of tunnels.

His aim is to collect vegetables from within the ground and destroy any monsters that try to thwart him.

The monsters are a motley looking crew which seem to have come straight out of the darker recesses of the games

designer's imagination and live beneath the soil.

The only easily described creature is one which resembles a dragon — page 97 in the book of common garden pests.

They can be despatched by the gardener by dropping rocks on them or blasting them with his gun.

Points are scored for any monsters which our hero kills off and any tasty vegetables he consumes in the game.



THE MEAN MACHINES ARE HERE!

That ever-popular science fiction theme, the robots have taken over the asylum, has now been recreated story-book fashion in the arcades.

Robots, the story goes, fed up with mankind's inept attempts at running Earth, decide to take matters into their own steely mitts and, with a fair degree of death and destruction, set out to do just that in the new game Robotron.

As always in these tales, one man stands between the robots and total human oblivion — in Robotron, that man is you.

Armed with a robot-blaster, you are charged with the protection of your family. The robotic hordes come in all shapes and sizes. The early ones tend to be small and easily despatched, the later models are bigger and more dangerous.

Certain varieties cannot be killed but only stopped for a time, others have the ability to turn your family into mutants.

The machine tells you the

ROBOTRON

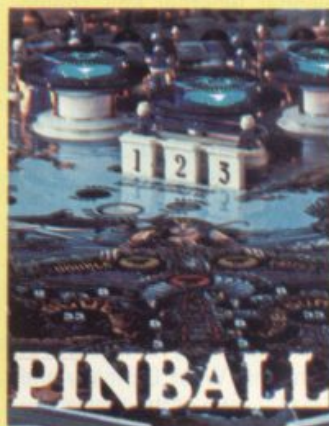
story and how to play. The story expands to illustrate each new screen and describe the events.

The game is a cross between Berserk and Defender and you are represented on the screen by a human figure which is controlled by an eight-way joystick.

Each screen is progressively

more difficult and by the third screen you have to deal with mutated family members.

Like Defender, the game comes from the Williams stable. It is due to be launched here at the end of May and is confidently expected to be a successor to the popular Defender.



Video games have ironically turned out to be a real shot in the arm for the pinball machines which once seemed in danger of losing out to the likes of space invaders.

The pinball designers, forced to become more innovative and imaginative to win back the players are now producing machines which put the accent firmly on the skill factors and give dedicated players a chance to build up high scores without relying heavily on the run of the ball.

One of the new breed of pinball games is Hyperball which could herald the start of a new category of arcade games.

It has the familiar pinball features of backboard, play-area, targets and ball-bearings — but there the similarity ends, for Hyperball is not about keeping balls in play.

Instead the player is given two triggers which take the place of the normal flippers and let him fire the ball-bearings directly into playfield. It is a rapid fire theme that has already made Hyperball very popular in the U.S.

The playfield is dominated by an energy centre which is bombarded by draining energy bolts. The aim of the player is to hit targets and prevent the lightning bolts from striking home.

The balls come out at anything up to 250 a minute and good players will make full use of this speed to protect the energy centre. Bonus points are offered for players who can hit targets which spell out words requested by the machine. One example is "energy" which must be spelt out in sequence by dropping balls through correct holes in the deck.

It is a fast action game which rewards skill—but it is difficult.

It's halftime in the semi-final against Czechoslovakia and you're 2-0 down.

As the team troop back into the changing rooms you wonder whether you should change your tactics. The 4-2-4 system you elected to play seems to be giving the Czechs a lot of possession in midfield and your sweeper has been caught out twice by their tendency to hit early crosses to their centre forward Nehoda — who scored both the goals.

You seemed to have the easier task too, for in the first semi-final West Germany and Brazil — two of the teams you had fancied for the title — had battled to a 2-2 draw, with Brazil romping through 5-2 in extra time.

Luckily you had the foresight to get your scouts to compile a thorough dossier on Brazil and there ought to be no surprises when you meet them. Perhaps you'd have been better off sending a scout to watch the Czechs.

Well you'd better pull another player back into midfield and also try to close down the Czechs' space in the centre — Panenka has been controlling the midfield.

And what about a substitution? Several of your players have been giving away possession.

It's not as though you haven't had chances, Morley was closest rounding two defenders before he shot wide, if that had gone in...

```
4 DIM D(4),M(4),D9(4),F9(4),A9(4),B2(4,3),D8(4),T9(4),P9(4),R(24)
5 DIM S8(4),H1(2),G(24),M(6,4),T1(3,3),T2(3,3),T3(3,3),T4(3,3),T4(20)
6 U=0:B4=0
7 DEF FNA(X)=INT(RND(1)*X)+1
10 DIM A(24):DIM F(24):DIM H1(3,3)
12 DIM A1(3,3):DIM M1(24,21):DIM M2(24)
14 DIM T5(24),T6(24),T7(24),T8(24)
16 DIM S5(24),S6(24),S7(24),Z9(12)
18 DIM A1(9),A2(9),U2(11)
20 DATA BRAZIL,ARGENTINA,W.GERMANY,YUGOSLAVIA
30 DATA HUNGARY,BELGIUM,ITALY,POLAND,FRANCE
40 DATA CZECHOSLOVAKIA,SPAIN,ENGLAND,SCOTLAND,N.IRELAND,PERU
50 DATA AUSTRIA,CHILE,"EL SALVADOR",HONDURAS
60 DATA ALGERIA,N.ZEALAND,CAMEROON,KUWAIT,RUSSIA
62 DATA 1,1,0,1,2,1,1,0,0,0,0,1,1,2,1,0,2,2
64 DATA " HITS THE BALL TOO FAR AHEAD OF "," S PASS IS MISCONTROLLED BY "
66 DATA " LOSTS THE BALL IN A MISUNDERSTANDING WITH "," HITS A LONG BALL TO "
68 DATA " PASSES WIDE TO "
69 DATA " CROSSES TO "," PLAYS A HIGH BALL TO "," COLLECTS A PASS FROM "
70 DATA " PLAYS A ONE-TWO WITH "
72 DATA " IS SENT AWAY BY "," WINS A FREE KICK FROM "," MOVES INSIDE "
74 DATA " SMERVES PAST "," DUMMIES "," RUNS ROUND "," RACES PAST "
76 DATA " SHRUGS OFF A CHALLENGE FROM "
82 DATA " IS TACKLED BY "," S PASS IS CUT OUT BY "
94 DATA " S CROSS IS HEADED AWAY BY "
98 DATA 5,15,30,30,5,15,15,30,5,5,30,15,15,5,30,30,15,5
92 DATA 5,30,15,15,5,30,30,15,5
94 DATA " S CHIP FOR GOAL IS HEADED AWAY BY "," LOSTS THE BALL TO "
96 DATA " IS TACKLED BY "," S VOLLEY IS PUNCHED CLEAR BY "
98 DATA " S FIERCE DRIVE IS WELL SAVED BY "
97 DATA " BLASTS THE BALL WIDE "," ROUNDS THE KEEPER AND MISKICKS "
98 DATA " BEATS TWO DEFENDERS AND SHOTS WIDE "," STUMBLES AND LOSTS THE BALL "
100 DATA " S CHIP FOR GOAL FINDS THE BACK OF THE NET "," BLASTS THE BALL HOME "
102 DATA " VOLLEYS INTO THE ROOF OF THE NET "," TAPS THE BALL IN FROM 5 YARDS "
104 DATA " HITS A LOW SHOT INTO THE NET "," S SHOT BOUNCES UNDER THE KEEPER "
106 DATA " S SOFT SHOT IS DROPPED BY THE KEEPER "," LETS FLY WITH A LONG SHOT "
108 DATA " STEPS INSIDE THE FULLBACK, ROUNDS THE KEEPER AND SLOTS HOME "
```



RUNS ON A SHARP MZ-80K IN 26K

BY TERRY ALLEN

WORLD CUP

World Cup Manager sets out to give you all the frustrations of sitting on the bench when the national side you manage go a goal down 20 minutes from time in a crucial match.

And hopefully, with some careful attention to tactics and good substitutions in critical games, it should give you all the elation of guiding your country's team through to the cham-

pionships of the 1982 World Cup Finals.

The game runs on a Sharp MZ-80K in a massive 26K but is packed with REM statements and there is not a PEEK or a POKE in sight so transferring it to another machine should not cause too many problems.

It will let you manage any of the 24 countries involved in the 1982 World Cup but expect to have a more difficult time if you pick El Salvador than if you choose Brazil.

It invites you to enter your team and then publishes the draw for the competition with initially six groups of four. Set out the countries you think will be stumbling blocks to your continuation in the competition and send off your scouts to watch them.

Remember you can get through by finishing second in your group so it may not be necessary to watch all three teams in your group. The first game comes up and a dossier on the opposition is printed out. Pay careful attention because you will have to find good tactical answers to the opposition's plays.

There are other considerations too, choose your formation carefully and if you need to boost your goal difference to qualify, try to manufacture an open game.

Turn to page 35


```

188 GOSUB 11062
190 GOSUB 11070
194 GOSUB 11094
196 GOSUB 11110
200 GOSUB 12100
210 GOSUB 5400
220 GOSUB 12300
230 GOSUB 12615
270 PRINT "E"
280 PRINT "PLEASE CHOOSE YOUR TEAM"
290 PRINT "ENTER A NUMBER FROM THIS LIST"
292 N=1
295 GOSUB 1295
330 GOSUB 1330
332 GOSUB 670
400 PRINT "E"
410 PRINT "YOU ARE MANAGER OF ":A$(T)
420 PRINT "YOUR AIM IS TO WIN THE 1982 WORLD CUP"
440 GOSUB 9930
480 FOR I=1 TO 6
490 S=0
500 V=FNA(24)
510 IF G(V)<>0 THEN GOTO 500
515 S=S+1
518 G(V)=I
520 M(I,S)=V
530 IF S=4 THEN GOTO 5060
540 GOTO 500
560 NEXT I
562 PRINT "E": "THE DRAW IS AS FOLLOWS"
564 PRINT " "
570 FOR I=1 TO 3
575 PRINT " "
580 PRINT "GROUP ":STR$(I):TAB(20):"GROUP ":STR$(I+3)
582 PRINT " "
590 FOR J=1 TO 4
600 PRINT A$(M(I,J)):TAB(20):A$(M(I+3,J))
610 NEXT J
620 NEXT I
625 PRINT " "
628 FOR I=1 TO 5000:NEXT I

```

```

630 GOSUB 9900
635 GOSUB 6000
652 GOSUB 5000
654 GOSUB 5100
656 GOSUB 9900
658 GOSUB 5200
660 GOSUB 4200
661 GOSUB 3000
662 GOSUB 3200
663 GOSUB 9900
664 IF E2>E1 THEN B2=X2:B3=X1
665 IF E1>E2 THEN B2=X1:B3=X2
666 PRINT "E":PRINT "CONGRATULATIONS TO ":A$(B2)
667 PRINT "1982 WORLD CUP WINNERS"
668 END
669 PRINT "E"
670 PRINT "NOW YOU MUST NAME YOUR TEAM "
680 DIM K$(12)
690 PRINT "KEY IN THE PLAYER'S NAMES AS PROMPTED"
700 D$="GOALKEEPER ":I=1
705 GOSUB 14000
710 FOR I=2 TO 5
720 D$="DEFENDER "+STR$(I-1)
730 GOSUB 14000
740 NEXT I
750 FOR I=6 TO 8
760 D$="MIDFIELD PLAYER "+STR$(I-5)
770 GOSUB 14000
780 NEXT I
790 FOR I=9 TO 11
800 D$="STRIKER "+STR$(I-8)
810 GOSUB 14000
820 NEXT I
822 D$="SUBSTITUTE ":I=12
824 GOSUB 14000
826 RETURN
870 END
1295 PRINT " "
1300 FOR I=1 TO 12
1302 IF X=1 THEN GOTO 1310
1304 IF (T-I)*(T-12-I)<>0 THEN GOTO 1310
1305 IF T=I+12 THEN GOTO 1308

```

MANAGER

```

1306 PRINT TAB(20):STR$(I+12):",":A$(I+12)
1307 GOTO 1320
1308 PRINT STR$(I):",":A$(I)
1309 GOTO 1320
1310 PRINT STR$(I):",":A$(I):TAB(20):STR$(I+12):",":A$(I+12)
1320 NEXT I
1322 PRINT " "
1324 PRINT " "
1325 RETURN
1330 INPUT "WHICH TEAM?":T$
1335 T=VAL(T$)
1340 IF T<1 THEN GOTO 1350
1342 IF T>24 THEN GOTO 1350
1344 GOTO 1370
1350 PRINT "PLEASE TYPE A NUMBER BETWEEN 1 AND 24"
1360 GOTO 1330
1370 RETURN
3000 PRINT "E"
3010 PRINT "BARCELONA 8th JULY 1982"
3020 PRINT " "
3030 PRINT "WORLD CUP SEMI-FINAL"
3040 PRINT " "
3042 PRINT A$(S8(1)): " U. ":A$(S8(3))
3043 X3=1
3044 GOSUB 9930
3045 X1=S8(1):X2=S8(3)
3046 IF X1=T THEN Z=X2:GOSUB 9000:E1=B:E2=C:GOSUB 4475:GOTO 3052
3048 IF X2=T THEN Z=X1:GOSUB 9000:E1=C:E2=B:GOSUB 4475:GOTO 3052
3050 GOSUB 4400
3052 M2(X1)=M2(X1)+1
3053 M1(X1,6)=X2:M1(X1,13)=E1:M1(X1,20)=E2
3054 M2(X2)=M2(X2)+1
3055 M1(X2,6)=X1:M1(X2,13)=E2:M1(X2,20)=E1
3056 IF (X1-T)*(X2-T)<>0 THEN GOSUB 9900
3060 PRINT "E"
3070 PRINT "SEVILLE 8th JULY 1982"
3080 PRINT " "
3090 PRINT "WORLD CUP SEMI-FINAL"
3100 PRINT " "
3102 E2=0:E1=0
3104 PRINT A$(S8(2)): " U. ":A$(S8(4))
3106 GOSUB 9930
3107 X1=S8(2):X2=S8(4)
3108 IF X1=T THEN Z=X2:GOSUB 9000:E1=B:E2=C:GOSUB 4475:GOTO 3112
3109 IF X2=T THEN Z=X1:GOSUB 9000:E1=C:E2=B:GOSUB 4475:GOTO 3112
3111 GOSUB 4400
3112 M2(X1)=M2(X1)+1
3114 M2(X2)=M2(X2)+1
3116 M1(X1,6)=X2:M1(X1,13)=E1:M1(X1,20)=E2
3118 M1(X2,6)=X1:M1(X2,13)=E2:M1(X2,20)=E1
3120 IF (X1-T)*(X2-T)<>0 THEN GOSUB 9900
3130 RETURN

```

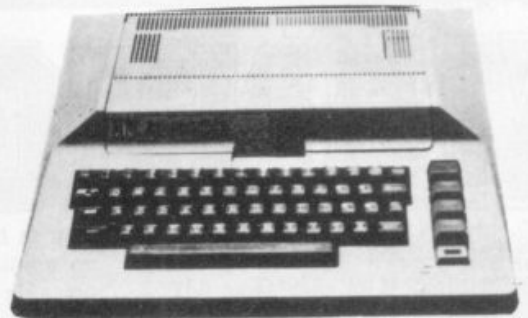


32k Ram Board for ATARI 400/800



UPGRADE YOUR ATARI 400 FROM 16K TO 32K AT ONE OF THE AUTHORISED DEALERS LISTED BELOW; FOR ONLY £89.95 INC VAT.

**FULL ONE YEAR WARRANTY
GOLD PLATED CONNECTORS
FIRST GRADE COMPONENTS
HAND MADE IN THE UK.**



INCREASE THE MEMORY SIZE OF YOUR 800 TO 48K FOR ONLY £115.00 INC VAT.

| | | | |
|--|--|--|--|
| COMPUTERS FOR ALL 72, North Road, Romford, Essex. 0708-60725 | GAMER 24 Gloucester Road, Brighton. 0273-698424 | GODFREYS COMPUTER CENTRE 30 East Walk, Basildon, Essex. 0268-289379 | GEMINI ELECTRONICS 50 Newton Street, Off Piccadilly, Manchester. 061-236 3083 |
| HI-FI WESTERN LTD 52 Cambrian Road, Newport, Gwent. 0633-62790 | JENNINGS STORES LTD 244/248 Hertford Road, Enfield, Middx. 01-804 1767 | MAYS HI-FI LTD 27 Church Gate, Leicester. 0533-58662 | MICROCHIPS (WINCHESTER) 66 St Georges Street, Winchester. 0962-68085 |
| NORMAN AUDIO 51 Fisher Gate, Preston. 0772-53057 | PERSONAL COMPUTER PALACE 4-6 Castle Street, Reading, RG1 7RD. 0734-589249 | SILICON CHIP 302 High Street, Slough. 0753-70639 | SILICON CENTRE 21 Comely Bank Road, Edinburgh 4. 031-332 5277 |
| SILICA SHOP LTD 1/4 The Mews, Hatherley Road, Sidcup, Kent. 01-301 1111 | VIDEO SERVICES BROMLEY 8a Sunbridge Parade, Plaistow Lane, Bromley. 01-460 4169 | CALISTO (COMPUTERS) Ltd 119 John Bright Street, Birmingham. 021-632 6458 | DISTRIBUTED IN THE UK BY CALISTO (SOFTWARE) LTD 021 632 6458. |


```

3200 U=1
3202 PRINT "0"
3205 PRINT "MADRID 11th JULY 1982"
3300 FOR I=1 TO 6
3310 PRINT " "
3320 NEXT I
3330 PRINT "1982 WORLD CUP FINAL"
3340 PRINT "===== "
3342 PRINT A$(N1(1)); " U. "; A$(N1(2))
3350 GOSUB 9930
3360 GOSUB 9930
3362 PRINT "0"
3370 E1=0:E2=0
3380 X1=N1(1):X2=N1(2)
3382 IF X1=T THEN Z=X2:GOSUB 9000:E1=B:E2=C:GOTO 3400
3384 IF X2=T THEN Z=X1:GOSUB 9000:E1=C:E2=B:GOTO 3400
3390 GOSUB 4400
3400 RETURN
3410 REM CHECK IF YOU'RE PLAYING
3420 FOR I=1 TO W6
3430 IF (M(I,H2)-T)*(M(I,A2)-T)=0 THEN GOSUB 3500
3440 NEXT I
3442 RETURN
3450 REM GET SCOUT'S REPORT
3452 D4=0
3455 IF (Z-S1)*(Z-S2)*(Z-S3)*(Z-S4)=0 THEN D4=1
3460 IF D4=1 THEN J$="YOUR SCOUTS HAVE BEEN WATCHING "+A$(Z):GOSUB 15000
3462 E=Z
3465 IF D4=1 THEN GOSUB 9900
3467 GOSUB 8400
3470 RETURN
3500 REM SLOT IN VALUE OF OPPOSITION
3510 IF M(I,H2)<>T THEN Z=M(I,H2)
3520 IF M(I,H2)=T THEN Z=M(I,A2)
3530 GOSUB 9000
3540 RETURN
3800 REM TYPE IN OPPOSITION TEAM
3810 PRINT "0":PRINT "DO YOU WISH TO TYPE IN THE OPPOSITION PLAYERS' NAMES?"
3820 INPUT "TYPE Y OR N ";D3$
3822 IF ASC(LEFT$(D3$,1))<>89 THEN GOSUB 12570: RETURN
3823 FOR I=1 TO 12
3825 PRINT "TYPE IN THE NAME OF PLAYER":I
3830 INPUT Z$(I)
3832 NEXT I
3840 RETURN
4000 REM SEMI-FINALISTS
4010 S8(I)=T9(J)
4020 RETURN
4200 PRINT "0"
4210 PRINT "1982 WORLD CUP SEMI-FINALS"
4220 PRINT "===== "
4230 FOR I=1 TO 4
4240 PRINT " "
4250 NEXT I
4260 PRINT A$(S8(1)):TAB(16):"U. " "A$(S8(3))
4270 FOR I=1 TO 4
4280 PRINT " "
4290 NEXT I
4300 PRINT A$(S8(2)):TAB(16):"U. " "A$(S8(4))
4302 FOR I=1 TO 6
4304 PRINT " "
4306 NEXT I
4310 GOSUB 9900
4320 RETURN
4400 REM PLAY SEMI-FINAL, FINAL
4410 FOR I=1 TO 90
4420 IF RND(1)>86/90 THEN GOSUB 4600
4425 IF I=45 THEN GOSUB 4900
4430 IF I/10=INT(I/10) THEN GOSUB 4800
4440 NEXT I
4450 IF E1=E2 THEN GOSUB 4700
4460 PRINT "FINAL SCORE "
4470 PRINT A$(X1):E1: " "A$(X2):E2
4475 W5=W5+1
4476 IF W5=1 THEN RETURN
4480 IF E1>E2 THEN N1(W5)=X1
4500 IF E2>E1 THEN N1(W5)=X2
4510 RETURN
4600 R7=RND(1)
4601 PRINT "0"
4602 R9=R(X1)/(R(X1)+R(X2))
4605 IF R7>R9 THEN 4600
4610 IF R7<R9 THEN J$=A$(X1)+" HAVE SCORED AFTER "+STR$(I)+" MINUTES"
4611 IF I=1 THEN J$=LEFT$(J$,LEN(J$)-1)
4612 IF R7<R9 THEN GOSUB 15000
4615 IF R7<R9 THEN E1=E1+1
4620 IF R7>R9 THEN J$=A$(X2)+" HAVE SCORED AFTER "+STR$(I)+" MINUTES"
4621 IF R7>R9 THEN GOSUB 15000
4625 IF R7>R9 THEN E2=E2+1
4627 GOSUB 9930
4630 RETURN
4700 PRINT "0"
4702 PRINT "AFTER EXTRA TIME"
4705 R4=FNA(2)
4710 IF R4=1 THEN E1=E1+FNA(3)
4720 IF R4=2 THEN E2=E2+FNA(3)
4725 GOSUB 9930
4730 RETURN
4800 PRINT "0"
4805 PRINT "SCORE AFTER ":I:" MINUTES ":" "
4810 PRINT A$(X1): " "E1: " "A$(X2): " "E2
4815 GOSUB 9930
4820 RETURN
4900 PRINT " "
4910 PRINT "HALF TIME SCORE:"

```

Then it's out of your hands and the two teams are up against one another with a running commentary of events. Keep a close check on which of your players seem to lose possession and play badly, these are the one's you will want to substitute. A good substitution will improve your play — a bad one will give the opposition more chance.

Also watch for which team is gaining the most possession in midfield — you may need to change your formation or tactics here. Check on how the goals are scored — it could be important to tighten up your defence to certain situations or to find out which of your own attacking plays is paying dividends.

Half-time comes around and this is your chance to change your tactics if you have noticed things going wrong.

At the end of the day, win, lose or draw, you will have to sit back and watch the other results of the day being typed out and see if your predictions are coming true.

And on you go, hopefully towards a place in the final.

The game is run on exactly the same lines as the World Cup with the winners of Group 1 going into Group A and the runners-up into Group C; Group 2 winners into Group B and runners-up into Group D; Group 3 winners into Group A and runners-up into Group C; Group 4 winners into Group C and runners-up into Group A; Group 5 winners into Group D and runners-up into Group B; Group 6 winners into Group B and runners-up into Group D.

The first semi-final is between the winners of Group A and C and the other between the winners of Group B and D.


```

4920 PRINT " "
4930 PRINT A$(X1): " "E1: " "A$(X2): " "E2
4940 PRINT " "
4945 GOSUB 9930
4950 RETURN
5000 REM INITIAL GROUP FIXTURES
5004 W6=6
5005 D1=12
5010 H2=1:A2=2:GOSUB 5020
5011 H2=3:A2=4:GOSUB 5020
5012 H2=1:A2=3:GOSUB 5020
5013 H2=2:A2=4:GOSUB 5020
5014 H2=1:A2=4:GOSUB 5020
5015 H2=2:A2=3:GOSUB 5020
5016 RETURN
5020 D1=D1+1
5021 GOSUB 3410
5022 PRINT "E"
5024 PRINT "RESULTS FOR "D1: " JUNE '82"
5026 PRINT " "
5027 FOR I=1 TO 6
5028 H=M(I,H2):A=M(I,A2)
5029 IF H=T THEN B=P2:C=P3:GOTO 5035
5030 IF T=A THEN B=P3:C=P2:GOTO 5035
5032 GOSUB 7000
5035 PRINT "GROUP":I: " "A$(H):B: " "A$(A):C
5040 NEXT I
5041 IF D1=18 THEN GOSUB 7200
5042 PRINT " "
5043 IF D1=18 THEN RETURN
5044 PRINT "PRESS L TO DISPLAY LEAGUE TABLES"
5045 PRINT " " ANY OTHER KEY TO CONTINUE"
5046 GET Z$
5048 IF Z$="" THEN GOTO 5046
5049 IF Z$="L" THEN GOSUB 7200
5050 RETURN
5100 REM PRINT GROUPS A-D
5105 PRINT "E"
5106 PRINT "GROUPS FOR THE SECOND STAGE ARE :-"
5107 PRINT " "
5110 FOR I=1 TO 2
5120 PRINT "GROUP "CHR$(64+I):TAB(20):"GROUP "CHR$(66+I)
5130 PRINT " "
5140 FOR J=1 TO 3
5150 PRINT A$(G2(I,J)):TAB(20):A$(G2(I+2,J))
5160 NEXT J
5165 PRINT " "
5170 NEXT I
5189 RETURN
5200 REM SECOND STAGE FIXTURES
5205 W6=4
5210 D1=27
5220 H2=1:A2=2:GOSUB 5300
5230 H2=3:A2=1:GOSUB 5300
5240 H2=2:A2=3:GOSUB 5300
5250 RETURN
5300 REM SECOND STAGE FIXTURES
5302 GOSUB 8310
5310 GOSUB 3410
5322 PRINT "E"
5324 PRINT "RESULTS FOR "D1: " JUNE '82"
5326 PRINT " "
5327 FOR I=1 TO 4
5329 H=G2(I,H2):A=G2(I,A2)
5330 IF H=T THEN B=P2:C=P3:GOTO 5335
5331 IF T=A THEN B=P3:C=P2:GOTO 5335
5332 GOSUB 7000
5335 PRINT "GROUP "CHR$(I+64): " "A$(H):B: " "A$(A):C
5340 NEXT I
5341 IF D1=29 THEN GOSUB 7200
5342 PRINT " "
5343 IF D1=29 THEN RETURN
5344 PRINT "PRESS L TO DISPLAY LEAGUE TABLES"
5345 PRINT " " ANY OTHER KEY TO CONTINUE"
5346 GET Z$
5348 IF Z$="" THEN GOTO 5346
5349 IF Z$="L" THEN GOSUB 7200
5350 D1=D1+1
5352 RETURN
5400 REM GENERATE TEAM TACTICS
5410 FOR I=1 TO 24
5412 S5(I)=FNA(3)
5414 S6(I)=FNA(3)
5416 S7(I)=FNA(3)
5420 T5(I)=FNA(3)
5430 T6(I)=FNA(3)
5440 T7(I)=FNA(3)
5450 T8(I)=FNA(3)
5460 NEXT I
5470 RETURN
5480 REM GET DESCRIPTION OF FREEKICK TACTICS
5490 IF F1=1 THEN C$=" DIRECT SHOT "
5500 IF F1=2 THEN C$=" CHIP TO THE FAR POST "
5510 IF F1=3 THEN C$=" TEE-UP FOR SHOT "
5520 RETURN
5530 REM DESCRIPTION OF CORNER TACTICS
5540 IF F1=1 THEN C$=" PLAY IT SHORT "
5550 IF F1=2 THEN C$=" AIM FOR THE FAR POST "
5560 IF F1=3 THEN C$=" AIM FOR THE NEAR POST "
5570 RETURN
5580 REM DESCRIPTION OF ATTACK TACTICS
5590 IF F1=1 THEN C$=" FAST BREAK "
5600 IF F1=2 THEN C$=" EARLY CROSS "
5610 IF F1=3 THEN C$=" SLOW BUILD-UP "
5620 RETURN
5630 REM MIDFIELD TACTICS
5640 IF F1=1 THEN C$=" TACKLE HARD "
5650 IF F1=2 THEN C$=" MARK TIGHT "
5660 IF F1=3 THEN C$=" FIND SPACE "
5670 RETURN
5680 REM FREEKICK DEFENCE
5690 IF F1=1 THEN C$=" MAKE A WALL "
5700 IF F1=2 THEN C$=" MARK MAN-TO-MAN "
5710 IF F1=3 THEN C$=" RUSH THE KICKER "
5720 RETURN
5730 REM CORNER DEFENCE
5740 IF F1=1 THEN C$=" MOVE OUT FAST "
5750 IF F1=2 THEN C$=" RELY ON THE GOALKEEPER "
5760 IF F1=3 THEN C$=" USE CLOSE MARKING "
5770 RETURN
5780 REM DEFENCE TACTICS
5790 IF F1=1 THEN C$=" USE A SWEEPER "
5800 IF F1=2 THEN C$=" INTERCEPT PASSES "
5810 IF F1=3 THEN C$=" SHADOW ATTACKERS "
5820 RETURN
5830 IF F1=1 THEN C$=" A 4-3-3 "
5840 IF F1=2 THEN C$=" A 4-4-2 "
5850 IF F1=3 THEN C$=" A 4-2-4 "
5860 RETURN
6000 REM CHOOSE TEAMS FOR SCOUTS TO WATCH
6005 PRINT "E"
6010 PRINT "SCOUTS CAN COMPILE DOSSIERS ON 4 TEAMS"
6020 PRINT "ENTER FOUR NUMBERS FROM THE FOLLOWING:"
6030 PRINT "SEPARATED BY COMMAS"
6040 X=2
6050 GOSUB 1295
6060 INPUT S1,S2,S3,S4
6070 IF (S1-T)*(S2-T)*(S3-T)*(S4-T)=0 THEN GOTO 6200
6072 IF (S1-S2)*(S1-S3)*(S1-S4)*(S2-S3)*(S2-S4)*
(S3-S4)=0 THEN 6200
6080 IF S1<1 THEN GOTO 6200
6090 IF S2<1 THEN GOTO 6200
6100 IF S3<1 THEN GOTO 6200
6110 IF S4<1 THEN GOTO 6200
6120 IF S4>24 THEN GOTO 6200
6130 IF S3>24 THEN GOTO 6200
6140 IF S2>24 THEN GOTO 6200
6150 IF S1>24 THEN GOTO 6200
6160 RETURN
6200 PRINT "RE-ENTER 4 NUMBERS FROM ABOVE LIST"
6210 GOTO 6060
7000 REM PLAYS TEAM H U. TEAM A
7010 REM MATCH SCORE IS B C
7011 B=0:C=0
7012 IF FNA(100)<60 THEN GOTO 7030
7020 B=M1(F(H),F(A)):C=M1(F(H),F(A))
7030 B1=FNA(8):C1=FNA(8)
7032 B1=B1+R(H):C1=C1+R(A)
7040 D=INT((ABS(B1-C1))/5)
7042 IF D>0 THEN 7080
7050 B=B+FNA(2)-1
7060 C=C+FNA(2)-1
7070 IF FNA(2)=2 THEN GOTO 7100
7072 IF R(H)>R(A) THEN B=B+FNA(2)-1
7074 IF R(A)>R(H) THEN C=C+FNA(2)-1
7078 GOTO 7100
7080 IF B1>C1 THEN B=B+D
7090 IF C1>B1 THEN C=C+D
7092 IF FNA(500)>498 THEN B=B+FNA(3)
7094 IF FNA(500)>498 THEN C=C+FNA(3)
7100 M2(H)=M2(H)+1:M2(A)=M2(A)+1
7110 M1 (H,M2(H))=A
7120 M1 (A,M2(A))=H
7130 M1 (H,M2(H)+7)=B
7140 M1 (A,M2(A)+7)=C
7150 M1 (H,M2(H)+14)=C
7160 M1 (A,M2(A)+14)=B
7170 RETURN
7200 REM
7201 PRINT "CALCULATING LEAGUE TABLES"
7202 IF W6=4 THEN GOSUB 8300
7204 IF W6=4 THEN GOTO 7210
7206 K1=1:K2=3:J1=4
7210 FOR I=1 TO W6
7220 GOSUB 7500
7230 GOSUB 7900
7235 IF W6+I-9=0 THEN PRINT "CALCULATING LEAGUE TABLES"
7240 NEXT I
7250 RETURN
7500 REM WORKOUT LEAGUE POSITIONS
7502 FOR J=1 TO J1
7504 Q(J)=0:F9(J)=0:A9(J)=0:P9(J)=0:W(J)=0:D8(J)=0:D9(J)=0
7506 NEXT J
7510 FOR J=1 TO J1
7520 T9(J)=M(I,J)
7530 FOR K=K1 TO K2
7540 IF M1(T9(J),K)=0 THEN GOTO 7600
7550 P9(J)=M1(T9(J),K+7)+F9(J)
7560 A9(J)=M1(T9(J),K+14)+A9(J)
7562 Z7=M1(T9(J),K+7)
7564 Z6=M1(T9(J),K+14)
7570 D8(J)=Z7-Z6+D8(J)
7580 Q(J)=Q(J)+1
7585 IF Z7=Z6 THEN D9(J)=D9(J)+1
7590 IF Z6<Z7 THEN W(J)=W(J)+1
7592 IF Z6<Z7 THEN P9(J)=P9(J)+2
7594 IF Z6=Z7 THEN P9(J)=P9(J)+1
7600 NEXT K
7605 NEXT J
7606 F2=0.

```



```

7610 FOR J=1 TO J1-1
7620 IF P9(J)<P9(J+1) THEN GOSUB 7800
7630 IF P9(J)=P9(J+1) THEN GOSUB 7700
7640 NEXT J
7650 IF F2=1 THEN GOTO 7606
7660 RETURN
7700 REM TEST GOAL DIFFERENCE
7710 IF D8(J)<D8(J+1) THEN GOSUB 7900
7720 IF D8(J)>D8(J+1) THEN RETURN
7730 IF F9(J)<F9(J+1) THEN GOSUB 7800
7740 IF F9(J)>F9(J+1) THEN RETURN
7750 IF FNA(2)=1 THEN GOSUB 7800
7760 RETURN
7800 REM SWAP TEAMS POSITIONS
7810 F3=T9(J):T9(J)=T9(J+1):T9(J+1)=F3
7820 F3=F9(J):F9(J)=F9(J+1):F9(J+1)=F3
7830 F3=A9(J):A9(J)=A9(J+1):A9(J+1)=F3
7840 F3=D8(J):D8(J)=D8(J+1):D8(J+1)=F3
7850 F3=D9(J):D9(J)=D9(J+1):D9(J+1)=F3
7860 F3=P9(J):P9(J)=P9(J+1):P9(J+1)=F3
7870 F3=W(J):W(J)=W(J+1):W(J+1)=F3
7880 F3=Q(J):Q(J)=Q(J+1):Q(J+1)=F3
7890 F2=1
7900 RETURN
7900 REM PRINT LEAGUE POSITIONS
7910 PRINT " "
7920 F$="F "A4$="A "
7930 IF W6=6 THEN B$=CHR$(I+48)
7940 IF W6=4 THEN B$=CHR$(I+64)
7950 PRINT "GROUP "B$:" LEAGUE TABLE"
7960 FOR J=1 TO J1
7970 IF F9(J)>9 THEN F$="F "
7980 IF A9(J)>9 THEN A4$="A "
7990 NEXT J
8000 PRINT " "
8010 PRINT TAB(20):" P W D L "F$:A4$:"Pts."
8020 FOR J=1 TO J1
8030 P4$="":P5$=""
8040 L9=Q(J)-W(J)-D9(J)
8050 IF F$="F " THEN GOTO 7990
8060 IF A4$="A " THEN GOTO 7994
8070 V1$=STR$(J)+". "+A$(T9(J))
8080 PRINT V1$:TAB(20):Q(J):W(J):D9(J):L9:P4$:F9(J):P5$:
A9(J):" ":P9(J)
8090 IF W6+J-5=0 THEN GOSUB 4000
8100 IF W6=4 THEN 7950
8110 IF J<3 THEN GOSUB 8900
8120 NEXT J
8130 IF W6=6 THEN 7956
8140 IF I<4 THEN 7985
8150 GOTO 7960
8160 IF I<3 THEN 7985
8170 IF (I-4)*(I-5)=0 THEN 7985
8180 PRINT "PRESS ANY KEY TO CONTINUE"
8190 GET Z$
8200 IF Z$="" THEN GOTO 7970
8210 RETURN
8220 IF F9(J)<10 THEN P4$=" "
8230 GOTO 7937
8240 IF A9(J)<10 THEN P5$=" "
8250 GOTO 7940
8260 K1=4:K2=5:J1=3
8270 FOR I=1 TO 4
8280 FOR J=1 TO 3
8290 N(I,J)=G2(I,J)
8300 NEXT J
8310 NEXT I
8320 RETURN
8330 REM SCOUT'S REPORT
8340 PRINT"PROFILE ON "A$(E):PRINT " "
8350 GOSUB 8600
8360 PRINT " "
8370 F1=S5(E)
8380 GOSUB 5780
8390 PRINT " "
8400 PRINT "IN DEFENCE THEY":C$
8410 PRINT " "
8420 F1=S6(E):GOSUB 5580
8430 PRINT "IN ATTACK THEY USE THE":C$
8440 PRINT " "
8450 F1=S7(E):GOSUB 5630
8460 PRINT "IN MIDFIELD THEY":C$
8470 PRINT " "
8480 IF D4=0 THEN GOSUB 9900:RETURN
8490 F1=T5(E):GOSUB 5480
8500 PRINT "IN FREEKICKS AROUND THE BOX THEY USE A":PRINTC$
8510 F1=T6(E):GOSUB 5680
8520 PRINT "AND DEFENDING AGAINST FREEKICKS THEY":PRINTC$
8530 PRINT " "
8540 F1=T7(E):GOSUB 5530
8550 PRINT"FROM A CORNER THEY":C$
8560 F1=T8(E):GOSUB 5730
8570 PRINT"WHEN FACED WITH A CORNER THEY":PRINTC$:PRINT " "
8580 F1=F(E):GOSUB 5830
8590 PRINT"THEY NORMALLY PLAY":C$:"FORMATION"
8600 PRINT " "
8610 GOSUB 9900
8620 RETURN
8630 REM PRINT PAST RESULTS
8640 IF M2(E)=0 THEN RETURN
8650 PRINT " "
8660 PRINT"RESULTS SO FAR IN WORLD CUP"
8670 PRINT " "
8680 FOR I=1 TO M2(E)
8690 PRINTA$(E):M1(E,I+7):" ":A$(M1(E,I)):M1(E,I+14)

```

```

8650 NEXT I
8660 PRINT " "
8670 GOSUB 9900
8680 RETURN
8690 REM SELECT TACTICS
8700 PRINT"0"
8710 PRINT"WHAT FORMATION SHALL WE PLAY BOSS?"
8720 PRINT " "
8730 FOR F1=1 TO 3
8740 GOSUB 5830
8750 PRINTF1:" ":C$
8760 NEXT F1
8770 PRINT " "
8780 GOSUB 9900
8790 F(T)=E9
8800 PRINT " "
8810 PRINT"WHAT ARE THE DEFENSIVE PLANS BOSS?"
8820 PRINT " "
8830 FOR F1=1 TO 3
8840 GOSUB 5780
8850 PRINTF1:" ":C$
8860 NEXT F1
8870 PRINT " "
8880 GOSUB 9900
8890 PRINT " "
8900 S5(T)=E9
8910 PRINT"WHAT ARE THE ATTACKING PLANS GUV?"
8920 PRINT " "
8930 FOR F1=1 TO 3
8940 GOSUB 5580
8950 PRINTF1:" ":C$
8960 NEXT F1
8970 PRINT " "
8980 GOSUB 9900
8990 PRINT " "
9000 S6(T)=E9
9010 PRINT"WHAT IS THE MIDFIELD SCHEME BOSS?"
9020 PRINT " "
9030 FOR F1=1 TO 3
9040 GOSUB 5630
9050 PRINTF1:" ":C$
9060 NEXT F1
9070 PRINT " "
9080 GOSUB 9900
9090 PRINT " "
9100 S7(T)=E9
9110 PRINT"WHAT IF WE GET A FREEKICK UPFIELD BOSS?"
9120 PRINT " "
9130 FOR F1=1 TO 3
9140 GOSUB 5480
9150 PRINTF1:" ":C$
9160 NEXT F1
9170 PRINT " "
9180 GOSUB 9900
9190 PRINT " "
9200 T5(T)=E9
9210 PRINT"HOW DO WE DEFEND AGAINST A FREEKICK?"
9220 PRINT " "
9230 FOR F1=1 TO 3
9240 GOSUB 5680
9250 PRINTF1:" ":C$
9260 NEXT F1
9270 PRINT " "
9280 GOSUB 9900
9290 PRINT " "
9300 T6(T)=E9
9310 PRINT"WHAT SHALL WE DO
WITH OUR CORNERS?"
9320 PRINT " "
9330 FOR F1=1 TO 3
9340 GOSUB 5530
9350 PRINTF1:" ":C$
9360 NEXT F1
9370 PRINT " "
9380 GOSUB 9900
9390 PRINT " "
9400 T7(T)=E9

```





ZX-81

ZX-80

**QS DEFENDER.**

UP - DOWN - THRUST - FIRE
First and only full screen display.
Software to drive QS SOUND BD.
Moving Planetary surface. Up to
84 fast moving characters on
screen at once. On screen scoring.
Ten missiles at once. Increasing
attack patterns. Requires 8K
ROM, and 4K min of RAM. **£5.50.**

QS SOUND BD.

A programmable sound effects
board using the AY-3-8910. 3
TONES; 1 NOISE; ENVELOPE
SHAPER. + TWO 8 BIT I/O PORTS.
Easily programmable from
BASIC, the AY chip does most of
the work leaving your computer
free for other things. Signal O/P
via 3.5 mm Jack socket Ports O/P
via a 16 pin I.C. Socket. **£26.00.**

QS CHRS BD./

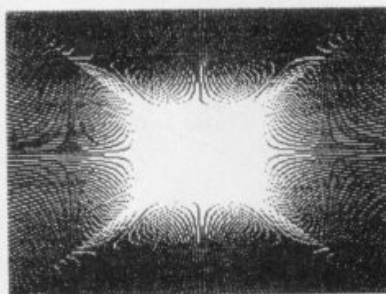
A programmable character
generator giving - 128 SEP-
ARATELY PROGRAMMABLE
CHARACTERS. ON/OFF SWITCH.
1K ON BOARD RAM. Enables
creation and display of your own
characters to screen or printer.
Demo cassette of fast machine
code operation routines and lower
case alphabet included. See below
for ZX PRINTER listing. **£26.00.**

QS - LOWER CASE

abcdefghijklmnopqrstuvwxyz

**QS INVADERS.**

LEFT - RIGHT - FIRE
13x7 INVADERS; High score; 3
levels of play; RND saucers; Bonus
base; Drives Sound bd. & CHRS bd.
Requires 7K RAM, 8K ROM + Slow.
£5.50.

**QS HI-RES BD.**

A Hi-res graphics board giving -
256 x 192 PIXELS. 6K ON BD.
RAM. SOFTWARE SELECT/
DESELECT. MIXED TEXT AND
GRAPHICS. 2K ON BOARD ROM.
Resident fast machine code
graphics software (in ROM)
provides the following HI-RES
Commands. - MOVE x,y; PLOT x,
y; DRAW x,y; BOX x,y; UP; DOWN;
LEFT; RIGHT; PRINT A\$; SCROLL;
BLACK; WHITE CLEAR COPY. See
above for ZX PRINTER listings
using COPY. **£85.00.**

**QS ASTEROIDS**

LEFT - RIGHT - THRUST - FIRE
Software to drive QS SOUND BD.
Multiple missiles firing in 8
directions. On screen scoring.
Increasing number of asteroids.
Full mobility of ship to all areas of
the screen. Two asteroid sizes.
Bonus ship at 10,000 points.
Requires 8K ROM, 4K min of RAM
+ SLOW function. **£5.50.**

QS 3K RAM Bd.

An extremely reliable static RAM
Bd. which combines with the
computer's memory to give 4K
total. Plugs direct in to the rear
port on your ZX Computer.
£15.00.

QS MOTHER BOARD BD. & QS CONNECTOR.

A reliable expansion system
allowing a total of any RAM pack
plus two other plug in boards to be
in use at once. On board 5V
regulator drives all external
boards. Fitted with two 23 way
double sided edge connectors.
Connector is 2x23 way edge
conns soldered back to back.
Expansion can operate in two
ways - (1) COMPUTER ↔
CONNECTOR ↔ Any QS add on bd.
(but no extra RAM pack). (2)
COMPUTER ↔ CONNECTOR ↔
MOTHER BD ↔ ANY RAM PACK.
(2 bds to fit in mother bd.) Mother
board **£12.00** Connector **£4.00.**

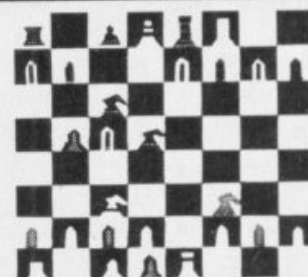
Special offers & news

(1) QS Mother bd. + connector + CHRS bd. + The special Graphics version of
ARCTIC COMPUTING'S ZX CHESS 11. £45.00.
The strongest chess program with 7 levels of play.

(2) QS MOTHER BD + CONNECTOR + either SOUND or CHRS bd. **£40.00.**

We will be at the following shows ... Come and see us ...

THE COMPUTER FAIR, Earls Court, 23rd to 25th April
3rd ZX MICROFAIR, Central Hall, Westminster.
30th April & 1st May



POSTAL AND MONEY ORDERS TO:

QUICKSILVA: 95, UPPER BROWN HILL RD. : MAYBUSH : SOTON : HANTS : ENGLAND.

Please state Type of machine, Which ROM, Memory size, when ordering.

ALL PRODUCTS FULLY GUARANTEED.


```

8879 PRINT "WHAT ABOUT THEIR CORNERS?"
8880 PRINT " "
8881 FOR F1 = 1 TO 3:GOSUB 5730
8882 PRINT F1: " " :C$
8883 NEXT F1
8884 PRINT " "
8885 GOSUB 9960
8886 PRINT " "
8888 T8(T)=E9
8889 RETURN
8900 ON I GOTO 8910,8920,8930,8940,8950,8960
8905 RETURN
8910 IF J=1 THEN G2(1,1)=T9(J)
8915 IF J=2 THEN G2(3,1)=T9(J)
8918 GOTO 8905
8920 IF J=1 THEN G2(2,1)=T9(J)
8925 IF J=2 THEN G2(4,1)=T9(J)
8928 GOTO 8905
8930 IF J=1 THEN G2(1,2)=T9(J)
8935 IF J=2 THEN G2(3,2)=T9(J)
8938 GOTO 8905
8940 IF J=1 THEN G2(3,3)=T9(J)
8945 IF J=2 THEN G2(1,3)=T9(J)
8948 GOTO 8905
8950 IF J=1 THEN G2(4,2)=T9(J)
8955 IF J=2 THEN G2(2,2)=T9(J)
8958 GOTO 8905
8960 IF J=1 THEN G2(2,3)=T9(J)
8965 IF J=2 THEN G2(4,3)=T9(J)
8968 GOTO 8905
9000 REM PLAY GAME
9001 PRINT "G":PRINT A$(T): " U. " :A$(Z):PRINT " "
9002 B=0:C=0:B4=0:B5=0:B6=0
9003 GOSUB 3450
9004 GOSUB 8670
9005 GOSUB 3000
9010 Z3=0:Z4=0:W1=0
9012 K4=T4(S7(T),S7(Z))+30
9015 W3=R(T):W4=R(Z)
9016 W3=W3+2:H1(F(T),F(Z)):W4=W4+2:H1(F(Z),F(T))
9017 FOR I=1 TO 11:U2(1)=0:NEXT I
9018 U1=0
9019 PRINT "G":PRINT "THE REF BLOWS HIS WHISTLE TO START GAME"
9020 FOR I=1 TO K4
9025 Z1=T
9030 IF FNA(W3+W4)>R(T) THEN Z1=Z
9032 IF Z1=T THEN Z8=2
9034 IF Z1=Z THEN Z8=T
9040 GOSUB 9800
9050 Z8$=" HAVE "
9052 GOSUB 9700
9055 PRINT A$(Z1):Z8$: "POSSESSION"
9056 PRINT " "
9070 IF Z1=T THEN GOSUB 9760
9080 IF Z1=Z THEN GOSUB 9780
9090 J$=Z5$+T4$(G1)+Z6$:GOSUB 15000
9092 PRINT " "
9094 GOSUB 9930
9100 Z4=Z2:Z3=Z1
9102 IF Z2=1 THEN U1=U1+1:U2(A3)=U2(A3)+1
9110 IF Z2=2 THEN GOSUB 9300
9112 IF I=22 THEN GOSUB 18000
9200 NEXT I
9201 H=T:A=Z
9202 PRINT "NOTHING ELSE OF SIGNIFICANCE HAPPENS DURING THE GAME"
9203 PRINT " ":PRINT "FINAL SCORE"
9204 PRINT " ":PRINT A$(T):B: " " :A$(Z):C
9205 P2=B:P3=C
9206 GOSUB 9900
9207 IF X3=0 THEN GOSUB 7100:RETURN
9208 IF B=C THEN 9211
9209 IF U=0 THEN RETURN
9210 GOSUB 7100:RETURN
9211 IF X5=1 THEN 9220
9212 Z3=0:Z4=0:K4=15
9214 X5=1
9216 PRINT "G":PRINT "EXTRA TIME BEING PLAYED"
9218 GOTO 9020
9220 X5=0
9222 PRINT "G":PRINT "PENALTIES WILL DECIDE THE RESULT"
9223 J$=" SHOOT'S WIDE"
9224 IF RND(1)>.5 THEN B=B+1:J$=" SCORES FROM THE SPOT"
9226 J$=K$(1+FNA(10))+J$:GOSUB 15000
9228 J$=" SHOOT'S WIDE"
9230 IF RND(1)>.5 THEN C=C+1:J$=" SCORES FROM THE SPOT"
9232 J$=Z9$(1+FNA(10))+J$:GOSUB 15000
9234 IF B=C THEN 9223
9236 PRINT "FINAL SCORE "
9238 PRINT A$(T):B: " " :A$(Z):C
9240 P2=B:P3=C
9245 GOSUB 9900
9250 RETURN
9300 REM SCORING CHANCE
9302 Z4=1
9305 G3=FNA(7)
9307 IF G1<8 THEN Z1$=Z6$
9309 IF G1>7 THEN Z1$=Z5$
9310 ON G3 GOSUB 9350,9350,9350,9350,9450,9500
9349 RETURN
9350 REM NORMAL ATTACK
9355 G3=FNA(100)
9360 IF T3(S6(Z3),S5(Z8))>100-G3+B4 THEN 9400
9365 GOSUB 9375
9366 RETURN

```

```

9375 G3=FNA(9)
9380 Z1$=Z1$+A1$(G3)
9382 IF Z8=T THEN H$=" "+K$(1+FNA(4))
9384 IF Z8=Z THEN H$=" "+Z9$(1+FNA(4))
9385 IF G3<4 THEN Z1$=Z1$+H$
9386 IF G3<4 THEN J$=Z1$:GOSUB 15000:Z2=1:RETURN
9387 IF Z8=T THEN H$=" "+K$(1)
9388 IF Z8=Z THEN H$=" "+Z9$(1)
9389 IF G3<6 THEN J$=Z1$+H$:GOSUB 15000:RETURN
9390 J$=Z1$:GOSUB 15000:RETURN
9400 REM GOAL IS SCORED
9402 PRINT " "
9404 B4=B4+2.5
9405 J$=Z1$+A2$(FNA(9)):GOSUB 15000
9406 GOSUB 9410:GOSUB 9640
9407 IF I=K4 THEN RETURN
9408 PRINT "FROM THE KICK OFF"
9409 RETURN
9410 J$="IT'S A GOAL! "+A$(Z1)+" HAVE SCORED":GOSUB 15000
9415 IF Z1=T THEN B=B+1
9420 IF Z1=Z THEN C=C+1
9422 D2=I*2
9423 IF RND(1)>.5 THEN D2=D2-1
9425 PRINT " "
9426 Z$=" MINUTES"
9427 IF D2=1 THEN Z$=" MINUTE"
9428 PRINT "SCORE AFTER ":D2:Z$
9430 PRINT " "
9432 PRINT A$(T):B: " " :A$(Z):C
9440 Z2=1
9449 RETURN
9450 REM CORNER
9452 PRINT " ":PRINT A$(Z1): " WIN A CORNER"
9455 PRINT " "
9456 IF Z1=T THEN Z1$=K$(5+FNA(6))
9458 IF Z1=Z THEN Z1$=Z9$(5+FNA(6))
9460 J$="FROM THE KICK THE BALL REACHES "+Z1$:GOSUB 15000
9465 G3=FNA(100)
9470 IF T2(S6(Z3),S5(Z8))>100-G3+B6 THEN B6=B6+2:GOTO 9400
9475 GOSUB 9375
9499 RETURN
9500 REM SET-PIECE
9502 PRINT " "
9510 IF Z1=T THEN Z5$=Z9$(1+FNA(4))
9512 IF Z1=Z THEN Z5$=K$(1+FNA(4))
9514 J$=Z1$+" IS BROUGHT DOWN BY "+Z5$+" THE REF AWARDS "+A$(Z1)
9516 J$=J$+" A FREEKICK JUST OUTSIDE THE BOX":GOSUB 15000
9520 PRINT " "
9525 PRINT "FROM THE FREEKICK "
9530 G3=FNA(100)
9532 IF T3(S6(Z3),S5(Z8))>100-G3+B5 THEN B5=B5+2:GOTO 9400
9534 GOSUB 9375
9536 RETURN
9600 REM DETERMINE PLAYER TO PRINT
9640 REM BRING ON SUB?
9645 IF W1=1 THEN GOSUB 9900:RETURN
9647 PRINT "PRESS S TO BRING ON SUBSTITUTE"
9648 PRINT " ANY OTHER KEY TO CONTINUE"
9649 GET Z$
9650 IF Z$="" THEN 9649
9651 IF ASC(Z$)<>83 THEN RETURN
9655 PRINT "G"
9656 W1=1
9660 FOR J=2 TO 11:PRINT J: " ":K$(J):NEXT J
9665 PRINT "PLEASE TYPE A NUMBER FROM 2 TO 11"
9666 PRINT "TO INDICATE THE PLAYER TO BE SUBSTITUTED"
9667 INPUT K
9668 IF K>11 THEN 9667
9669 IF K<2 THEN 9667
9670 PRINT " ":J$=K$(K)+" TRUDGES OFF TO BE REPLACED BY " +K$(12):GOSUB 15000
9675 Z$=K$(K):K$(K)=K$(12):K$(12)=Z$
9680 W3=W3+(-U1/10)+U2(K)*2
9685 RETURN
9700 REM DETERMINE IF POSS. REGAINED
9710 REM IF Z1<>1 THEN RETURN
9720 IF Z4<>1 THEN RETURN
9730 IF Z3<>Z1 THEN RETURN
9740 Z8$=" REGAIN "
9750 RETURN
9760 REM GENERATE 2 RANDOM PLAYERS
9762 A3=FNA(10)+1
9764 Z5$=K$(A3)
9766 IF G1>10 THEN Z6$=Z9$(FNA(10)+1)
9768 IF G1>10 THEN RETURN
9770 A4=FNA(10)+1
9772 IF A4=A3 THEN 9770
9774 Z6$=K$(A4)
9776 RETURN
9780 REM GENERATE 2 RANDOM PLAYERS
9782 A3=FNA(10)+1
9784 Z5$=Z9$(A3)
9786 IF G1>10 THEN Z6$=K$(FNA(10)+1)
9788 IF G1>10 THEN RETURN
9790 A4=FNA(10)+1
9792 IF A4=A3 THEN 9790
9794 Z6$=Z9$(A4)
9796 RETURN
9800 REM DETERMINE SUCCESS OF POSS.
9810 G1=FNA(20)
9820 IF G1<4 THEN Z2=1
9830 IF G1<4 THEN RETURN
9840 IF G1>17 THEN Z2=1

```

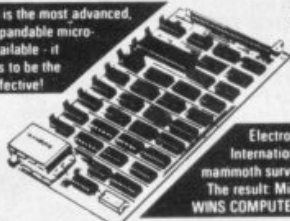

HENRY'S COMPUTER KIT DIVISION

404 EDGWARE RD, LONDON W2 1ED
TEL: 01-402 6822

RETAIL SALES
& DEMONSTRATIONS

MICROTAN 65

Microtan 65 is the most advanced, powerful, expandable micro-computer available - it also happens to be the most cost effective!



Electronic Today International held a mammoth survey of kits. The result: Microtan 65 WINS COMPUTER CLASS!

YOU MAY DEDUCT
£10 FROM MICRO-
TAN 65 KITS
AND ASSEMBLED
UNITS LISTED HERE
ONLY FROM US

MICROTAN 65 CONTENTS

High quality, plated thru hole printed circuit board, solder resist and silk screened component identification, 6502 microprocessor, 1K monitor TANBUG. Now with 'V' Bug, 1K RAM for user programme, stack and display memory, VDU alphanumeric display of 16 rows by 32 characters. MICROtan 65 system file binder, 136 page, bound, users hardware software manual with constructional details and sample programmes. Logic and discrete components to fully expand MICROtan 65. The MICROtan 65 kit has won widespread acclaim for its superb presentation. We pay attention to detail!

KIT FORM £69.00 + £10.35 V.A.T., total £79.35.
MICROTAN 65 ASSEMBLED AND TESTED.

Specification as above, but assembled and fully bench tested by ourselves.

£79.00 + £11.85 V.A.T., total £90.85.

DELIVERY EX-STOCK POST PAID

MAIL ORDERS to: 11/12 Paddington Green, London W2.

TANGERINE • TANGERINE



FOOTBALL MANAGER

Addictive Games

for
ZX81
ZX80
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 ★

JUST
LOOK AT
THESE
FEATURES

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!

FOOTBALL MANAGER IS SUPPLIED WITH INSTRUCTION BOOK
OCCUPIES THE ENTIRE 16K RAM

HARDWARE REQUIRED

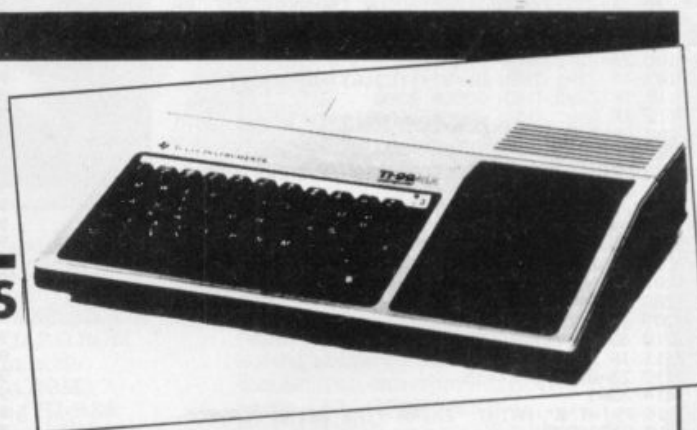
| ZX81/ ZX80 | TRS80/ Video Genie |
|---------------|-----------------------|
| 8K ROM | LEVEL II |
| 16K RAM | 16K RAM |

To Order send Cheque/P.O. £7.95
made payable to: ADDICTIVE GAMES
at: Dept. C.V.G. P.O. BOX 278
CONNBURROW
MILTON KEYNES MK14 7NE
PLEASE STATE COMPUTER

THE NEW TEXAS T199/4A 42K PERSONAL COMPUTER ONLY £299.00 + VAT

LOOK AT THESE FEATURES

- 9900 16 BIT PROCESSOR 3.5 MHZ
- 26K ROM INCLUDING 14K BASIC
- 7.6K GRAPHICS LANGUAGE INTERPRETER
- 4.4K MONITOR
- 16K USER RAM (EXPANDABLE TO 48K)
- HI-RES GRAPHICS 192 x 256
- 16 COLOURS WITH FOREGROUND, AND BACK GROUND
- FULL MEMORY MAPPED SCREEN
- 5 OCTAVES SOUND FROM 110Hz TO OVER 40000
- 3 SIMULTANEOUS TONES + NOISE GENERATOR
- BUILT IN LOUDSPEAKER WITH VOLUME CONTROL
- PLUGS INTO ANY (B/W GIVES SHADES OF GREY)
- INTERFACE TO CONTROL 2 CASSETTE PLAYERS (AUTO COPY AND UPDATE FROM ONE TO THE OTHER) PLUS MANY MORE SUPER FEATURES
- 12 MONTH GUARANTEE
- OPTIONS INCLUDE:- BIG RANGE OF SOLID STATE PLUG IN SOFTWARE
- RS232 INTERFACE
- THERMAL PRINTER
- DISK DRIVES
- SPEECH SYNTHESIZER
- JOYSTICKS ETC ETC.



Please send me
T199/4A COMPUTERS (Inc.
Power supply modulators
and cassette interface).
Please send me details and price list
for which I enclose a large S.A.E.

Name _____

Address _____

Phone _____

I enclose cheque for _____ (£343.85 per computer
including £44.85 VAT)

Please charge my Access/Diners Club Card, Barclaycard.

Number _____

or telephone your card order during shop hours to:-
Watford (0923) 40601 or 44057

Signed _____

Send to The Computer Centre, Watford, Ltd.
150 High Street, Watford, Herts. WD1 2EN




```

9850 IF G1>17 THEN RETURN
9860 Z2=2
9870 RETURN
9900 PRINT "PRESS ANY KEY TO CONTINUE"
9905 GET Z#
9910 IF Z#="" THEN 9905
9920 RETURN
9930 FOR U=1 TO 1200
9940 NEXT U
9950 RETURN
9960 REM INPUT NUMBER FROM 1 TO 3
9964 INPUT "ENTER A NUMBER BETWEEN 1 AND 3:";E#
9966 IF LEN(E#)>1 THEN 9990
9967 IF ASC(E#)<49 THEN 9990
9968 IF ASC(E#)>51 THEN 9990
9969 E9=VAL(E#)
9980 RETURN
9990 PRINT "PLEASE RE-ENTER"
9992 GOTO 9964
11062 FOR I=1 TO 24
11064 F(I)=INT(RND(1)*3)+1
11066 NEXT I
11068 RETURN
11070 FOR J=1 TO 24
11080 READ A#(I)
11090 NEXT I
11092 RETURN
11094 FOR I=1 TO 3
11095 FOR J=1 TO 3
11096 READ H1(I,J):READ A1(I,J)
11097 NEXT J
11098 NEXT I
11100 RETURN
11110 FOR I=1 TO 20
11120 READ T#(I)
11130 NEXT I
11140 RETURN
12100 REM GENERATE TEAM'S RATINGS
12110 FOR I=1 TO 3

```

Longer listings are best! That's the message you keep drumming into us on the telephone and by letter. Well, they don't come much longer than World Cup Manager and we hope you take the trouble to key it in. But for any Sharp owners who feel it will be too risky or time consuming to type it, a cassette of the game is available from Sharpsoft. It costs £5.75 and can be bought from Sharpsoft, 86/90 Paul Street, London EC1.

```

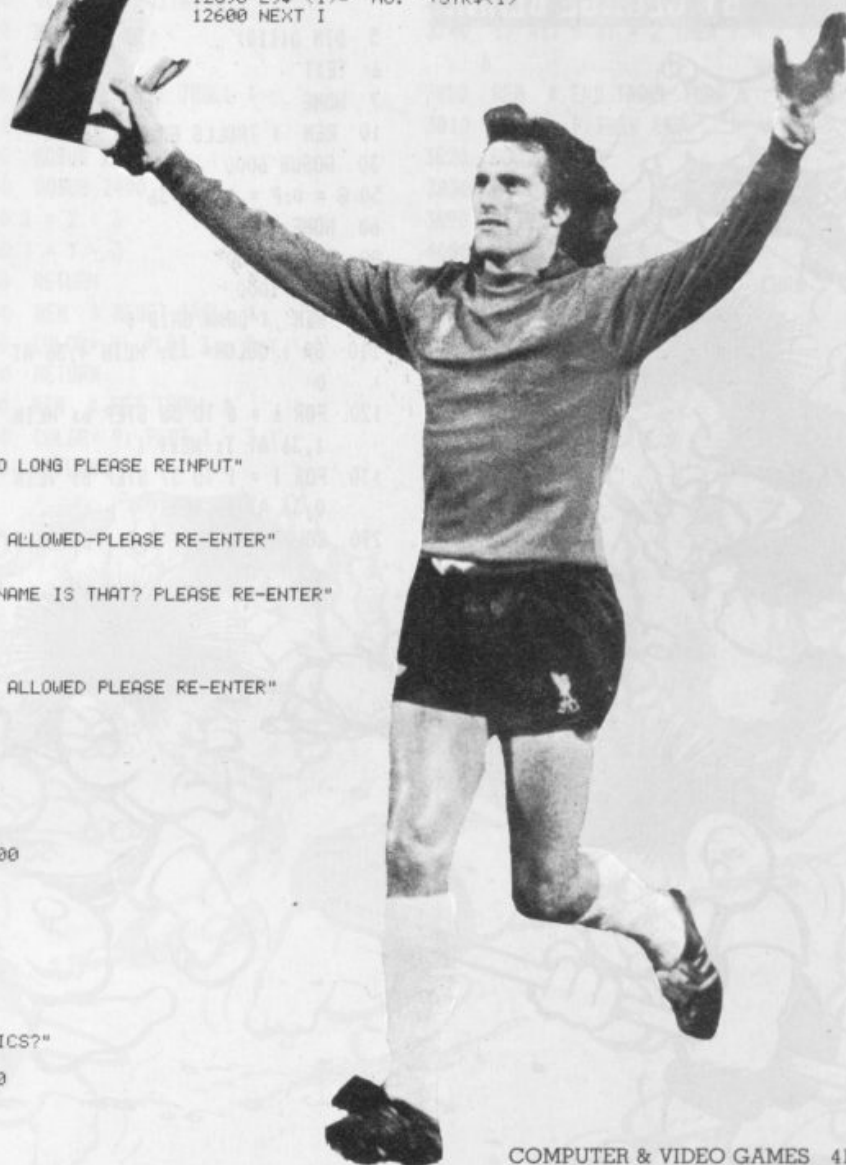
12605 Z9#(1)=" THEIR GOALKEEPER "
12610 RETURN
12615 REM GENERATE GOALSCORING MESSAGES
12620 FOR I=1 TO 9
12630 READ A1#(I)
12635 NEXT I
12640 FOR I=1 TO 9
12650 READ A2#(I)
12660 NEXT I
12670 RETURN
14000 REM CHECK VALIDITY OF NAME
14005 K3=46
14010 PRINT D$:INPUT K$(I)
14020 IF LEN(K$(I))>35 THEN PRINT "NAME IS TOO LONG PLEASE REINPUT"
14030 IF LEN(K$(I))>35 THEN 14010
14040 FOR K1=1 TO LEN(K$(I))
14050 K2=ASC(MID$(K$(I),K1,1))
14060 IF K2>90 THEN PRINT "ONLY LETTERS ARE ALLOWED-PLEASE RE-ENTER"
14070 IF K2>90 THEN GOTO 14010
14080 IF K2=32 THEN GOTO 14110
14082 IF K2+K3-90<3 THEN PRINT "WHAT SORT OF NAME IS THAT? PLEASE RE-ENTER"
14083 IF K2+K3-90<3 THEN 14010
14085 IF K2=39 THEN 14110
14088 IF K2=45 THEN 14110
14089 IF K2=46 THEN 14110
14090 IF K2<65 THEN PRINT "ONLY LETTERS ARE ALLOWED PLEASE RE-ENTER"
14100 IF K2<65 THEN GOTO 14010
14110 K3=K2
14115 NEXT K1
14120 RETURN
15000 IF LEN(J#)<=39 THEN PRINT J#
15005 IF LEN(J#)<39 THEN PRINT " "
15010 IF LEN(J#)<=39 THEN RETURN
15029 FOR J=39 TO 1 STEP -1
15030 IF ASC(MID$(J#,J,1))=32 THEN GOTO 16000
15040 NEXT J
15050 PRINT J#
15060 RETURN
16000 PRINT LEFT$(J#,J)
16010 J#=RIGHT$(J#,LEN(J#)-J)
16020 GOTO 15000
18000 PRINT " "
18010 PRINT "HALFTIME SCORE:"
18020 PRINT A$(T);B$ " "A$(Z);C
18030 PRINT "DO YOU WISH TO CHANGE YOUR TACTICS?"
18040 INPUT Z#
18045 IF ASC(LEFT$(Z#,1))=89 THEN GOSUB 8670
18050 GOSUB 9640
18060 RETURN

```

```

12120 R(I)=INT(RND(1)*10)+21
12130 NEXT I
12149 FOR I=4 TO 11
12150 R(I)=INT(RND(1)*10)+16
12160 NEXT I
12170 FOR I=12 TO 14
12180 R(I)=20
12190 NEXT I
12200 FOR I=15 TO 17
12210 R(I)=INT(RND(1)*5)+16
12220 NEXT I
12230 FOR I=18 TO 23
12240 R(I)=INT(RND(1)*5)+11
12250 NEXT I
12260 R(24)=INT(RND(1)*22)+11
12270 RETURN
12300 REM MATRIX OF MIDFIELD POSS.
12310 FOR I=1 TO 3
12320 FOR J=1 TO 3
12330 T4(I,J)=10
12340 NEXT J
12350 NEXT I
12360 T4(1,1)=5
12370 T4(3,3)=15
12380 REM MATRIX OF FREEKICKS TACTICS
12390 FOR I=1 TO 3
12400 FOR J=1 TO 3
12410 READ T1(I,J)
12420 NEXT J
12430 NEXT I
12440 REM MATRIX OF CORNER TACTICS
12450 FOR I=1 TO 3
12460 FOR J=1 TO 3
12470 READ T2(I,J)
12480 NEXT J
12490 NEXT I
12500 REM MATRIX OF ATTACK TACTICS
12510 FOR I=1 TO 3
12520 FOR J=1 TO 3
12530 READ T3(I,J)
12550 NEXT J
12560 NEXT I
12570 REM GENERATE OPPOSITION DEFAULT NAMES
12580 FOR I=1 TO 12
12590 Z9#(I)=" NO. "+STR$(I)
12600 NEXT I

```



TROLLS GOLD

A KING'S ransom in gold could be yours if you are willing to brave the terrors of a deep dark cave. But reaching the gold is only half the battle — there is a particularly nasty Troll guarding the gold. He will attempt to stop you taking his golden treasure out of the cavernous labyrinth — that's if he hasn't got to you as you find your way into his lair. There are 36 rooms within the cave where the Troll can lurk or where the gold may be found. Can you beat the Troll in this battle of wits?

RUNS ON AN APPLE IN 3K

BY GEORGE BLANK



```

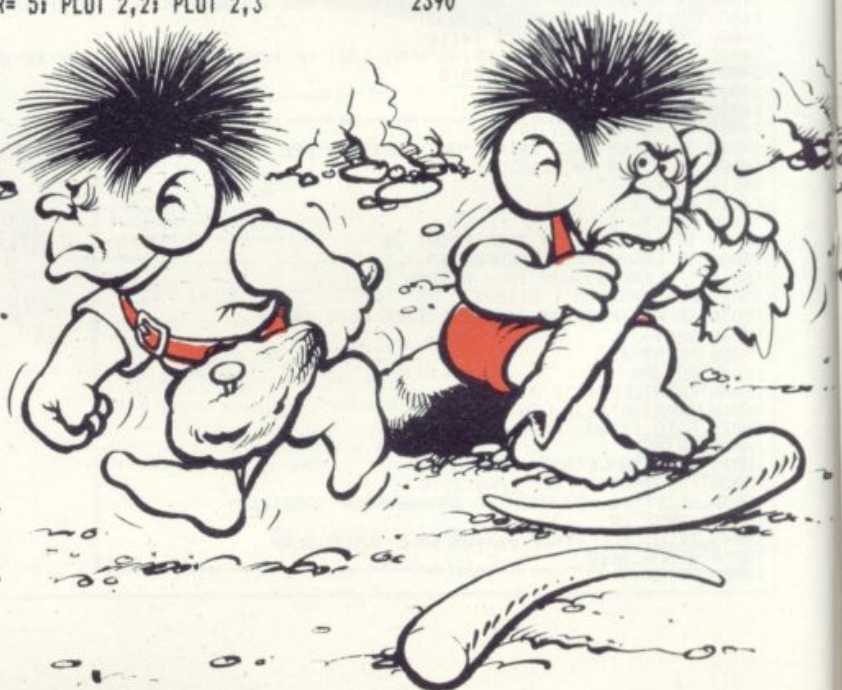
5 DIM A(110)
6 TEXT
7 HOME
10 REM * TROLLS GOLD *
30 GOSUB 6000
50 G = 0: P = 1: T = 36
60 HOME
80 GOSUB 2000
90 GOTO 1000
100 REM * DRAW GRID *
110 GR: COLOR= 15: HLIN 4,36 AT
    0
120 FOR I = 6 TO 36 STEP 6: HLIN
    1,36 AT I: NEXT I
130 FOR I = 1 TO 37 STEP 6: VLIN
    0,36 AT I: NEXT
290 COLOR= 5: PLOT 2,2: PLOT 2,3

```

```

: PLOT 3,3: PLOT 3,4: PLOT 4
,4: PLOT 4,5: PLOT 5,5
320 COLOR= 13: HLIN 32,34 AT 35:
    PLOT 33,34
410 GOSUB 5000
420 GOSUB 5200
490 RETURN
1000 REM * MASTER ROUTINE *
1010 IF SCRN( 2,2) < > 5 THEN
    GOSUB 100
1020 GOSUB 2700
1100 GOSUB 5300
1200 GOSUB 3300
1910 GOSUB 2800
1990 GOTO 1000
2000 REM * DOORS *
2010 FOR A = 1 TO 110
2020 A(A) = 0
2030 NEXT
2040 FOR A = 7 TO 36
2050 A(A) = 1
2060 NEXT
2070 FOR A = 52 TO 56
2080 A(A) = 1
2090 A(A + 6) = 1
2100 A(A + 12) = 1
2110 A(A + 18) = 1
2120 A(A + 24) = 1
2130 A(A + 30) = 1
2140 NEXT
2150 RETURN
2200 REM * Y COORD OF DOOR * IN
    , D * OUT, Y *
2210 IF D > 49 THEN 2280
2220 IF D < 13 THEN Y = 6: GOTO
    2390
2230 IF D < 19 THEN Y = 12: GOTO
    2390
2240 IF D < 25 THEN Y = 18: GOTO
    2390
2250 IF D < 31 THEN Y = 24: GOTO
    2390
2260 IF D > 36 THEN Y = 36: GOTO
    2390

```




```

2270 Y = 30: GOTO 2390
2280 IF D < 57 THEN Y = 5: GOTO
2390
2290 IF D < 63 THEN Y = 11: GOTO
2390
2300 IF D < 69 THEN Y = 17: GOTO
2390
2310 IF D < 75 THEN Y = 23: GOTO
2390
2320 IF D < 81 THEN Y = 29: GOTO
2390
2330 Y = 35
2390 RETURN
2400 REM # X COORD OF DOOR # IN
. D # OUT, X #
2410 Z = D
2420 IF Z > 49 THEN 2530
2430 Z = Z - 6
2440 IF Z > 6 THEN 2430
2450 Z = INT (Z + .2)
2460 IF Z = 1 THEN X = 4
2470 IF Z = 2 THEN X = 10
2480 IF Z = 3 THEN X = 16
2490 IF Z = 4 THEN X = 22
2500 IF Z = 5 THEN X = 28
2510 IF Z = 6 THEN X = 34
2520 GOTO 2590
2530 Z = D - 44
2540 Z = Z - 6
2550 IF Z > 6 THEN 2540
2555 Z = INT (Z + .2)
2560 IF Z = 2 THEN X = 7
2565 IF Z = 3 THEN X = 13
2570 IF Z = 4 THEN X = 19
2575 IF Z = 5 THEN X = 25
2580 IF Z = 6 THEN X = 31
2590 RETURN
2600 REM # SELECT DOORS #
2610 D = INT ((RND (1) * 80) +
7)
2620 IF A(D) < > 1 THEN 2610
2630 A(D) = 2
2640 GOSUB 2200

```

```

2650 GOSUB 2400
2690 RETURN
2700 REM # WHICH DOORS ARE OPEN
? #
2710 FOR B = 90 TO 110
2720 GOSUB 2600
2730 A(B) = D
2740 COLOR= 0: PLOT X,Y
2750 IF D > 40 THEN PLOT X,Y -
1
2760 NEXT B
2770 HOME
2790 RETURN
2800 REM # CLOSE DOORS #
2810 FOR A = 90 TO 110
2820 D = A(A)
2830 A(A) = 0
2840 A(D) = 1
2850 GOSUB 2200
2860 GOSUB 2400
2862 COLOR= 15
2865 IF D > 40 THEN 2880
2870 COLOR= 15: HLIN X - 1, X + 1
AT Y
2875 GOTO 2890
2880 VLIN Y, Y - 1 AT X
2890 NEXT A
2895 RETURN
3000 REM #LOCATE TROLL #
3010 D = T + 6
3020 GOSUB 2200
3030 GOSUB 2400
3040 X = X + 3
3050 Y = Y - 3
3060 RETURN
3100 REM # RESET TROLL #
3110 COLOR= 0: PLOT X - 3, Y
3190 RETURN
3200 REM # SET TROLL #
3210 COLOR= 9: PLOT X - 3, Y
3290 RETURN

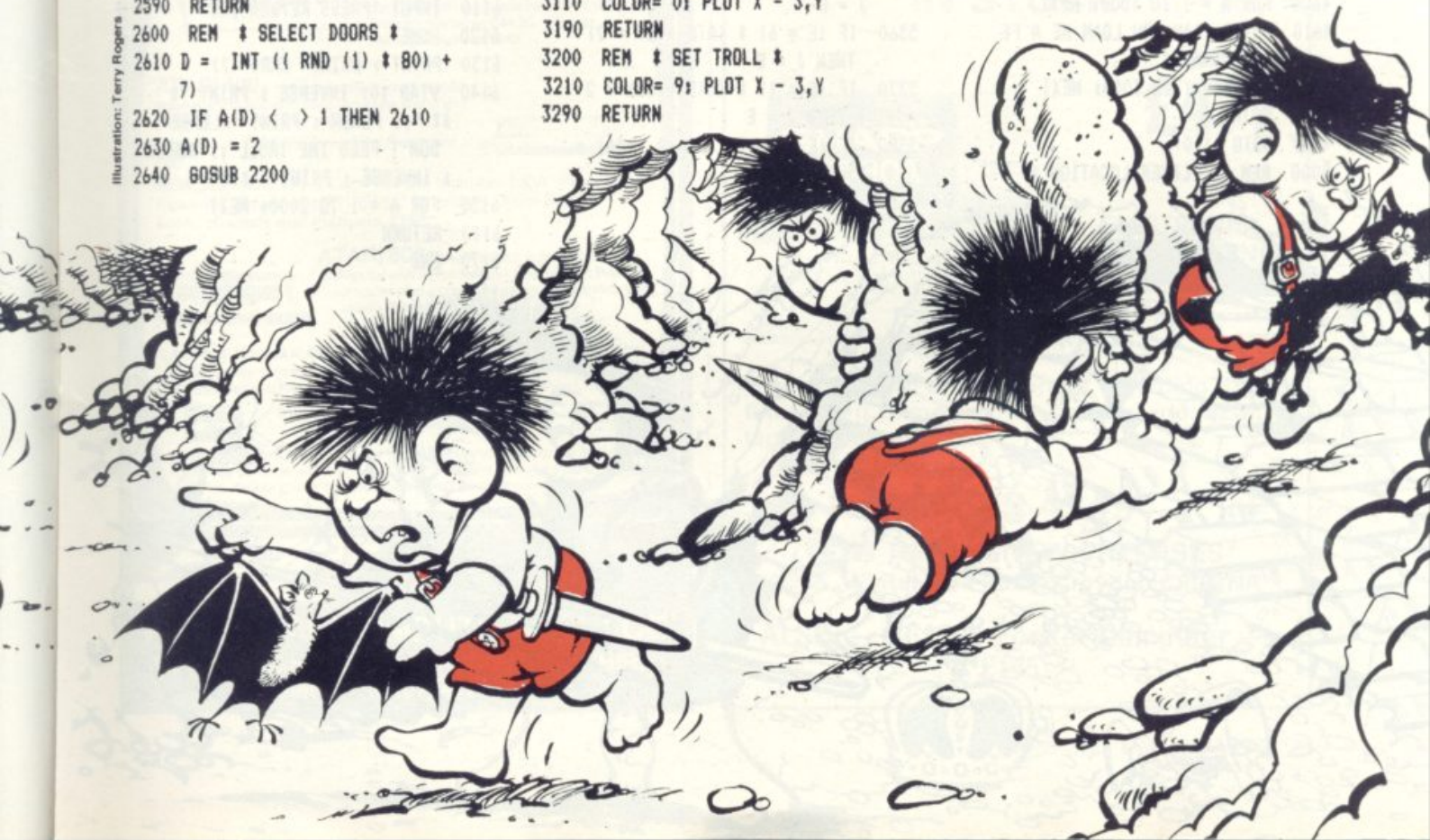
```

```

3300 REM # CONTROL TROLL #
3310 GOSUB 3000
3320 GOSUB 3100
3330 C = T - P
3340 IF C < 0 THEN 3370
3360 GOTO 3400
3370 C = ABS (C)
3380 IF C < 6 THEN 3600
3390 GOTO 3700
3400 REM # MOVE TROLL UP #
3410 IF T < 7 THEN 3500
3420 IF A(T) = 2 THEN T = T - 6
3430 IF T = P THEN 4000
3500 REM # MOVE TROLL OUT #
3510 IF T = 1 THEN 3600
3520 IF A(T + 50) = 2 THEN T = T
- 1
3530 IF T = P THEN 4000
3540 IF A(T) = 2 THEN T = T - 6
3550 GOTO 3800
3600 REM # MOVE TROLL IN #
3610 IF A(T + 51) = 2 THEN T = T
+ 1: GOTO 3730
3700 REM # MOVE TROLL DOWN #
3710 IF T > 30 THEN 3800
3730 IF T = P THEN 4000
3740 IF A(T + 6) = 2 THEN T = T +
6
3800 REM # END TROLL TURN #
3810 IF T = P THEN 4000
3820 GOSUB 3000
3830 GOSUB 3200
3890 RETURN
4000 REM # EATEN BY TROLL #
4001 FOR I = 1 TO 10: PRINT CHR#
(7): NEXT I: GOSUB 3000

```

Illustration: Terry Rogers




```

4002 GOSUB 3200
4003 FOR I = 1 TO 1000: NEXT
4005 TEXT : HOME : VTAB 10
4010 TEXT : VTAB 10: INVERSE : FLASH
      : PRINT "SOME PEOPLE NEVER L
      EARN!!"
4030 NORMAL : PRINT
4040 PRINT "THE SIGN AT THE ENTR
      ANCE TO THE CAVE SAID:"
4050 INVERSE : PRINT "§ PLEASE
      DON'T FEED THE TROLL §"; NORMAL
4060 PRINT
4070 PRINT "THE TROLL JUST ATE Y
      OU FOR DINNER!"
4080 PRINT
4090 PRINT " § § § YOU LO
      SE! § § §"
4100 PRINT
4110 INPUT "WOULD YOU LIKE TO TR
      Y AGAIN?";B$
4120 IF LEFT$(B$,1) = "N" THEN
      NORMAL : END
4125 GOTO 50
4500 REM § GAME WON §
4510 TEXT : HOME
4520 VTAB 10
4530 PRINT "§ § § § YOU W
      IN § § § §"
4540 PRINT
4550 PRINT "YOU ARE VERY RICH!!
      !!!!!!!!!!"
4560 PRINT
4570 FOR A = 1 TO 1000: NEXT
4580 PRINT CHR$(7); PRINT "BY
      THE WAY...."
4590 PRINT
4600 FOR A = 1 TO 1000: NEXT
4610 PRINT "CAN YOU LOAN ME A FE
      W THOUSAND?"
4620 FOR A = 1 TO 1000: NEXT
4630 PRINT
4640 GOTO 4110
5000 REM § PLAYER LOCATION §

```

```

5010 D = P + 6
5020 GOSUB 2200
5030 GOSUB 2400
5040 X = X + 3
5050 Y = Y - 3
5090 RETURN
5100 REM § RESET PLAYER §
5110 COLOR= 0: PLOT X - 3,Y
5140 IF G = 1 THEN COLOR= 0: HLIN
      X - 5,X - 2 AT Y + 2: HLIN X
      - 4,X - 3 AT Y + 1
5190 RETURN
5200 REM § SET PLAYER §
5210 COLOR= 12: PLOT X - 3,Y
5240 IF G = 1 THEN COLOR= 13: HLIN
      X - 5,X - 3 AT Y + 2: PLOT X
      - 4,Y + 1
5290 RETURN
5300 REM § CONTROL PHASE §
5305 IF (A(P) < 2) § (A(P + 6) <
      2) § (A(P + 50) < 2) § (A(P +
      51) < 2) THEN 5490
5310 INPUT "UP, DOWN, RIGHT (OR
      IN), LEFT (OR OUT), OR STAY
      ?";D$;E = 0;E$ = LEFT$(D$,
      1); IF E$ = "U" THEN E = -
      6
5315 IF E$ = "D" THEN E = 6
5320 IF E$ = "R" OR E$ = "I" THEN
      E = 1
5325 IF E$ = "L" OR E$ = "O" THEN
      E = - 1
5330 J = 0: HOME
5340 IF (E < 0) AND (P = 1) AND
      (G = 1) THEN 4500
5350 IF (E = - 6) § (A(P) = 2) THEN
      J = E
5360 IF (E = 6) § (A(P + 6) = 2)
      THEN J = E
5370 IF (E = 1) § (A(P + 51) = 2
      ) THEN J = E
5380 IF (E = - 1) § (A(P + 50) =
      2) THEN J = E

```

```

5390 IF J = 0 THEN 5490
5400 GOSUB 5000
5410 GOSUB 5100
5420 P = P + J
5430 IF P = 36 THEN 5500
5440 GOSUB 5000
5450 GOSUB 5200
5460 IF T = P THEN 4000
5470 GOTO 5300
5490 RETURN
5500 REM § TAKE GOLD §
5510 GOSUB 5000
5520 G = 1
5530 GOSUB 5200
5540 GOSUB 5700
5590 GOTO 5300
5700 REM § RESET GOLD §
5710 COLOR= 0: HLIN X - 5,X - 3 AT
      Y + 2: HLIN X - 4,X - 3 AT Y
      + 1
5795 RETURN
6000 TEXT
6010 PRINT
6020 PRINT CHR$(7)
6030 PRINT "TROLLSGOLD"
6040 PRINT
6050 PRINT "IF YOU ARE FOOLHARDY
      ENOUGH TO"
6060 PRINT "DESCEND TO THE LOWES
      T AND INMOST"
6070 PRINT "REACHES OF A CAVE IN
      HABITED"
6080 PRINT "BY A NASTY TROLL, J
      UST TO"
6090 PRINT "STEAL HIS GOLD..."
6100 PRINT
6110 INPUT "PRESS RETURN";A$
6120 HOME
6130 PRINT : PRINT CHR$(7)
6140 VTAB 10: INVERSE : PRINT "§
      § "; FLASH : PRINT "PLEASE
      DON'T FEED THE TROLL"; NORMAL
      : INVERSE : PRINT " § § §"
6150 FOR A = 1 TO 2000: NEXT
6160 RETURN
6170 END

```



MICHAEL ORWIN'S ZX81 CASSETTES

CASSETTE ONE for 1k ZX81

"I had your Invaders/React cassette... I was delighted with this first cassette."
P. Rubythorn, 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. Please let... into the secret of your first time load every time!"
E.H., London SW4

Just two out of over 30 unsolicited testimonials

Cassette One 1k machine code programs:
React, Invaders, Phantom Aliens, Maze of Death, Planet lander, Bouncing Letters, Bug Splat.

1k Basic programs:

I Ching, Mastermind, Robots, Basic Hangman PLUS Large Screen versions of Invaders and Maze of Death, ready for when you get 16k.

Cassette One costs £3.80

CASSETTE TWO

Ten games in Basic for 16k ZX81

Cassette Two contains Othello, Awari, Laser Bases, Word Mastermind, Rectangles, Crash, Roulette, Pontoon, Penny Shoot and Gun Command.

Cassette Two costs £5.

CASSETTE THREE

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 photon 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 'Back step' facility.

SECRET MESSAGES If you are spying for the KGB, why not throw away those incriminating code books, and buy this innocent looking cassette? This message coding program is txlp qexi jf.

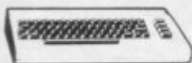
MARTIAN CRICKET A simple but addictive game (totally unlike Earth cricket) in machine code. The speed is variable, and it can run very fast.

Cassette Three 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)

COMPUTERS FOR PEOPLE



VIC 20 The expandable colour computer from Commodore. Comes complete with leads and manuals £197. Program Recorder £44.95. VIC and Recorder together £240.

ATARI 400 A new generation micro for family entertainment and education. Amazing sound and graphics direct from your colour T.V.

Atari 400A £299.95. Program Recorder £50.

NEW Atari 400PCP. Unique system includes 400A; Program Recorder; Power supply; BASIC cartridge; 'Atari BASIC' book; all leads and manuals. £350.



ATARI 800 The advanced, expandable computer with all the features needed on a Business computer plus a great colour, sound, graphics and speed. £599.95 with free dust cover. Cassette recorder £50. Disk drive £345.

CALL IN IF YOU CAN, OR USE OUR EXCELLENT MAIL ORDER SERVICE.

Same day despatch. Please write your order carefully or phone us for information/order form. Callers welcome. Open 9.00-6.00. Closed Thursday.



BUY FROM THE PEOPLE WHO CARE.
All prices inclusive of 15% VAT.



All our equipment is covered by the unique Personal Computer Palace Service Scheme, which provides free installation, one years parts and labour guarantee and optional maintenance contracts.



PERSONAL COMPUTER PALACE

4-6 CASTLE STREET, READING, BERKSHIRE.

Telephone: (0734) 589249

CROYDON MICROS

****IN STOCK****



£477

**ELECTRONIC
MAGNIFICENCE
Personal
Computer**

Over £50 worth of FREE progs. including BASIC tutorial, 10 games, home finance and GEMINI tape database.

01-689-4349

NOW IN OUR NEW PREMISES

20/28, Whitehorse Road, Croydon CR9 2NA

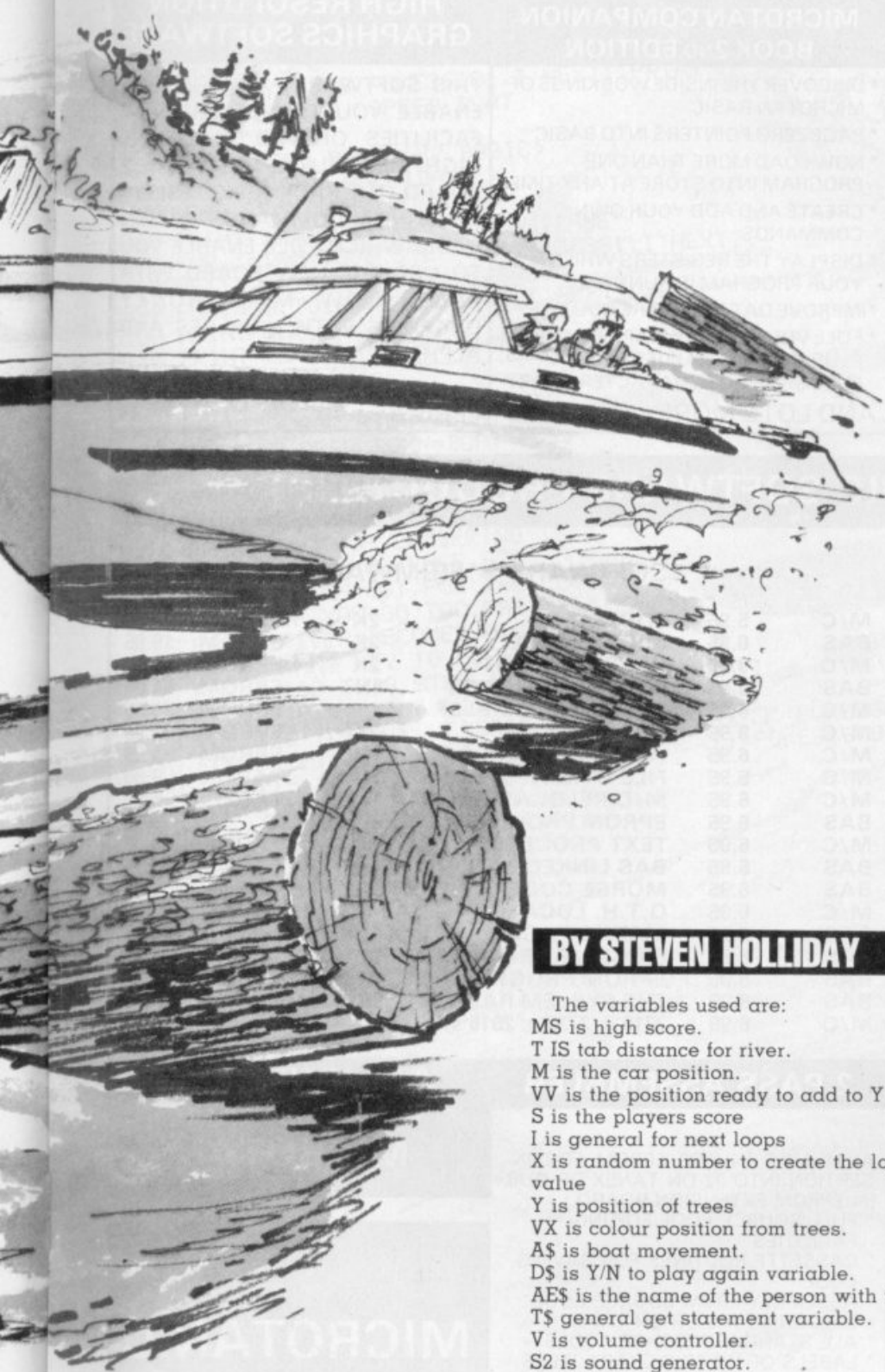
**ALSO — RC1500 Pocket Computer —
£145.**


```

0 MS=0:POKE36878,0:POKE36879,172
1 GOSUB5000
2 B=2:POKE36879,218:GOSUB7000
5 PRINT" "
10 PRINT"J":T=7:M=T+3:VV=0:S=0
20 FORI=1TO23
30 PRINTTAB(T)" "
40 NEXTI
50 X=INT(RND(1)*11)
55 Y=INT(RND(1)*23)
60 IFX<3THENT=T-1
70 IFX>7THENT=T+1
71 IFS>3500THEN GOSUB 9000:GOTO90
72 IFS>2500THENGOSUB8000:GOTO90
73 IFX=5THENPRINTTAB(T)" 6 "
74 IFX=10THENPRINTTAB(T)" 3 "
75 IF12<TTHENT=T-1
76 IF1>TTHENT=T+1
78 IFX=7 THENPRINTTAB(T)" "
80 VV=7680+(22*20)
81 VX=38400+(22*20)
82 IFY<TTHENPOKEVV+Y,81:POKEVX+Y,5:POKEVV+22+Y,93:POKEVX+22+Y,2
83 IFY>T+9THENPOKEVV+Y,81:POKEVX+Y,5:POKEVV+Y+22,93:POKEVX+22+Y,2
85 PRINTTAB(T)" "
90 GETA$
100 IFA$="M"THENM=M-1
110 IFA$="M"THENM=M+1
120 IFPEEK(M+7680)=101THEN300
130 IFPEEK(M+7680)=103THEN300
132 IFPEEK(M+7680)=102+128THEN300
135 IFPEEK(7680+M)=54+128THENS=S+6:FORI=1TO4:POKE36875,221+I:NEXTI:POKE36875,0
137 IFPEEK(7680+M)=51+128 THENS=S+3:FORI=1TO4:POKE36875,128+I:NEXTI:POKE36875,0
140 POKEM+7680,42
145 FORI=1TO2:POKE36874,200+I:NEXTI
150 S=S+3
160 GOTO50
300 POKE36874,0
305 FORI=228TO127STEP-1
310 POKE7680+M,170
320 POKE7680+M,163
330 POKE7680+M,205
340 POKE7680+M,206
350 POKE7680+M,42
355 POKE36877,I
360 NEXT
365 POKE36877,0
367 POKE36876,127
368 B=-1:GOSUB7000
369 POKE36879,26
370 PRINT"JIN SPEED BOAT"
380 PRINT"YOU SCORED"
390 PRINTS:"POINTS"
395 IFS>MS THENVV=0:MS=S:GOTO1000
397 GOTO1060
400 PRINT"Y/N TO PLAY AGAIN "
410 FORI=1TO500:GETD$:IFD$="M"ORD$="M"THENNEXTI
420 IFD$="Y"THENB=1:POKE36879,218:GOSUB7000:PRINT" ":GOTO10
425 IFD$="N"THENPRINT"BYE...BYE...":END
430 NEXTI
440 FORV=1TO50
450 PRINT" "
460 PRINT"Y/N TO PLAY AGAIN "
470 NEXTV
480 PRINT"TTTTTT"
490 GOTO400
1000 REM
1010 PRINT"MS":MS=S
1020 PRINT"YOU HAVE GOT THE HIGH"
1030 PRINT"SCORE FOR TODAY"
1040 PRINT"PLEASE INPUT YOUR NAME"

```


S·P·E·E·D·B·O·A·T



FINDING the source of the Mackenzie River by speedboat can be a real challenge in the logging season.

A lot of lumbering is going on and the thoughtless treefellers are sending their timber down river with little regard to life and limb.

The Mackenzie River follows the usual watery logic, being slow and sluggish at first but speeding up as you approach its source and after a score of 2,500 has been reached it narrows, becoming faster and more difficult for would-be discoverers to negotiate. Another 1,000 points and it is still more difficult.

A good boatsman will spot the most favourable currents and steer for them. These are shown as bonus points on the river.

The game is simple but it will suit the dexterous and those who can look ahead. It is for one person to steer the boat up-river, trying to miss the logs and hit the bonus scores as they flash upon the screen. To steer the boat use the two cursor keys for left and right.

The program runs as fast as it does because the river is printed onto the screen in a fast working statement and as the boat is poked onto the very top of the screen, each print statement pushes it totally off the screen, so only one poke statement is needed.

A graphically exciting and neatly playable game, difficult enough to become addictive.

BY STEVEN HOLLIDAY

The variables used are:

MS is high score.

T IS tab distance for river.

M is the car position.

VV is the position ready to add to Y to create the trees.

S is the players score

I is general for next loops

X is random number to create the logs' numbers and tab value

Y is position of trees

VX is colour position from trees.

A\$ is boat movement.

D\$ is Y/N to play again variable.

AE\$ is the name of the person with the high score.

T\$ general get statement variable.

V is volume controller.

S2 is sound generator.

RUNS ON A VIC-20 IN 3K

50-160 is main body of program.

7000-8000 is music routine.

5000-6000 the instructions.

8000-9000 is the medium width river.

9000- is thin river.

6000-7000 is data for music.

1000-2000 is high score routine.

160-1000 prints score and asks if another go is required.

82&83 makes the trees grow.

120-137 checks next position of craft.

TANGERINE

APPROVED SOFTWARE FOR

MICROTAN

MICRO TANTEL SOFTWARE

MICRO TANTEL IS A SOFTWARE PACKAGE WHICH INTERFACES TO TANTEL UNITS AND YOUR COMPUTER. THE MOMENT YOU CONNECT YOUR COMPUTER TO THE TANTEL UNIT YOU GET FULL COLOUR FACILITIES WITH A SCREEN SIZE OF 24x40. FETCH AND SAVE PRESTEL PAGES INTO USER RAM AREA.

UPDATE AND DISPLAY PAGES IN ANY ORDER AND AT ANYTIME.
EPROM £19.95

MICROTAN COMPANION BOOK 2ND EDITION

- * DISCOVER THE INSIDE WORKINGS OF MICROTAN BASIC
- * PAGE ZERO POINTERS INTO BASIC
- * NOW LOAD MORE THAN ONE PROGRAM INTO STORE AT ANY TIME
- * CREATE AND ADD YOUR OWN COMMANDS
- * DISPLAY THE REGISTERS WHILST YOUR PROGRAM IS RUNNING
- * IMPROVE DATA RESTORE ROUTINE
- * FULL VDU MEMORY MAP WITH HEX PLUS DECIMAL VALUES PLUS FULL GRAPHICS CHARACTER CHART

AND LOTS MORE £9.95

HIGH RESOLUTION GRAPHICS SOFTWARE

THIS SOFTWARE PACKAGE WILL ENABLE YOU TO USE THE NEW FACILITIES OF THE TANGERINE HIGH RESOLUTION GRAPHICS BOARD. THE PACKAGE CONSISTS OF 38 NEW COMMANDS WITHIN BASIC WHICH WILL ENABLE YOU TO USE THE NEW BOARD WITH EASE. NOW MIX CHUNKY GRAPHICS WITH HIGH RES AND ALPHA.

EPROM £16.95

MICROTANIC SOFTWARE PRODUCT LIST

GAMES TAPES

| | | | | |
|-----------------|---|------|-----|------|
| ADVENTURE 1 | — | 7K | M/C | 5.95 |
| ADVENTURE 2 | — | 7K | BAS | 6.95 |
| ADVENTURE 3 | — | 16K | M/C | 9.95 |
| ADVENTURE 4 | — | 16K | BAS | 9.95 |
| THE DEFENDER | — | 7K | M/C | 6.95 |
| TANK RAID | — | 16K | M/C | 9.95 |
| EARTH ATTACK | — | 7K | M/C | 6.95 |
| SPACE INVADERS | — | 3K | M/C | 5.95 |
| THE GOBBLER | — | 6K | M/C | 6.95 |
| SUB STRIKE | — | 5K | BAS | 6.95 |
| STAR CHESS | — | 3K | M/C | 6.95 |
| 3D MAZE | — | 7K | BAS | 6.95 |
| 3D OXO | — | 7K | BAS | 6.95 |
| GRAPHIC PUZZLES | — | 7K | M/C | 6.95 |
| MOLE SWAT | — | 7K | BAS | 6.95 |
| GAMES PACK 1 | — | 3x7K | BAS | 8.95 |
| GAMES PACK 2 | — | 3x7K | BAS | 8.95 |
| GAMES PACK 3 | — | 3x7K | BAS | 8.95 |
| GAMES PACK 4 | — | 4x7K | M/C | 8.95 |

SOFTWARE — FIRMWARE

| | | | |
|---|-----|-------|-------|
| TOOLKIT 1 | 2K | EPROM | 22.50 |
| MICROTANTEL | 2K | EPROM | 19.95 |
| HI RES TOOLKIT | 2K | EPROM | 16.95 |
| FORTH LANGUAGE | IN | EPROM | 34.95 |
| 2 PASS ASSEMBLER | | EPROM | 34.95 |
| TOOLKIT 2 | 2K | EPROM | 19.95 |
| WORD PROCESSOR | IN | EPROM | 39.95 |
| FILE UTILITIES | BAS | TAPE | 9.95 |
| M/C RELOCATOR | M/C | TAPE | 5.95 |
| EPROM PROGRAMMER SELF BUILD | | | 9.95 |
| TEXT PROCESSOR | M/C | TAPE | 19.95 |
| BAS LINKED ASSEMBLER | | TAPE | 7.95 |
| MORSE CODE GENERATOR | | TAPE | 4.95 |
| Q.T.H. LOCATOR | | TAPE | 4.95 |
| MATHS PACK | BAS | TAPE | 6.95 |
| SINCLAIR PRINTER INTERFACE | | | 29.95 |
| EPROM PROGRAMMER — PLUGS INTO THE SYSTEM RACK — WILL PROGRAM 2716's, 2732's, 2516's, 2532 | | | 69.95 |

TOOLKIT

APPEND LOAD TWO PROGRAMS INTO STORE NOW

HEX CONVERSION FOR THOSE POKES

PLOT COMMANDS FOR GRAPHICS

SINGLE KEY COMMANDS

FIND AND DISPLAY LINE NOS OF ANY VARIABLE

AUTO NUMBERING NO MORE TYPING IN OF LINE NUMBERS

RENUMBER RESOLVES ALL GOTO'S, GOSUB'S, THEN'S, ETC.

EPROM £22.50

2 PASS ASSEMBLER

AVAILABLE IN 2732 EPROM FOR INSERTION INTO J2 ON TANEX OR OUR 8K EPROM EXTENSION BOARD.

- * FULL SOURCE CODE EDITING FACILITIES.
- * CASSETTE ROUTINES FOR SAVING CODE.
- * ASSEMBLY FROM SOURCE CODE HELD IN STORE OR ON TAPE.
- * ALL STANDARD 6502 OP CODES + LABELS OF UP TO 6 CHARACTERS.
- * HEX, DECIMAL AND CHARACTER CONSTANTS SUPPORTED.
- * ASSEMBLY — LABEL — LIST — PRINT
- * RELOCATABLE ASSEMBLY FOR EPROMS.

FULL DOCUMENTATION £34.95

ADVENTURES

NOW AVAILABLE FOR
MICROTAN

SEND CHEQUE POSTAL ORDER PLUS 60p POST AND PACKING TO:

MICROTANIC SOFTWARE

235 FRIERN ROAD
DULWICH, LONDON OBD
Or tel 01-693 7659
PRICES INCLUDE VAT

CVG


```

1050 INPUTAE$
1060 PRINTAE$;" HAS THE HIGH SCORE"
1070 PRINT"WITH";MS;"POINTS"
1080 GOTO400
3025 S=S+3
3095 POKE36875,0
5000 FORI=38 TO180:POKE36881,I:NEXTI:PRINT"J"
5010 PRINT"38" SPEED BOAT
5020 PRINT"180"
5030 REM SPEED BOAT (V2 BASIC)
5040 REM BY S.L.HOLLIDAY
5050 REM 28/1/1982(FORV&CG)
5060 PRINT"ANY KEY TO CONTINUE"
5070 FOR I=180 TO38 STEP-1:POKE36881,I:NEXTI
5080 GETT$:IFT$=""THEN5080
5090 FORI=38 TO180:POKE36881,I:NEXTI
5100 PRINT"38"
5110 PRINT" THE INSTRUCTIONS"
5120 PRINT" "
5130 PRINT" "
5140 PRINT" CRSR RIGHT=BOAT RIGHT"
5150 PRINT" CRSR DOWN=BOAT LEFT"
5160 PRINT" NUMBERS=POINTS(EXTRA)"
5170 PRINT" G-O-O-D L-U-C-K"
5171 PRINT" BEWARE!!!"
5172 PRINT"ALOT OF LUMBERING IS"
5173 PRINT"TAIING PLACE,SO"
5174 PRINT"WATCH OUT FOR THE LOGS"
5175 PRINT"IF YOU GO TOO FAR THE"
5176 PRINT"RIVER BECOMES A STREAM"
5180 PRINT"ANY KEY TO PLAY"
5185 FOR I=180 TO38 STEP-1:POKE36881,I:NEXTI
5190 GETT$:IFT$=""THEN5190
5200 FORI=12 TO100:POKE36880,I:NEXTI:PRINT"J":POKE36875,0
5210 FORI=100TO12 STEP-1:POKE36880,I:NEXTI:POKE36879,218:RETURN
6000 DATA225,360,225,360,225,240
6010 DATA228,120,231,360,231,240
6020 DATA228,120,231,240,232,120
6030 DATA235,720,240,360,235,360
6040 DATA231,360,225,360,235,240
6050 DATA232,120,231,240,228,120
6060 DATA225,480
6070 DATA -1
6080 DATA 195,800,0,80,195,600,0,80,195,200,195,800,0,80
6090 DATA203,600,201,200,0,80,201,600,195,200,0,80
6100 DATA195,600,0,80,195,200,0,80,195,1000,-1
7000 S2=36875
7001 IFB>0THENRESTORE
7010 V=36878
7020 REM
7030 POKEV,15
7040 READP
7050 IFP=-1THENB=-1:RETURN
7060 READD
7070 POKES2,P
7080 FORN=1TOD:NEXTN
7090 POKES2,0
7100 FORN=1TO20:NEXTN
7120 GOTO7040
8000 IF1<TTHENB=T-1
8010 IF1>TTHENB=T+1
8020 PRINTTAB(T)" " "S=S+6
8030 RETURN
9000 IF1<TTHENB=T-1
9010 IF1>TTHENB=T+1
9005 PRINTTAB(T)" " "S=S+12
9010 RETURN

```


SAVE THE PRIN

BAD Baron Megabyte has imprisoned the beautiful Princess Minnie on the top floor of his nine storey castle. She is guarded by his minions who have orders to trample any intruder to death.

Armed with your magic crossbow, you, the brave knight Gothur Lothur Bottu, have to find the keys to release her and then guide her to safety for a fairytale ending.

You will find one key hidden on each of the lower nine floors of the castle. On each floor there are four hiding places. One of these contains a key, two are empty, and the last one could be empty or contain a sleeping enemy — who will not like being woken up.

Obstructions to your quest are scattered around the castle, but you can blast your way to safety or kill an enemy with one of your nine magic crossbow bolts.

During your search for the keys an enemy might pop up suddenly when you have just mounted the stairs to the next floor. And the Bad Baron tends to move the keys around when you are not looking.

You use the keys I, J, L, and M to make your moves and press CTRL and one of those keys to fire in a certain direction.

The program was written in Acorn Atom, BASIC, and this should help in translating for other machines. For example, the Atom's screen consists of 16 rows of 32 columns, and the second row starts at 8020, so change lines 15, 121, and 125 to suit your own machine. The program should then run.

The characters used to represent stairs, hiding places and other features are defined at the beginning and you can change them easily.

For those with Microsoft-style BASIC, use eg `D$ = "D"`. Line 30 provides an `INKEY$` FUNCTION, so for other BASIC's change line 100 to `100 K$ = INKEY$`.

After defining variables, line 35 GOSUB's to the end of program text, so you can expand your introduction as much as memory space will allow. Lines 40 and 50 reset variables at the beginning of the game.

Line 40 starts with a function which ensures a random value for an address within the screen's limits. Line 50 uses a byte array and can be replaced by `G$ = "0123456789"`.

New floors start at line 60 with a bleep and one second wait, followed by a row of information written to the top line of the screen. Line 65 POKE's obstructions are the random locations.

Lines 75 and 80 place the hides on the screen. Line 82 puts a key in one of them and gives a 1 in 4 chance of an enemy sleeping in one of the other hides. The array EE allows this extra one.

Line 85 and 87 invert the floor numbers where you have found keys, and also puts your player onto the screen.

Lines 110-115 convert the up-down-left-right choice to a screen address increment. Line 130 checks to see if a move would go off the screen. Line 145 reads the "fire" button so the same information is available to set direction of fire.

Before making a move the program looks at what is already there. If it is a hide a "W" character replaces an "H" character. If it is a key line 195 does a computed GOTO on an integer division on the floor number by nine. The program then branches to line 100 for all floors except nine, when it branches to line 3000.

By changing an enemy's character from "H" to "E" for hide characters you will have to step aside to avoid being trampled if you find an enemy.

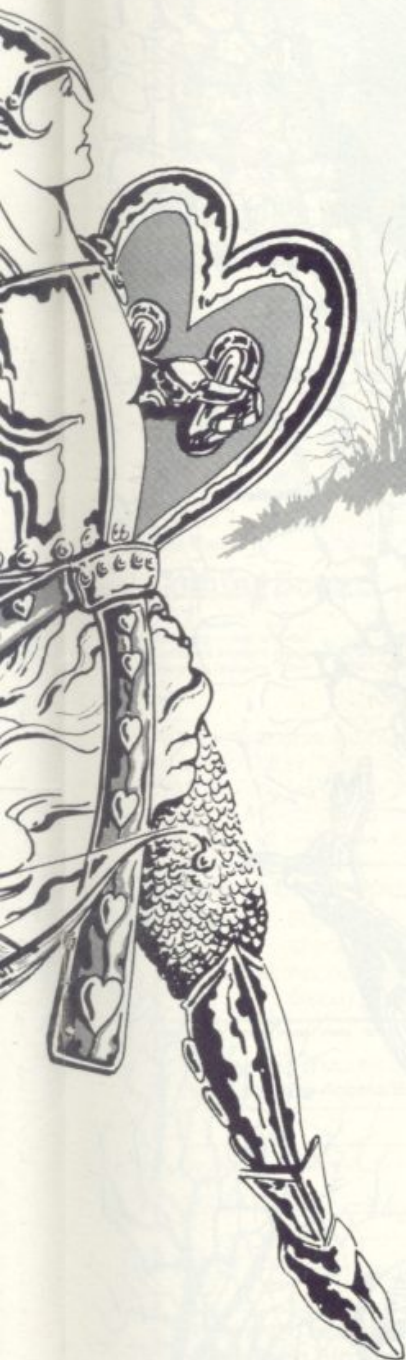
The enemy move is made in lines 300 to 350. To make the lower floors easier on your way up the number of enemy is kept constant — line 310. But the enemy move is only made if the character at the specified address is "E". The routine only moves them up and down the screen but it is possible to make them move sideways.

If the enemy does get you your remains are marked with a cross in line 340.

Program variables: A own position. B bolts. C change of address. D Cown stair character. E enemy character. EE9 enemy address. F floor number. G9 byte array, 0?9 if not got key. H hiding place character. HH3 hiding place address. I loop variable. K key pressed number. KKO lable for assembly code. L key character on screen. M Mecharacter (0=dead). N address of speaker. O obstruction character. P Princess rescued. Q quickest time. R random choice. S start of second row of screen. T time taken. U upstairs character. V enemy killed. W3 what's in the hide. Y previous best number of kills. Z last address of screen.



NCESS



RUNS ON AN ATOM IN 3K

BY GEORGE TAYLOR

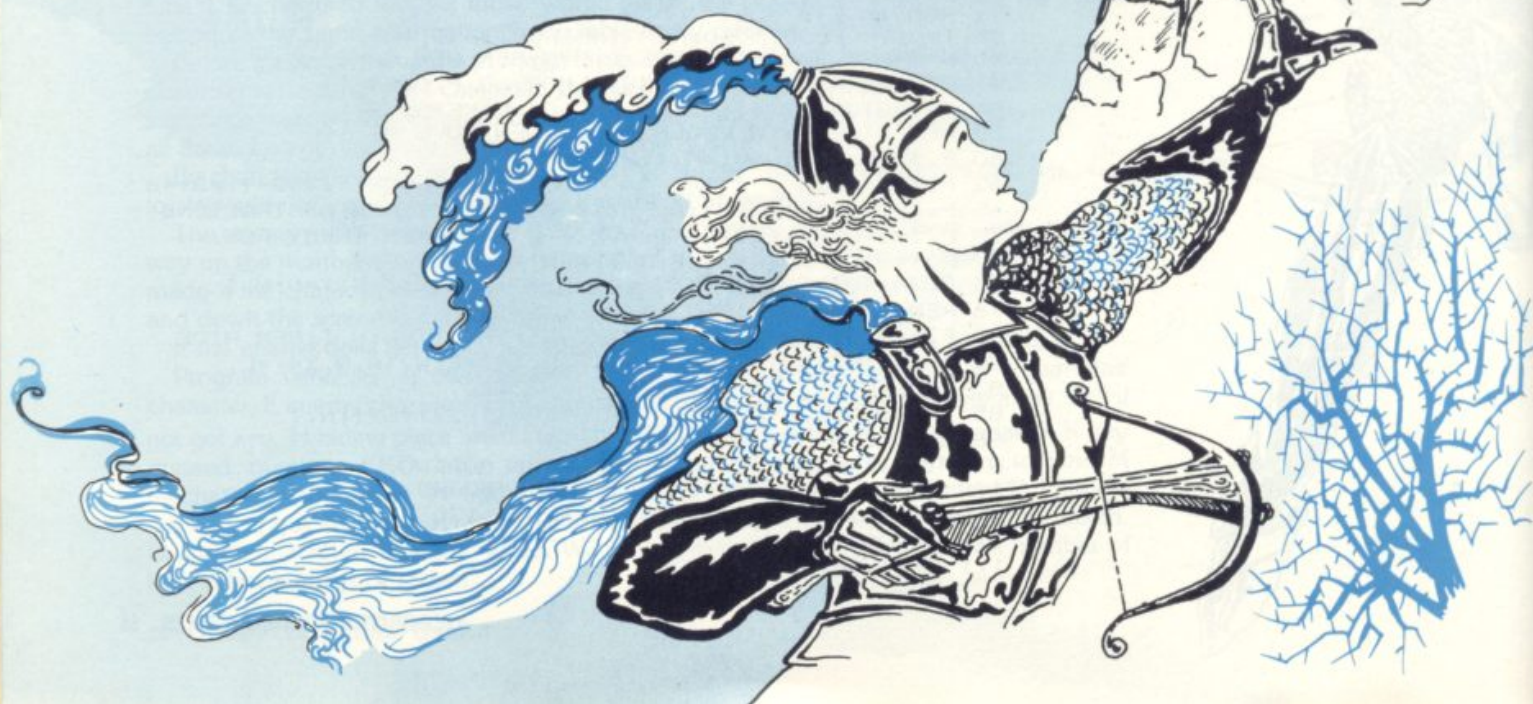
```
10 D=#84;E=#2A;H=#88;L=#8B;M=#F;N=#B002
11 REM DOWNSTAIR,ENEMY,HIDING,KEY,ME,L/SPEAKER
15 D=#FF;Q=9999;S=#8020;U=#95;Y=0;Z=#B1FF
16 REM OBSTRUCTION,SCREEN 2ND LINE,SCREEN END
20 DIM EE(10),G9,HH(3),KK0,W3
21 REM KEYS GOT,ADDRESS OF HIDES,ASSEMBLER LABEL
22 REM CONTENTS OF HIDES,ASSEMBLER ADDRESS
30 DIM P-1;P,#21;I;:KK0 JSR #FE71;STY #80;RTS;I;P,#6
31 REM INKEY$ SUB
35 T=0;V=0;G0S,5000;REM INSTRUCTIONS
40 A=S+A.R.%(Z-S);B=9;F=0;P=0;REM NEW GAME
41 REM ME POSITION,BOLTS,FLOOR,NO P/CESS
50 F,I=0T09;G?I=I+48;N,I;G,62;NO KEYS YET
59 REM START NEW FLOOR AT 60,NEW MOVE AT 100
60 P,#7;F,I=1T060;WAIT;N,I
62 P,#12"KEYS          BOLTS      FLOOR ";?(S-9)=B+48
65 F,I=1T05*P+15;S?(A.R.%(Z-S))=0;N,I;REM OBSTRUCIONS
70 F,I=0T010;EE(I)=S+A.R.%(Z-S);N,I;REM ENEMY POS.
72 F,I=0T0 F;?EE(I)=E;N,I;REM PLACE ENEMY
75 F,I=1T02;S?(A.R.%(Z-S))=D;S?(A.R.%(Z-S))=U;N,I
76 REM PLACE STAIRS
80 F,I=0T03;HH(I)=S+A.R.%(Z-S);?HH(I)=H;N,I;REM HIDE
82 F,I=0T03;W?I=32;N,I;W?(A.R.%4)=E;W?(A.R.%4)=L
83 REM ENEMY, KEY HIDDEN
85 ?A=M;?(S-1)=48+F;F,I=0T09;S?(I-27)=G?I;N,I
86 REM KEYS GOT ON SCREEN
87 ?(S-1)=G?F;P,#7;REM INVERT FLOOR NO.
100 LINK KK0;K=?#80;REM SCAN KEYBOARD
110 IF K<40;IF K<46;G0S,(80+K);G,130
120 G,300
121 C=-32;R.
```



```

122 C=-1;R.
123 C=0;R.
124 C=1;R.
125 C=32;R.
130 IF A+C>=S;IF A+C<=Z;G.145; STAY ON SCREEN
145 G.300
145 IF ?#B001&64=0;G.4000;FIRE
150 IF A?C=32;G.250;MOVE OK
160 I=0;IF A?C<>H;G.200;NOT HIDE
170 IF HH(I)<>A+C;I=I+1;IF I<4;G.170;REM ADDRESS?
180 A?C=W?I;IF A?C=E;P.#7#7;EE(F+1)=A+C;G.100
185 REM ENEMY HIDING
190 IF A?C<>L;G.200;NOT KEY
195 G?F=F+176;S?(F-27)=G?F;?(S-1)=G?F;G.(100+F/9*2900)
200 IF A?C=U;F=F+1;G.2000;UP ONE FLOOR
210 IF A?C=D;F=F-1;G.1000;DOWN ONE
270 ?A=32;A=A+C;?A=M;REM MOVE ME
300 REM MOVE ENEMY
310 F.I=0T010;C=EE(I)+32*(A>EE(I))-32*(A<EE(I))
312 IF C<S;G.330
315 IF C>Z;G.330;KEEP ON SCREEN
320 IF A=C;IF?EE(I)=E;P.#30#7?"SPLAT-YOURE DEAD";M=0
325 IF?C=32;IF?EE(I)=E;?C=E;EE(I)=32;EE(I)=C
330 N.I;?N=?N+4;T=T+1;REM MOVE ONE ROW, CLICK
340 IF M=0;?A=#AB;LINK #FE94;G.35;MARK GRAVE
350 G.100
1000 IF F>0;G.60;DOWN STAIR
1010 P.#12"YOU ARE OUT OF THE CASTLE";IF P;G.1030
1020 P."WITHOUT THE PRINCESS!""GO BACK YOU COWARD";F=0;G.60
1030 P."IN'T" SECONDS WITH "V"KILLS"
1040 P."BEST IS"Q"AND"Y;IF T<Q;T=Q;Y=V
1050 P."WELL DONE THOU BRAVE KNIGHT!";LINK #FE94;G.35
2000 IF F<10;G.60;UP STAIR
2010 P.#12"YOU ARE ON THE ROOF!""WHO DO YOU THINK YOU ARE?"
2020 P."BATMAN?";F=9;G.60
3000 I=0;REM KEY HIDDEN
3010 IF G?I>128;IFI<9;I=I+1;G.3010
3020 IF I<9;P.#12#7"YOU MUST COLLECT ALL KEYS";G?9=H;G.60
3030 P.#12#7"THE PRINCESS";P=1;G.60
4000 B=B-1;I=0;IF B<0;G.100;FIRE BOLTS
4010 I=I+1;?N=?N+4;IF A?(I*C)=32;A?(I*C)=#2E;G.4010;DOTS
4020 I=0;IF A?(I*C)=E;V=V+1
4030 I=I+1;?N=?N+4;IF A?(I*C)=#2E;A?(I*C)=32;G.4030
4040 ?(S-9)=B+48;G.100
5000 P.#12?"SAVE THE PRINCESS""BY G.E.TAYLOR"?
5010 P."FORWARD = I"
5020 P."LEFT = J L = RIGHT"
5030 P."BACKWARD = M"
5040 P."FIRE = CTRL"
5050 P.#(D-32)#(-32)U" STAIRS "#(D-32)" OBSTRUCTIONS"
5060 P.#(M+32)" YOU "#E" ENEMY"
5070 P."PRESS RETURN";LINK #FE94;R.

```



Memotech's New Memory System for the ZX81

It grows as you progress

MEMOPAK 16K



Memopak 16K Memory Extension

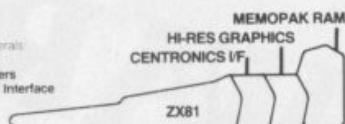
- £39.95 incl.VAT

It is a fact that the ZX81 has revolutionised home computing, and coupled with the new Memopak 16K it gives you a massive 16K of Directly Addressable RAM, which is neither switched nor paged. With the addition of the Memopak 16K your ZX81's enlarged memory capacity will enable it to execute longer and more sophisticated programs, and to hold an extended database.

The 16K and 64K Memopaks come in attractive, custom-designed and engineered cases which fit snugly on to the back of the ZX81, giving firm, wobble-free connections. See below for ordering information.

Coming Soon...

A complete range of ZX81 plug-in peripherals:
Memotech Hi-Res Graphics
Centronics Interface and Software Drivers
Memotech Digitising Tablet RS232 Interface



All these products are designed to fit 'piggy-back' fashion on to each other, and use the Sinclair power supply. WATCH THIS SPACE for further details. We regret we are as yet unable to accept orders or enquiries concerning these products – but we'll let you know as soon as they become available.

How to order your Memopak.

By Post: Fill in the coupon below and enclose your cheque/P.O./Access or Barclaycard number.

By Phone: Access/Barclaycard holders please ring Oxford (0865) 722102 (24-hour answering service).

Please make cheques payable to Memotech Limited
Please debit my Access/Barclaycard* account number

*Please delete whichever does not apply.

SIGNATURE _____ DATE _____

NAME _____ ADDRESS _____

We want to be sure you are satisfied with your Memopak – so we offer a 14-day money back Guarantee on all our products.
Memotech Limited, 3 Collins Street, Oxford OX4 1XL, England Telephone: Oxford (0865) 722102/3/4/5

MEMOPAK 64K



Memopak 64K Memory Extension

- £79.00 incl.VAT

The 64K Memopak is a pack which extends the memory of the ZX81 by a further 56K, and together with the ZX81 gives a full 64K, which is neither switched nor paged, and is directly addressable. The unit is user transparent and accepts basic commands such as 10 DIM A(9000).

BREAKDOWN OF MEMORY AREAS

0-8K ... Sinclair ROM

8-16K ... This section of memory switches in or out in 4K blocks to leave space for memory mapping, holds its contents during cassette loads, allows communication between programmes, and can be used to run assembly language routines.

16-32K ... This area can be used for basic programmes and assembly language routines.

32-64K ... 32K of RAM memory for basic variables and large arrays.

With the Memopak 64K extension the ZX81 is transformed into a powerful computer, suitable for business, leisure and educational use, at a fraction of the cost of comparable systems.

Unique 3 month trade-in offer!

When your programming needs have outgrown the capacity provided by 16K RAM, and you find it necessary to further extend your ZX81's capacity, we will take back your 16K Memopak and allow a discount of £15.00 against your purchase of our 64K model.*

*We reserve the right to reject, for discounting purposes, units which have been either opened or damaged in any way.

Please send me:

| | Quantity | Price | Total |
|--------------------|----------|--------|-------|
| 16K RAM, Assembled | | £39.95 | |
| 64K RAM, Assembled | | £79.00 | |
| Postage | | | £2.00 |
| Total Enclosed | | | |

CV6

sinclair selection

Computer and Video Games proudly presents two more exciting games for your Sinclair ZX81. Beat off an unearthly attack from the stars in War of the Worlds and win yourself a small fortune in Bet, a racecourse gambling game. We aim to cater for all kinds of Sinclair user — so we've chosen one 1K epic and one 16K special for you to play. So keep your finger on the laser fire button and don't lose your shirt...

Those nasty Martians are at it again. This time they are swooping from the sky to attack your laser base and smash it into the ground. You can fend them off by firing an invisible laser beam at them.

The laser base is printed at the bottom of the screen. You can move it left and right using the 'P' and 'A' keys.

The Martians appear at random positions on the screen and move down towards you. You must line up your base below them and use the 'I' key to fire then. If they land on top of you the game will end.

If you manage to score 1000 the scoring rate will be doubled and the Martians will mutate into another form.

BY DAVID HEALEY

RUNS IN 1K

```

10 LET A=PI/PI
20 LET B=PI-PI
30 LET C=15
40 LET D=25
50 LET S=B
55 LET H=21
60 LET E$=" "
70 LET G=A
80 CLS
90 LET X=INT (RND*26)
100 LET Y=INT (RND*H)
110 PRINT AT H,C;" "
115 IF Y>H THEN LET Y=H
120 PRINT AT Y,X;E$
124 IF Y=H AND X=C OR Y=H AND X=C-A OR Y=H AND X=C+A THEN GOTO 500
126 IF Y=H AND X=C+2 OR Y=H AND X=C-2 THEN GOTO 600
128 IF Y=H AND X<>C THEN GOTO 6
130 IF INKEY$="A" THEN LET C=C-A
135 IF C<B THEN LET C=B
140 IF INKEY$="P" THEN LET C=C+A
145 IF C>26 THEN LET C=26
150 IF INKEY$="I" THEN GOTO 400
170 LET Y=Y+G
180 CLS
190 GOTO 110
400 IF C<>X THEN GOTO 170
410 PRINT AT Y,X-A;" "
420 PAUSE 4
430 LET S=S+D
440 IF S=1000 THEN GOTO 500
450 GOTO 80
500 LET E$=" "
510 LET D=D+D
520 GOTO 80
600 CLS
610 PRINT "SCORE=";S

```

WAR OF THE WORLDS

BET

BY JO GARNER

RUNS IN 16K

```

10 REM "BET"
11 PRINT "TO PLAY YOU STATE YO
UR STAKE AND THE HORSE YOU BE
T IT ON. IF YOU LOSE IT SUBTRA
CTS YOUR STAKE FROM YOUR TOTAL
L BUT IF YOU WIN IT MULTIPLYS
YOUR STAKE BY YOUR HORSE, ADDS 1
0 AND ADDS ALL THAT TO YOUR TO
TAL YOU MAY QUIT AFTER A
RACE BY PRESSING 0
RT"
12 INPUT S$
13 REM (C)J.GARNER 1981 TO C+U
G.
20 LET M=50
25 CLS
30 LET A=5
40 LET B=4
50 LET C=3
60 LET D=2
70 LET E=1
80 PRINT "HORSES 1,2,3,4,5 ARE
RUNNING HOW MUCH ARE YOU BET
TING?"
90 INPUT N
100 PRINT "*****"
110 INPUT M
120 CLS
121 PRINT AT 1,16;"MONEY BET="
N, "MONEY LEFT=", M-N, "ON HORSE"
122 IF A>B AND A>C AND A>D AND
A>E THEN PRINT AT 7,23;"1"
123 IF B>A AND B>C AND B>D AND
B>E THEN PRINT AT 7,23;"2"
124 IF C>A AND C>B AND C>D AND
C>E THEN PRINT AT 7,23;"3"
125 IF D>A AND D>B AND D>C AND
D>E THEN PRINT AT 7,23;"4"
126 IF E>A AND E>B AND E>C AND
E>D THEN PRINT AT 7,23;"5"
127 PRINT AT 0,0;"*****HORSE
SE RACE*****"
130 PRINT AT 19,0;"*****"
140 PRINT AT 20,0;"**FINISH**"
150 PRINT AT A,1;"1"
160 PRINT AT B,3;"2"
170 PRINT AT C,5;"3"
180 PRINT AT D,7;"4"
190 PRINT AT E,9;"5"
195 IF A=18 OR B=18 OR C=18 OR
D=18 OR E=18 THEN GOTO 400
200 LET Z=INT (RND*5)+1
210 IF Z=1 THEN LET A=A+1
220 IF Z=2 THEN LET B=B+1

```

Forget the Grand National and the Derby — the ZX stakes is twice as exciting! You can win a fortune or lose your shirt — just like the real thing.

First you bet on the runners, numbered 1 to 5. You have £50 to bet.

When the betting is out of the way the ZX81 will display the race course with the runners at the top of the screen at the starting post. The horses are represented by the inverse graphics characters 1-5.

If you win your stake is multiplied by the number of the winning horse. If you lose the computer will subtract your stake from your total. Then you have the opportunity of betting again on another.

The variable M sets up the value of your money. The variables A to E set up the positions of the horses at the start of the race. If you want to be a coward and save your cash you can finish the game.

```

230 IF Z=3 THEN LET C=C+1
240 IF Z=4 THEN LET D=D+1
250 IF Z=5 THEN LET E=E+1
260 GOTO 122
400 SCROLL
401 PRINT "HORSE NO. "; Z; " WON"
402 SCROLL
403 IF Z=H THEN GOTO 600
405 SCROLL
410 PRINT "*****"
420 SCROLL
430 LET M=M-N
431 IF M<=0 THEN PRINT "YOU ARE
OUT OF MONEY"
432 IF M<=0 THEN GOTO 2290
435 IF INKEY$="" THEN GOTO 435
436 IF INKEY$="Q" THEN GOTO 200
0
440 GOTO 25
600 PRINT "*****"
610 LET M=M+(N*H+10)
615 IF M>=1000000 THEN GOTO 700
620 IF INKEY$="" THEN GOTO 620
625 IF INKEY$="Q" THEN GOTO 200
0
630 GOTO 25
700 PAUSE 100
705 CLS
710 IF M>=1000000 THEN PRINT "
YOU NOW HAVE A MILLION QUID
*****"
720 GOTO 620
2000 CLS
2001 FOR N=1 TO M
2002 PRINT AT 21,25;"£";N
2010 SCROLL
2020 PRINT " "
2030 SCROLL
2040 PRINT " "
2050 SCROLL
2060 PRINT " "
2070 SCROLL
2080 PRINT " "
2090 SCROLL
2100 PRINT " "
2101 SCROLL
2110 PRINT " "
2120 SCROLL
2130 PRINT " "
2140 SCROLL
2150 PRINT " "
2160 SCROLL
2170 PRINT " "
2180 NEXT N
2200 SCROLL
2205 PRINT "PRESS 0 TO REP
EAT"
2300 INPUT A$
2305 CLS
2310 RUN

```



Helicopter Lander



```

10 REM ** HELICOPTER LANDER **
20 LET S=0
30 LET R=INT(RND(1)*20)+10
40 LET H=14
50 LET A$=""
60 LET B$=""
70 LET HD=1
80 PRINT"S 90 LETS=S+1
100 PRINT"";LEFT$(B$,HD-1);LEFT$(A$,H);""2`"
110 PRINT"";LEFT$(B$,HD);LEFT$(A$,H);""2888"
120 PRINT"";LEFT$(B$,11);LEFT$(A$,R);""8888"
130 GOSUB 500
140 LET Z=INT(RND(1)*2)+1
150 ON Z GOSUB240,260
160 IF PEEK(151)=42 ANDH)2 THEN H=H-1
170 IF PEEK(151)=41 ANDH)36 THEN H=H+1
180 IF PEEK(151)=18 THEN HD=HD+1
190 IF HD()10 THEN 80
200 IF H=R ORR=H-1 ORR=H-2 OR R=H-3 THEN 280
210 GOSUB320
220 GOTO 380
230 END
240 IF R) 3 THEN R=R-1
250 RETURN
260 IF R (38 THEN R=R+1
270 RETURN
280 GOSUB 320
290 PRINT"*SUCCESS*"
300 PRINT"S: "MINUTES
310 GOTO 450
320 PRINT"3"
330 PRINT"";LEFT$(B$,HD-1);LEFT$(A$,H);""2`"
340 PRINT"";LEFT$(B$,HD);LEFT$(A$,H);""2888"
350 PRINT"";LEFT$(B$,11);LEFT$(A$,R);""8888"
360 GOSUB 500
370 RETURN
380 REM
390 FOR N=1 TO 5:LET HD=11+N:GOSUB 320:NEXT N
400 PRINT"CRASHED"
410 PRINT"";LEFT$(B$,HD-1);LEFT$(A$,H);""
420 PRINT"";LEFT$(B$,HD);LEFT$(A$,H);""
430 PRINT"";LEFT$(B$,16);LEFT$(A$,H);""*1**1*"
440 POKE 158,0
450 PRINT" AGAIN ?"
460 GETA$:IF A$="" THEN 460
470 IF A$="Y" THEN RUN
480 IF A$="N" THEN END
490 GOTO 460
500 PRINT"";LEFT$(B$,12)""
510 RETURN
READY.

```

RUNS ON A PET IN 8K

BY BARRY COOPER

Flying your helicopter over a rough North Sea you have to set down safely on an oil rig's pitching and rolling landing pad — and not crash into the sea.

You use the 4 key to move left, 6 to move right, 8 to go up and 2 to go down. The characters inside the string quotes in lines 100, 110, 120, 330, 340, 350, 430 and 500 should be typed in shift mode to produce the graphics used in this game.

The variables are: H and HD — height and position of helicopter. S — score. R — random position of launching pad.

AND ANDREW GREEN

DOG STAR ADVENTURE

RUNS ON A TRS-80

BY LANCE MICKLUS

```

150 CLEAR200:RANDOM:DEFINT A-Z
200 GOSUB30300
450 LC=2:SL=64:BL=4:BF=50:RV=16396
600 GOTO10300
2125 IF TC<250RRND(6F)<>1 THEN2425
2150 IF TC=300 LET BF=20
2175 IF LC<30RLC=90RLC=260RLC=360RLC=37 THEN2425
2200 IF LC>26 AND LC<31 THEN2425
2225 PRINT"Holy smokes. An armed guard just walked in."
2250 GOSUB20350:IFVB<>120RND<>15 THEN5575
2275 X=13:GOSUB21450:IFY<>-1 THEN5575
2300 IFBL=0CLS:PRINT"I'm out of ammunition.":PRINT:GOTO5600
2325 PRINT"zzZAP! No more guard."
2350 BL=BL-1:IFBL=0PRINT"I'm out of ammunition."
2425 IFMD<>TC THEN2550
2450 X=22:GOSUB21450:IFY<>-1 THEN2550
2475 PRINT"Your McDonald's Hamburger is cold."
2550 GOSUB20350:TC=TC+1
2575 IFVB=0ANDND=0 THEN2650 ELSE2800
2650 PRINT"I don't know how to do that.":GOTO2125
2725 PRINT"Nothing happened.":GOTO2125
2800 IFVB>10RND>7 THEN3175
2825 IFND=0 THEN2650
2850 IFDS(LC,NO-1)=0PRINT"I can't go that way.":GOTO2125
2875 IFDRANDDS(LC,NO-1)>2ANDDS(LC,NO-1)<6PRINT"I can't go that way. Flight deck doors are open. NO AIR!!":GOTO2125
2900 IFND=3ANDLC=31ANDNOTDJPRINTM0:GOTO2125
2925 IFLC=35ANDDS(LC,NO-1)=36ANDOB(21,0)<>0PRINT"The robot won't let me through.":GOTO2125
2950 IFLC=17ANDOB(13,1)=17 THEN5575
2975 IFLC=9ANDOB(5,1)=9 THEN5575
3000 IFLC=90RLC=17 LETHE$(LC)="
3025 LC=DS(LC,NO-1)
3050 IFLC=34 LETHE$(LC)="
3075 IFLC=26 THEN11800
3100 GOTO10300
3175 IFVB=360T010300
3250 IFVB<>2 THEN3700
3275 IFND=0PRINT"I don't know what a ";CHR$(34);ND$(0);CHR$(34);
" is.":GOTO2125
3300 IFCR>SPRINT"I can't carry any more.
HINT: Drop something.":GOTO2125
3325 FORI=1TOLO:IFOB(I,0)=NOX THEN3350 ELSENEXTI:GOTO2650
3350 IFOB(I,1)=-1PRINT"I'm already carrying it.":GOTO2125
3375 IFOB(I,1)<>LCPRINT"I don't see it.":GOTO2125
3400 IFND<>37 THEN3475
3425 X=13:GOSUB21450:IFY<>-1PRINT"I don't have a blaster to put it in.":GOTO2125
3450 BL=4:OB(I,1)=0:PRINT"My BLASTER's reloaded.":FORI=1TO1:NEXT I:GOTO2125
3475 IFND=150RND=250RND=34PRINT"He looks pretty mean to me.":GOTO2125
3500 CR=CR+1:OB(I,1)=-1:PRINT"D.K.":FORI=1TO1:NEXTI

```

The evil General Doom is holding Princess Leya, the leader of the Forces of Freedom, captive on his ship. He captured her ship — bound for a secret command centre on the planet Harris Seven. He has also captured her entire treasury of Melidium Crystals, the currency of the galaxy.

Princess Leya is wearing a Shinestone necklace. Encoded in one of the stones is the location and strength of her Freedom Fighting Force.

Through the medium of your computer you can roam the ship and attempt to rescue the Princess. Even if you do not manage the rescue you must try to disrupt Doom's plans for the galaxy. There are guards all over the ship and you could be easily caught and imprisoned.

The computer understands several ordinary English commands such as GET and DROP. Other words that you can use are HELP, INVEN, LOOK, and SCORE. There are more — but you must discover these yourself.

```

3525 IFND=14ANDNOTCHPRINT"A voice says: ";CHR$(34);"SESAME";CHR$(34);".":CM=-1
3550 IFND=22ANDMD=0LETMD=TC+50
3575 IFND=12LETHE$(2)="
3600 IFND=13LETHE$(7)="
3625 GOTO2125
3700 IFVB<>4 THEN3875
3725 PRINT"I'm carrying:"
3750 K=0:FORI=1TOLO:IFOB(I,1)=-1PRINTOB$(I):K=1
3775 NEXTI:IFK=0PRINT"NOTHING"
3800 PRINT:GOTO2125
3875 IFVB<>5 THEN3950 ELSEGOSUB21050:GOTO2125
3950 IFVB<>6 THEN4200
3975 IFND=0 THEN3275
4000 IFLC=2PRINT"There's no room here.":GOTO2125
4025 IC=0:FORI=1TOLO:IFOB(I,1)=LCLETIC=IC+1
4050 NEXTI:IFIC>12PRINT"There not enough room. Get rid of something.":GOTO2125
4075 FORI=0TOLO:IFOB(I,0)=NOX THEN4100 ELSENEXTI:GOTO2650
4100 IFOB(I,1)<>-1PRINT"I'm not carrying it.":GOTO2125
4125 CR=CR-1:OB(I,1)=LC:PRINT"D.K.":FORI=1TO1:NEXTI:GOTO2125
4200 IFVB<>7 THEN4300
4225 IFHE$(LC)=" THENPRINT"How am I supposed to know what to do?":GOTO2125 ELSEPRINTHE$(LC):GOTO2125
4300 IFVB<>8 THEN4750
4375 IFND=BT THEN4475 ELSEPRINT"Press (ENTER) when ready to : RECORD : "
4400 GOSUB22000:GOTO4525
4475 IFND$(0)="PRINT"Try something like ";CHR$(34);VB$(0);" file spec";CHR$(34);".":GOTO2125
4500 OPEN"D",1,ND$(0)
4525 FORI=0TOLO
4550 IFBT THENPRINT#-1,OB(I,0),OB(I,1),OB(I,2) ELSEPRINT#1,OB(I,0);OB(I,1);OB(I,2)
4575 NEXTI
4600 IFBTPRINT#-1,TB,TC,CM:PRINT#-1,DR,BL,MD:PRINT#-1,6F,DJ,CR:PRINT#-1,LC
4625 IFND=BTPRINT#1,TB,TC,CM;DR;BL;MD;6F;DJ;CR;LC
4650 IFND=BT CLOSE
4675 PRINT"D.K.":GOTO2125
4750 IFVB<>9 THEN5150
4825 IFND=BT THEN4925 ELSEPRINT"Press (ENTER) when ready to $ READ TAPE $ "
4850 GOSUB22000:GOTO4975
4925 IFND$(0)=" THEN4475
4950 OPEN"I",1,ND$(0)
4975 FORI=0TOLO
5000 IFBT THENINPUT#-1,OB(I,0),OB(I,1),OB(I,2) ELSEINPUT#1,OB(I,0),OB(I,1),OB(I,2)
5025 NEXTI
5050 IFBTINPUT#-1,TB,TC,CM:INPUT#-1,DR,BL,MD:INPUT#-1,6F,DJ,CR:INPUT#-1,LC

```



```

5075 IFNOTBTINPUT#1,TB,TC,CM,DR,BL,MD,6F,DJ,CR,LC
5100 IFNOTBTCL0SE
5125 60T010300
5150 IFVB<>10THEN5225ELSECLS:J=0:60T011200
5225 IFVB<>11THEN5725
5250 IFNO<>10THEN2650
5275 IFLC<>2ANDLC<>11PRINT"What button,":60T02125
5300 IFLC=11ANDNOTBLETTB=-1:PRINTM2$:60T02125
5325 IFLC=11ANDTBLETTB=0:PRINTN3$:60T02125
5375 X=12:60SUB21450:IFY<>1THEN2725
5425 X=24:60SUB21450:IFY<>1THEN2725
5450 IFNOTTBPRINTN3$:60T02725
5475 IFNOTDRPRINTM4$:60T02725
5500 60T011150
5575 CLS:PRINT"H E L P ! ! !":PRINT
5600 PRINT"Roche Soldiers are everywhere. I've been captured."
5625 PRINT"I'm now a prisoner. Woe is me..."
5650 60T011500
5725 IFVB<>12ORNO=0THEN6025
5750 IFBL=0PRINT"But I don't have any ammunition left.":60T02125
5775 X=13:60SUB21450:IFY<>-1PRINT"But I'm not carrying a BLASTER
,":60T02125
5800 X=NO:60SUB21450:IFY=-1PRINT"I can't. I'm holding it.":60T02
125
5825 IFNO=34PRINT"zzZAP!":BL=BL-1:60T02125
5850 IFY<>LCPRINT"I don't see it.":60T02125
5875 FORI=1T0L0:IFOB(I,0)=NOXTHEN5900ELSENEXTI:60T02650
5900 OB(I,1)=0:FORI=1T01:NEXTI:PRINT"zzZAP!!! The ";NO$(NO);" v
aporized."
5925 BL=BL-1:IFBL=0PRINT"I'm out of ammunition."
5950 60T02125
6025 IFVB<>13THEN6275
6050 IFNO=0PRINT"Say what?":60T02125
6075 X=14:60SUB21450
6100 IFY<>-10RNO<>19PRINT"O.K. ";NO$(NO):60T02125
6125 IFDR60T02725
6150 DR=-1:PRINT"A voice comes over the P.A. system and says:
OPENNING FLIGHT DECK DOORS"
6175 IFLC<>2ANDLC<>6PRINT"
Yips!!! There's no air!!! CROAK...":END
6200 60T02125
6275 IFVB<>14THEN6750
6300 IFNO<>20ANDNO<>16ANDNO<>11ANDNO<>33THEN2650
6325 IFNO=20THEN6550
6350 IFNO<>16THEN6450
6375 IFOB(6,1)=-1PRINT"Sorry. I'm not a cartographer.":60T02125
6400 IFOB(6,1)=LCPRINT"Try GET MAP.":60T02125
6425 PRINT"It's not here.":60T02125
6450 X=NO:60SUB21450:IFY<>LCANDY<>-1THEN6425
6475 IFNO=11PRINT"It says: >> NEEDS TURBO <<"

```

```

6500 IFNO=33PRINT"It says: >> OUT OF ORDER <<"
6525 60T02125
6550 IFLC<>13PRINT"I don't see any.":60T02125
6575 PRINT:PRINT"It says on the wall,"
6600 PRINT">> YOUR MOTHER'S GOT A BIG NOSE <<"
6625 PRINT">> KILROY MADE IT HERE, TOO <<"
6650 PRINT">> SAY SECURITY <<"
6675 60T02125
6750 IFVB<>15THEN6975
6775 IFNO=0PRINT"What's a ";NO$(0);"?":60T02125
6800 IFNO<>22PRINT"Don't be ridiculous.":60T02125
6825 X=22:60SUB21450:IFY<>-1PRINT"I'm not holding it.":60T02125
6850 FORI=1T0L0:IFOB(I,0)=22THEN6875ELSENEXTI:PRINT"I don't know
where it is.":60T02125
6875 OB(I,1)=0:PRINT"Chump - Chump. Hummm, good."
6900 FORI=1T01:NEXTI:60T02125
6975 IFVB<>16ORNO<>23ORLC<>16THEN7125
7000 X=23:60SUB21450:IFY<>-1PRINTM1$:60T02125
7025 OB(11,1)=0:OB(14,1)=16:CR=CR-1:PRINTM2$
7050 60T02125
7125 IFVB<>18ORNO<>36THEN7275
7150 IFNO<>36ORLC<>31THEN2650
7175 X=17:60SUB21450:IFY<>-1PRINTM3$:60T02125
7200 HE$(31)=="":DJ=-1:PRINTM4$:60T02125
7275 IFVB<>19ORNO=0THEN7600
7300 IFNO<>34PRINT"That's stupid!":60T02125
7325 IFLC<>35PRINTM5$:60T02125
7350 X=22:60SUB21450:IFY<>-1PRINTM6$:60T02125
7375 IFNO=35PRINTM7$:60T02125
7400 IFNO<>34PRINTNO$(0);M8$:60T02125
7425 IFTC<>MDPRINTM9$:60T02125
7450 FORI=1T0L0:IFOB(I,0)=34THEN7475ELSENEXTI:60T02650
7475 K=1:FORI=1T0L0:IFOB(I,0)=22THEN7500ELSENEXTI:60T02650
7500 PRINTNO$:HE$(35)=="
7525 OB(K,1)=0:OB(1,1)=0:OB(21,0)=0:OB$(21)=""
FORI=1T01:NEXTI:60T02125
7600 IFVB<>17THEN7700
7625 PRINTNO$(0):60T02125
7700 IFVB<>20THEN7975
7725 IFNO=0THEN2650
7750 X=NO:60SUB21450:IFY=-1PRINT"I'm carrying it. That's impossi
ble.":60T02125
7775 IFY=LCTHEN7850
7800 IFNO<>11ORNO=19ORNO=20ORNO=30THEN2650
7825 PRINT"I can't hit something I can't see.":60T02125
7850 IFNO=15ORNO=25ORNO=34PRINT"I'd rather not. He might hit me
back!":60T02125
7875 IFNO=35PRINT"That's not nice!":60T02125
7900 60T02725

```




```

7975 IFVB<>21THEN8000ELSEPRINT"I'm not strong enough to kill any
thing.":GOTO2125
8000 GOTO2650
10300 CLS:PRINTDS$(LC):A$=""
10305 IFLC=35LETBF=10
10400 IFLC=7THEN10700
10450 K=0:FORI=1TOLO:IFOB(I,1)<>LCTHEN10600
10500 IFK=0LETK=1:PRINT:PRINT"Around me I see":A$=OB$(I):GOTO10
600
10550 IFLEN(A$)+5+LEN(OB$(I))>SLTHENPRINTA$:LETA$=OB$(I)ELSEA$=A
$+" "+OB$(I)
10600 NEXTI
10650 IFA$<>"PRINTA$
10700 PRINT:PRINT"Obvious directions are ";:K=0
10750 FORI=0TO5:IFDS(LC,I)=0THEN10900
10800 IFK<>0PRINT", ";
10850 PRINTNO$(I+1);:K=1
10900 NEXTI
10950 IFK=0PRINT"unknown";
11000 PRINT".":GOTO2125
11150 CLS:GOSUB21050
11200 IFJ=0PRINT"We have FAILED our mission.
The forces of Princess Leya will be conquered."
11250 IFJ=SCPRINT"We are HEROS.
The forces of Princess Leya will conquer the evil Roche
soldiers, and freedom will prevail throughout the galaxy."
11300 IFJ=0ANDJ<SCPRINT"We have helped the forces of Princess Le
ya defend the
galaxy. Long live the forces of freedom!"
11500 PRINT
11550 INPUT"Do you want to play again (Y or N)";A$:A$=LEFT$(A$,1
)

```

```

11600 IFA$="Y"THEN150ELSEEND
11800 CLS:PRINT"A voice booms out, ";CHR$(34);"WHO GOES THERE";C
HR$(34)
11850 GOSUB20350
11900 IFVB<>13ORNO<>30THEN5575
11950 PRINTN1$
12000 GOSUB20350
12050 X=31:GOSUB21450:IFY<>-1THEN5575
12100 IFVB<>17ORNO<>31THEN5575ELSE10300
20350 IFBTTTHENINPUT"What should I do";CM$ELSELINEINPUT"What shou
ld I do? ";CM$
20395 VB$(0)="":NO$(0)="":VB=0:NO=0:IFLEN(CM$)=0RETURN
20400 FORZL=1TOLEN(CM$):IFMD$(CM$,ZL,1)<>" "THENVB$(0)=VB$(0)+M
ID$(CM$,ZL,1):NEXTZL
20500 FORZL=1TOLV:IFYB$(ZL)<>"*ANDLEFT$(VB$(0),LEN(VB$(ZL)))=VB$
(ZL)THENVB=ZL:GOTO20600ELSENEXTZL

```

```

20550 VB=0:NO$(0)=VB$(0):GOTO20650
20600 IFLEN(VB$(0))+1=LEN(CM$)THENNO=0:RETURNELSENO$(0)=RIGHT$(
CM$,LEN(CM$)-1-LEN(VB$(0)))
20650 FORZL=1TOLN:IFNO$(ZL)<>"*ANDLEFT$(NO$(0),LEN(NO$(ZL)))=NO$
(ZL)THENNO=ZL:GOTO20800ELSENEXTZL
20700 NO=0:RETURN
20800 FORZL=1TO1:NEXTZL:RETURN
21050 J=0:FORI=1TOLO:IFOB(I,1)=1LETJ=J+OB(I,2)
21100 NEXTI:PRINT"Out of a maximum of";SC;"points, you have";J;"
points."
21150 IFJ=0PRINT"We're not doing too good."
21200 RETURN
21450 FORZL=0TOLO:IFOB(ZL,0)=XTHENY=OB(ZL,1):GOTO21500ELSENEXTZL
:Y=-99:RETURN
21500 FORZL=1TO1:NEXTZL:RETURN
22000 A$=INKEY$
22010 IFINKEY$=""THEN22010ELSERETURN
30300 SC=215
30450 IFPEEK(16396)=201THENBT=-1ELSEBT=0

```

```

30600 LV=21:DIMVB$(LV)
30650 VB$(1)="GO":VB$(2)="GET":VB$(3)="LOOK"
30700 VB$(4)="INVEN":VB$(5)="SCORE":VB$(6)="DROP"
30750 VB$(7)="HELP":VB$(8)="SAVE":VB$(9)="LOAD":VB$(10)="QUIT"
30800 VB$(11)="PRESS":VB$(12)="SHOOT":VB$(13)="SAY"
30850 VB$(14)="READ":VB$(15)="EAT":VB$(16)="CSAVE"
30900 VB$(17)="SHOW":VB$(18)="OPEN":VB$(19)="FEED"
30950 VB$(20)="HIT":VB$(21)="KILL"
31100 LN=37:DIMNO$(LN)
31150 NO$(1)="NORTH":NO$(2)="EAST":NO$(3)="SOUTH"
31200 NO$(4)="WEST":NO$(5)="UP":NO$(6)="DOWN"
31250 NO$(10)="BUTTON":NO$(11)="TAG":NO$(12)="FUEL"
31300 NO$(13)="BLASTER":NO$(14)="COMMUNICATOR":NO$(15)="GUARD"
31350 NO$(16)="MAP":NO$(17)="KEYS":NO$(18)="NECKLACE"
31400 NO$(19)="SESAME":NO$(20)="GRAFFITI"
31450 NO$(21)="CAPE":NO$(22)="HAMBURGER"
31500 NO$(23)="TAPE":NO$(24)="TURBO"
31550 NO$(25)="SCIENTIST":NO$(26)="PLANS"
31600 NO$(27)="SCHEMATIC":NO$(28)="DEVICE":NO$(29)="GUN"
31650 NO$(30)="SECURITY":NO$(31)="I. D. ":NO$(32)="CRYSTALS"
31700 NO$(33)="SIGN":NO$(34)="ROBOT":NO$(35)="PRINCESS"
31750 NO$(36)="DOOR":NO$(37)="AMMUNITION"
31900 CL=37:DIMDS$(CL)
31950 DS$(1)="I'M IN THE PASSENGER & STORAGE COMPARTMENT OF MY S
PACE SHIP.
THERE'S AN EXIT HERE TO LEAVE THE SHIP."
32000 DATA2,0,0,0,0,3
32050 DS$(2)="I'M IN THE COCKPIT OF MY SPACE SHIP.
A LARGE RED BUTTON SAYS >> PRESS TO BLAST OFF <<"
32100 DATA0,0,1,0,0,0
32150 DS$(3)="I'M STANDING NEXT TO MY SPACE SHIP WHICH IS LOCATE
D ON A HUGE FLIGHT DECK."

```



```

32200 DATA18,0,4,0,1,0
32250 DS$(4)="I'M OUT ON THE FLIGHT DECK OF GENERAL DOOM'S BATTL
E CRUISER."
32300 DATA3,5,4,4,0,0
32350 DS$(5)=DS$(4):DATA4,6,5,4,0,0
32400 DS$(6)="I'M IN A HALLWAY. THERE ARE DOORS ON ALL SIDES.
THE DOOR TO THE NORTH SAYS: >> CLOSED FOR THE DAY <<"
32450 DATA7,0,8,5,0,0
32500 DS$(7)="I'M IN THE SUPPLY DEPOT.
AROUND ME I SEE:
ALL KINDS OF THINGS"
32550 DATA0,0,6,0,0,0
32600 DS$(8)="I'M AT THE END OF ONE OF THE HALLWAYS.
I CAN HERE VOICES NEARBY. SOUNDS LIKE GUARDS."
32650 DATA6,10,0,9,0,12
32700 DS$(9)="I'M IN THE STRATEGY PLANNING ROOM.":DATA11,0,0,0,0
,0
32750 DS$(10)="I'M IN THE DECONTAMINATION AREA.":DATA0,14,0,0,0,
0
32800 DS$(11)="THIS AREA IS THE TRACTOR BEAM CONTROL ROOM.
A LARGE SIGN WARNS: >> DO NOT PRESS ANY BUTTONS <<"

```


A PRACTICAL DIGITAL ELECTRONIC KIT FOR ★ LESS THAN £20 ★



SUITABLE FOR BEGINNERS

NO SOLDERING!

Learn the wonders of digital electronics and see how quickly you are designing your own circuits. The kit contains: seven LS TTL integrated circuits, breadboard, LEDs, and all the

DIL switches, resistors, capacitors, and other components to build interesting digital circuits; plus a very clear and thoroughly tested instruction manual (also available separately). All this comes in a pocket size plastic wallet for only £19-90p inc VAT and p&p. This course is for true beginners - the only extra you need is a 4½V battery.

- needs no soldering iron.
- asks plenty of questions, but never leaves you stuck and helpless.
- teaches you about fault-finding, improvisation, and subsystem checking.

This course teaches boolean logic, gating, R-S and J-K flipflops, shift registers, ripple counters, and half-adders. Cheque with order to:- Cambridge Learning Limited, Unit 146, Rivermill Site, FREEPOST, St. Ives, Huntingdon, Cambs. PE17 4BR, England.

Or tel 0480 67446 with credit card details

Cambridge Learning

ingenious!

16K
£279



32K
£310

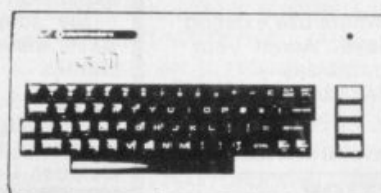
48K
£339

Genie II business system with key pad £295.

IN BLACKPOOL

* SOFTWARE * PERIPHERALS * BOOKS
EPSON MZ80 FT/1 & 2 £345.00

COMMODORE VIC 20



Only
£173.00

Available
shortly
Mysterious
Adventures for
VIC 20.



LEISURONICS COMPUTER STORES
64 Abingdon Street, Blackpool,
Lancashire. Tel: 0253 27091
Please add 15% VAT to all prices.

AUTHORISED
DEALER

ATARI



800 16K COMPUTER

400 16K OR 32K COMPUTER

LOW PRICE CONVERSIONS NOW
BEING DONE

NOW AT SUPER LOW PRICES

PLUS

EXTENSIVE RANGE OF HARDWARE
AND COMPATIBLE SOFTWARE

ALSO

NEW ITEMS ARRIVING INCLUDING

"LE-STICK"

JENNINGS STORES LTD.

248 Hertford Road (Nr. Green Street), Enfield,
Middx. Tel: Tel: 804 1767.

ZX81 16K RAM

PLUG-IN UNIT

£24.95 inc.

■ ASSEMBLED _ TESTED _ GUARANTEED ■

Cheque/P.O.s to:
PLESSIS ELECTRONICS, CASTLE HOUSE, OLD RD,
LEIGHTON BUZZARD (beds), LU7 7RG.

7 DAYS DELIVERY

TANDY & VIDEO GENIE OWNERS

FANTASTIC LIGHT PEN

Play Backgammon (included) and move your men by just pointing the pen at the screen. Comes complete with info sheets and game cassette

Video Genie owners require a 2nd cassette or a MINI amplifier.

Tandy owners use existing cassette player. Adapt your own programs easily.

Ideal for 'MENU' selection.

Tandy Model I Level II & Video Genie. Only £10.95

LE STICK

The ultimate joystick real home arcade action brings joystick games to life, or adapt your own programs.

| | |
|------------------------|--------|
| TANDY MI LII | £32.00 |
| VIDEO GENIE | £32.00 |
| TANDY COLOUR | £24.75 |
| ATARI VIDEO GAME | £24.75 |
| ATARI COMPUTER 400/800 | £24.75 |

NOW ADAPT YOUR OWN GAMES OR PLAY THE BIG 5 GAMES WITH

JOYSTICKS

£22.50 single joystick



Tandy Model I, LII Video Genie

The famous Atari Joystick interfaced for your Tandy MI LII or Video Genie. Just plugs straight into the expansion port. Your own games easily adapted by using a simple Basic statement, or buy Joysticks Games.

Galaxy Invasion, Attack Force, Cosmic Fighter £9.95
Robot Attack, Meteor Mission, Defense Command £9.95

LOW COST PROGRAMS

MICROCOSM I (30 programs), 2 (20 programs) or 3, (20 programs with sound) just £19.95 each. Send for detailed lists.
ASYLUM £11.00 LABRINTH £9.95
DEATHMAZE 5000 £9.95
GOBBLE MAM £9.95

★ CLOAD MAGAZINE ★

Tandy Model 1 or 3 & Video Genie 6 to 8 programs on a cassette each month.

| | |
|-----------------------|--------|
| Trial Tape | £5.75 |
| 6 month subscription | £28.50 |
| 12 month subscription | £52.00 |

Business programs, Games, Adventures, Utilities, Educational all appear in Cload Magazine.

OVER 40 BACK ISSUES AVAILABLE. INCLUDING: THESE IN OUR TOP FIVE

1. MARCH 1981 includes Space Invaders (Alien) with Sound plus 5 more programs.
2. NOVEMBER 1980 includes Fox & Hounds Monster Game, plus put audio sounds in your own programs.
3. DECEMBER 1980 includes, Star Fighter arcade type game, plus Flight Simulator.
4. SEPTEMBER 1981 Trolls Treasure Adventure Cron Diversion arcade game.
5. OCTOBER 1981 Tenpin Bowling with sound plus Frankenstein Adventure.

NOW AVAILABLE

Good Games No 1 (7 Great Games) £11.95. Adventure No 1 (5 Adventures) £11.95

TANDY COLOUR COMPUTER OWNERS

WE HAVE THE LARGEST RANGE OF COLOUR COMPUTER SOFTWARE IN EUROPE.

★ CHROMASSETTE MAGAZINE ★

Every month 6 to 8 programs on a cassette. At low prices. 10 back issues available. Educational, Practical, Utility and many games. Give your computer a cultural lesson.

| | |
|-----------------------|--------|
| Trial Cassette | £5.95 |
| 6 month subscription | £32.00 |
| 12 month subscription | £55.00 |

MARK DATA PRODUCTS

CAVE HUNTER £19.95
Manoeuvre your way through a spooky old cave in this high action arcade game.

COLOR BESERK £19.95
A sensational hi-res graphics game. The exciting combination of Evil Orville and Angry Robots will give you hours of fun.

CALIXTO ISLAND ADVENTURE £17.50. A challenging and humorous adventure to find the stolen museum treasure.

BLACK SANCTUM ADVENTURE £17.50. Pit yourself against the forces of Black Magic.

SPECTRAL ASSOCIATES

COLOR SPACE INVADERS £19.95
METEORIDS £19.95

A meteor mission. Hit those asteroids with your laser.

SPACE WAR. Avoid the Black Hole, fast action arcade game £19.95

GAME OF LIFE. Build a life community and fight with a virus £13.95

GRAPHIC ANIMATOR. Draw pictures with the joysticks create animation and store pictures on tape £9.95

ARTILLERY DUEL. Engage in an exciting duel against the computer £7.95



COMPUTERWARE PRODUCTS

For the Tandy Colour **COLOUR INVADERS** £19.95

MAGIKUBE (The Cube on your computer) £17.50

STORM (Arcade game with 105 levels of play) £19.95

3D DRAWING BOARD (Draw, rotate, elevate 3D objects) £19.95

MAZE RACE (Board game involving chance and strategy) £14.95

COLOR PAC ATTACK (Pac-mac on your colour computer) £19.95

SPACE TRADERS £13.95
For 2 to 4 players. Become a space millionaire.

MADNESS & THE MINOTAUR £17.95
Adventure game. Over 200 rooms to get through

LOTHARS LABYRINTH £13.95
Word search puzzle game.

BATTLEFLEET £13.95
Battleship game.

LASER COMMAND £9.95
Arcade game.

SUB HUNT £13.95
Fight those killer subs.

CROID £11.95
Gives your computer artificial intelligence.

ALCATRAZ II £8.95
Get out of prison.

Post your Cheque/PO today to

MICRODEAL

DEAL HOUSE

BRIDGES

BODMIN

CORNWALL

PL30 5EF

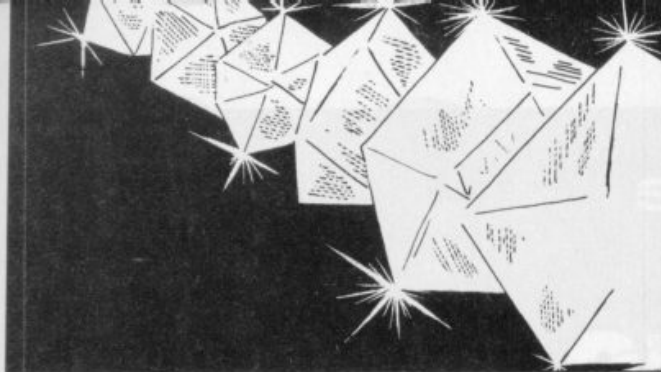
TEL 0726 850821

MICRODEAL
THE GAMES
SPECIALISTS

SEND 1st CLASS
STAMP FOR LISTS



ACCESS



32850 DATA0,0,9,0,0,0
32900 DS\$(12)="I'M IN ANOTHER HALLWAY. TO THE EAST IS A RESTROOM
*
32950 DATA15,13,0,0,0,0
33000 DS\$(13)="THIS IS WHAT IS COMMONLY CALLED ON EARTH, THE BAT
HROOM.
THERE'S GRAFFITI WRITTEN ALL OVER THE WALL.
PIPES LEAD UP THROUGH THE CEILING."
33050 DATA15,0,0,12,27,0
33100 DS\$(14)="THIS APPEARS TO BE AN INTERROGATION ROOM".:DATA0,
0,0,10,0,0
33150 DS\$(15)="I'M IN A LOUNGE.":DATA0,0,13,12,0,0
33200 DS\$(16)="THIS IS A COMPUTER ROOM. THERE'S A TRS-80 IN HERE
ON THE SCREEN IT SAYS: >> CSAVE TAPE <<".:DATA17,0,10,0,0,0
33250 DS\$(17)="I'M IN A TESTING LABORATORY.":DATA0,0,16,0,0,0
33300 DS\$(18)="I'M IN A HALLWAY.
A LARGE ARROW POINTS EAST AND SAYS: >> TO THE VAULT <<"
33350 DATA16,25,3,19,0,0
33400 DS\$(19)="THIS IS THE ENTRANCE TO THE DEVELOPMENT LAB SECTI
ON":DATA20,10,21,20,22,0
33450 DS\$(20)="I'M IN A LONG CORRIDOR. THERE ARE LABORATORIES ALL
AROUND ME.":DATA19,23,21,20,22,24
33500 DS\$(21)="I'M IN A RESEARCH LAB.":DATA20,0,0,0,0,0
33550 DS\$(22)="I'M LOST!":DATA22,22,22,22,22,20
33600 DS\$(23)=DS\$(21):DATA0,0,0,20,0,0
33650 DS\$(24)=DS\$(21):DATA0,0,0,20,0
33700 DS\$(25)="I'M NEAR THE ENTRANCE TO THE VAULT.
A SIGN HERE SAYS: >> AUTHORIZED PERSONEL ONLY <<"
33750 DATA0,26,0,10,0,0
33800 DS\$(26)="I'M IN THE VAULT.":DATA0,0,0,25,0,0
33850 DS\$(27)="I'M IN A PIPE TUNNEL WHICH LEADS IN EVERY DIRECTI
ON.":DATA20,27,27,27,27,13
33900 DS\$(28)=DS\$(27):DATA29,29,29,29,30,29
33950 DS\$(29)="I'M LOST IN A MAZE OF PIPES.":DATA20,29,29,29,29,
27
34000 DS\$(30)="I'M IN THE PIPE MAZE.
BELOW ME I THINK I CAN SEE THE JAIL."
34050 DATA29,29,20,29,29,31
34100 DS\$(31)="I'M IN THE JAIL."
34150 DATA32,33,34,35,0,0
34200 DS\$(32)="I'M IN A JAIL CELL.":DATA0,0,31,0,0,0
34250 DS\$(33)=DS\$(32):DATA0,0,0,31,0,0
34300 DS\$(34)=DS\$(32):DATA31,0,0,0,0,0
34350 DS\$(35)="I'M AT THE SECURITY DESK.
TO THE NORTH AN ELEVATOR.":DATA36,31,0,0,0,0
34400 DS\$(36)="I'M IN THE ELEVATOR.":DATA0,0,35,0,37,0
34450 DS\$(37)=DS\$(36):DATA0,0,14,0,0,36
34500 LO=23:DIMOB\$(LO)
34500 OB\$(1)="A TAG WHICH SAYS: >> NEEDS TURBO <<".:DATA11,5,0
34550 OB\$(2)="ANTI-MATTER FUEL":DATA12,5,5
35000 OB\$(3)="BLASTER":DATA13,7,0
35050 OB\$(4)="COMMUNICATOR":DATA14,9,0
35100 OB\$(5)="A VERY SURPRISED GUARD":DATA15,9,0
35150 OB\$(6)="MAP OF THE SHIP":DATA16,29,20
35200 OB\$(7)="SOME KEYS":DATA17,9,0
35250 OB\$(8)="A SHINESTONE NECKLACE":DATA18,10,20
35300 OB\$(9)="PRINCESS LEYA'S CAPE":DATA21,14,5
35350 OB\$(10)="MCDONALD'S HAMBURGER":DATA22,15,0



35400 OB\$(11)="A CASSETTE TAPE":DATA23,7,0
35450 OB\$(12)="A TURBOENCABULATOR":DATA24,17,5
35500 OB\$(13)="AN EVIL LOOKING SCIENTIST":DATA25,17,0
35550 OB\$(14)="SECRET ATTACK PLANS":DATA26,0,20
35600 OB\$(15)="DEATH RAY SCHEMATIC":DATA27,9,20
35650 OB\$(16)="CLOAKING DEVICE":DATA28,17,20
35700 OB\$(17)="MICRO LASER GUN":DATA29,24,20
35750 OB\$(18)="I. D. CARD":DATA31,17,0
35800 OB\$(19)="MALIDIUM CRYSTALS (THE TREASURY)":DATA32,26,30
35850 OB\$(20)="A SIGN WHICH SAYS: >> OUT OF ORDER <<".:DATA33,3,0
35900 OB\$(21)="ATTACK ROBOT":DATA34,35,0
35950 OB\$(22)="PRINCESS LEYA":DATA35,34,50
36000 OB\$(23)="AMMUNITION":DATA37,7,0
36150 DIMDS(CL,5):RESTORE
36200 FORZL=1TOCL:FORZD=0TO5
36250 READDS(ZL,2D):NEXTZD:NEXTZL
36300 DIMOB(LO,2)
36350 FORZL=1TOLO:READOB(ZL,0),OB(ZL,1),OB(ZL,2):NEXTZL
36500 DIMHE\$(CL)
36550 HE\$(1)="I THINK WE'RE SUPPOSE TO LEAVE THE STUFF HERE."
36600 HE\$(2)="I WONDER IF WE HAVE ENOUGH FUEL?"
36650 HE\$(7)="HOW 'BOUT A BLASTER."
36700 HE\$(9)="TRY SHOOT GUARD."
36750 HE\$(13)="IT MIGHT BE INTERESTING TO READ THE GRAFFITI."
36800 HE\$(17)="TRY SHOOT SCIENTIST."
36850 HE\$(22)="I'M AS CONFUSED AS YOU ARE.":HE\$(29)=HE\$(22)
36900 HE\$(31)="IT MIGHT HELP IF WE HAD SOME KEYS TO OPEN ANY LOC
KED DOORS."
36950 HE\$(35)="DID YOU BRING ANYTHING TO EAT?"
37100 M0\$="I CAN'T GO THERE. THE DOOR IS LOCKED."
37150 M1\$="I'M NOT CARRYING ANY BLANK TAPE."
37200 M2\$="THE TRS-80 RECORDED SOMETHING ON THE TAPE, AND THEN I
T PRINTED:
>> ATTACK PLANS -- VERY SECRET <<"
37250 M3\$="I CAN'T. I'M NOT CARRYING ANY KEYS."
37300 M4\$="O.K. THE DOOR TO THE JAIL CELL IS UNLOCKED."
37350 M5\$="THERE'S NO ROBOT HERE."
37400 M6\$="BUT I DON'T HAVE ANY HAMBURGERS."
37450 M7\$="CHUMP... CHUMP BURP!
THE PRINCESS THANKS YOU FOR A DELICIOUS MEAL."
37500 M8\$="DOESN'T EAT HAMBURGER."
37550 M9\$="NOTHING HAPPENED. THE HAMBURGER IS COLD YOU KNOW."
37600 N0\$="THE ATTACK ROBOT EATS THE HAMBURGER AND DISSAPERS."
37650 N1\$="I'M AT THE IDENTIFICATION TERMINAL.
ON THE SCREEN IT SAYS: >> SHOW I.D. <<"
37700 N2\$="THE TRACTOR BEAM IS OFF."
37750 N3\$="THE TRACTOR BEAM IS ON."
37800 N4\$="YOU FORGOT TO OPEN THE FLIGHT DECK DOORS."
37850 RETURN

 **commodore**

COMPUTING

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. IT IS PUBLISHED BY NICK HAMPSHIRE, AUTHOR OF THE PET REVEALED, PET GRAPHICS, A LIBRARY 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 AND WHATEVER YOUR APPLICATION. SOFTWARE, HARDWARE, MACHINE CODE, GAMES, BUSINESS USE — IT IS ALL COVERED IN EVERY ISSUE.

IF YOU WANT TO LEARN MORE ABOUT YOUR COMPUTER TAKE OUT A SUBSCRIPTION TO COMMODORE COMPUTING. IT IS THE ONLY WAY TO GET IT, AND GET IT STRAIGHT.

SEND £12.50 FOR A SUBSCRIPTION FOR 1 year (10 ISSUES) TO:

COMMODORE COMPUTING, MAGSUB, OAKFIELD HOUSE, PERRYMOUNT ROAD, HAYWARDS HEATH, SUSSEX RH16 3DH.

Bouncing



Illustration: Terry Rogers

```

0 REM BOING BY RON WEBSTER
ATARI TRANSLATION BY JAMES GARON
5 DIM B$(10):FOR I=1 TO 10:READ X:B$(I)
  )=CHR$(X):NEXT I
10 GRAPHICS 0:POKE 82,5:POSITION 9,1
15 ? " * * * B O I N G ! * * * ":?
20 ? "Don't let Bouncing Barney down!"
25 ? "Barney likes bouncing, but he"
30 ? "has trouble staying on his"
35 ? "trampoline. Use the joystick"
40 ? "to keep it underneath him. If"
45 ? "he hits the left side of the"
50 ? "trampoline he bounces to the"
55 ? "right. If he hits the right"
60 ? "side of the trampoline, he"
65 ? "bounces to the left. This af-"
70 ? "fects Barney's bouncing more"
75 ? "and more as the skill level"
80 ? "increases, and makes it harder"
85 ? "to keep him in the air. See"
90 ? "how long you can keep Barney"
95 ? "bouncing."?:? ? "Good luck !! ":?
100 ? "(Barney needs it!)"
110 OPEN #1,4,0,"K"
120 ? " Skill level (0-9)?":?
125 GET #1,Q:Q=Q-48
130 IF Q<0 OR Q>9 THEN 125
140 H=(Q+2)/4:GRAPHICS 5:POKE 752,1
145 SETCOLOR 4,10,2:SETCOLOR 2,4,2
150 SETCOLOR 0,4,2:SETCOLOR 1,8,12
155 COLOR 1:FOR I=0 TO 5:PLOT I,39:DRA
WTO I,0:NEXT I
160 DRAWTO 74,0:FOR I=74 TO 79:PLOT I,
0:DRAWTO I,39:NEXT I
170 E=1:P=16:A=39:B=A:D=E:COUNT=1:V=14
172 C=INT(RND(0)*2+1)*H-3/2*H
175 POKE 656,0:POKE 657,P?:? B$:
180 FOR X=0 TO 16:FOR I=15 TO 32 STEP
17:POKE 656,0:POKE 657,X?:? CHR$(I);
185 FOR J=1 TO 10:NEXT J:NEXT I:NEXT X
190 POKE 657,16?:? CHR$(11):;FOR I=1 TO

```

BARNEY likes bouncing. In fact he likes it so much he bounces everywhere. He bounces off walls. He bounces off ceilings. He even bounces on a trampoline. But so far he has failed to work out that bouncing off the floor is harmful to his health. You have to protect Bouncing Barney from his own folly by making sure the trampoline stays under his flying body as he hurtles up and down. There are ten skill levels to the game — but be warned. Level zero is so easy you might want to bounce directly to level nine. Don't do it! Level nine is for people who don't mind seeing their efforts result in messy consequences. Stick to the lower levels until you have developed your skill — for Barney's sake!

```

50:NEXT I:POKE 657,16?:? " ";:FOR X=34
TO 39
200 COLOR 2:PLOT X,B:FOR I=1 TO 10:NEX
T I:COLOR 0:PLOT X,B:FOR I=1 TO 50:NEX
T I:NEXT X:COLOR 2:PLOT A,B
220 S=STICK(0)
225 IF S>8 AND S<12 AND P>2 THEN P=P-1
230 IF S>4 AND S<8 AND P<30 THEN P=P+1
235 SOUND 0,150+2*B,10,V:V=V-2:IF V<0
THEN V=0
240 POKE 656,0:POKE 657,P
242 IF B>38.5 THEN ? " Boing!";:GOTO 2
50
245 ? B$;
250 COLOR 0:PLOT INT(A),INT(B):A=A-C:B
=B-D
255 D=D-0.4
260 IF A<6 THEN A=6:C=-C:GOSUB 400
265 IF A>73 THEN A=73:C=-C:GOSUB 400
270 IF B<1 THEN B=1:D=-ABS(D):E=E-RND(
0)-1:GOSUB 400
275 IF B<38.5 THEN 320
280 B=39:D=E:V=14:LEFT=P+P
285 IF INT(A)>LEFT AND INT(A)<LEFT+14
THEN 310
290 ? :? "S P L A T ! ",COUNT;" Bounc
e";:IF COUNT>1 THEN ? "s"
295 COLOR 2:PLOT INT(A),INT(B):FOR V=1
4 TO 0 STEP -0.1:SOUND 0,253,12,V:NEXT
V:IF COUNT=1 THEN ?
300 ? " Skill level was ";Q:GOTO 1
20
310 IF B>38.5 THEN COUNT=COUNT+1:E=E+R
ND(0)/2:C=(A-8-LEFT+RND(0))*H/4
320 COLOR 2:PLOT INT(A),INT(B):GOTO 22
0
400 SOUND 1,200,10,8:FOR TIME=1 TO 10:
NEXT TIME:SOUND 1,0,0,0:RETURN
450 DATA 32,17,18,18,18,18,18,5,32,32

```

BY RON WEBSTER

RUNS ON AN ATARI IN 8K

PRACTICAL PROGRAMMING

THE WAY TO BETTER PROGRAMS

Basic was designed to be easy to learn, so that people who are not professional programmers can write simple programs for themselves.

It is not easy to write long, complicated programs in any language, and is particularly difficult in Basic for several reasons, the main reason being the lack of suitable control structures.

In order to write a Basic program that works properly it is necessary to begin by designing the program carefully, and producing a detailed specification before beginning to write the code.

Top-down structuring is a method of program design where we begin with a general description of the program. Step by step, we add more details of the procedures the program must perform until we have a description that is sufficiently detailed to allow us to specify the data structure and write the code.

We need to use only a few simple structures in the description:

1. A sequence of procedures that are executed one after the other.
2. IF condition THEN procedure. If condition is true perform procedure, otherwise continue with the next section of the program.
3. IF condition THEN procedure 1 ELSE procedure 2. If condition is true perform procedure 1; if condition is false perform procedure 2; then continue with the next section of the program.
4. REPEAT procedure UNTIL condition. Perform procedure, then test condition; if false loop back to procedure, if true continue with the next section of the program. Note that the test comes at the end, so that

the body of the loop must be performed at least once.

5. WHILE condition DO procedure. Test condition; if true perform procedure then loop back to test condition again; if false continue with the next section of the program. Note that here the test is performed first, so that the body of the loop need not be performed at all.
6. CASE i OF procedure 1, procedure 2, ..., procedure n. If i is 1 perform procedure 1, if i is 2 perform procedure 2, etc.

The essential property of these structures is that they each have a single entry point at the beginning and a single exit point at the end. This makes it possible to write a program outline where the logical flow proceeds straight through from beginning to end.

It is not possible to write Basic code like this because GOTO statements make the logical flow of the program jump around all over the place.

SIMPLE GAMES

To illustrate top-down structuring I will show how a simple game program can be developed. The game is one that has been published in various forms, sometimes in the simple form described here, but usually in a more sophisticated form with extra features.

The object of the game is to shoot down a plane which moves across the screen. The gun is fixed in the centre of the bottom line of the screen and is fired by pressing a single key.

We begin with a trivial description of the program:
REPEAT play game.
UNTIL game over.

To elaborate this we take the procedure "play game" and note that it can be divided into two parts, updating the display and handling input from the keyboard, so the description becomes:

REPEAT update display
handle input
UNTIL game over.



"Update display" involves moving the plane, moving the shell if one has been fired, and taking appropriate action if there is a hit. At first sight it may appear that we can expand it to:
move plane
IF shell fired THEN move shell
IF hit THEN plane destroyed

But if we look more closely at the possible positions of the plane and shell we see that we may have the shell immediately to the right of the plane so the plane will run into the shell. Or we may have the shell one place to the right and one line below, in which case the hit will occur after both the plane and the shell have been moved. Our next expansion of "update display" could be:

move plane
IF hit THEN plane destroyed
IF shell fired THEN move shell
IF hit THEN plane destroyed

Before continuing with this part of the program we need to look at the "handle input" section.

The description of the program says nothing about when and how often the gun may be fired. Program descriptions are often inadequate but top-down design will reveal where the deficiencies are.

If the gun could be fired continuously there would be no point to the game, so we must introduce some restriction. Two possibilities are to provide a limited supply of ammunition, or to allow the gun to be fired once each time the plane starts on a new line.

If we provide a limited supply of ammunition and allow the

BY TED BALL

PRACTICAL PROGRAMMING

gun to be fired at any time while there is ammunition remaining, there could be several shells in motion at one time. To keep the program simple I will use the second possibility.

The "handle input" procedure can now be expanded easily. We have to first check that the gun can be fired — which means that it has not been fired since the plane started on its present line — and if so check for a key and fire a shell if the key has been pressed. The expansion may be written in stages as:

IF gun enabled THEN handle input

IF gun enabled THEN check keyboard

IF key pressed THEN fire shell and finally:

IF gun enabled THEN check keyboard

IF key pressed THEN set initial shell position

write shell to screen

set "shell fired" flag

clear "gun enabled" flag

THE LISTINGS

Collecting together the sections that have been developed so far gives listing 1. From this we can see that the procedures we need to expand now are "move plane", "move shell" and "plane destroyed".

When we expand "move plane" we must remember to check for the plane having reached the end of its run half-way down the screen or having reached the end of a line on the screen. Thus the first step in the expansion is:

write blank to current plane position

determine new plane position
write plane to new plane position

and for the next step we introduce the checks by expanding "determine new plane position" to:

move plane position one place to right

IF end of line THEN set up for new line

IF end of run THEN set up for new run.

and expanding "set up for new line" and "set up for new run" we get:

move plane position one place to right

IF end of line THEN set plane position to start of next line
decrease score value
set "gun enabled" flag

IF end of run THEN add 1 to plane count

set plane position to start of screen

set score value to initial value

set "gun enabled" flag

"Move shell" is expanded in a similar way, but remembering to delete the shell when it reaches the top of the screen:

write blank to current shell position

move shell position up one line

IF off screen THEN clear "shell fired" flag

ELSE write shell to new position

tion

"Plane destroyed" appears in two places and in the final program we will obviously want to implement it as a subroutine.

To indicate this we will replace "plane destroyed" in the body of the program description by "subroutine (plane destroyed)" and put the expansion in a separate section at the end.

The expansion of "subroutine (plane destroyed)" is straightforward:

clear "shell fired" flag

simulate explosion on screen

add score value to player's score
set up for new run

with "set up for new run" being expanded in exactly the same way as before.

This leaves the final test "game over" to be expanded. Since the game consists of shooting at a fixed number of planes "plane count more than number of planes".

Putting these latest expansions into the program description of listing 1 gives the final program description shown in listing 2.

This final description gives almost all the detail we need to write the program.

Listing 1: Intermediate Program Description

REPEAT move plane

IF hit THEN plane destroyed

IF shell fired THEN move shell

IF hit THEN plane destroyed

IF gun enabled THEN check keyboard

IF key pressed THEN

set initial shell position

write shell to screen

set "shell fired" flag

clear "gun enabled" flag

UNTIL game over.

Listing 2: Final Program Description

REPEAT write blank to current plane position

move plane position on place right

IF end of line THEN

set plane position to start of next line

decrease score value

set "gun enabled" flag

IF end of run THEN

add 1 to plane count

set plane position to start of screen

set score value to initial value.

set "gun enabled" flag

write plane to new position

IF hit THEN subroutine (plane destroyed)

IF shell fired THEN write blank to current shell position

move shell position up 1 line

IF off screen THEN clear "shell fired" flag

ELSE write shell to new position

IF hit THEN subroutine (plane destroyed)

IF gun enabled THEN

check keyboard

IF key pressed THEN

set initial shell position

write shell to screen

set "shell fired" flag

clear "gun enabled" flag

UNTIL plane count more than number of planes

Subroutine (plane destroyed):

clear "shell fired" flag

simulate explosion on screen

add score value to player's score

add 1 to plane count

set plane position to start of screen

set score value to initial value

set "gun enabled" flag



ZX80/1

£37.95
incV.A.T.

ZX KEYBOARD FULLY CASED WITH REPEAT KEY



Fully cased keyboard£37.95
Uncased keyboard£27.95
Keyboard Case£10.95

This is a highly professional keyboard using executive buttons as found on top quality computers. It has a repeat key and comes complete in its own luxury case. This is a genuine professional keyboard and should not be confused with toy keyboards currently available on the market.

16K RAMPACK MASSIVE ADD ON MEMORY FULLY CASED

comes fully assembled, tested and guaranteed

£32.95
incV.A.T.

The 16K Rampack plugs straight into the user port at the rear of your computer. And of course as in all our products the Rampack is fully enclosed in a matt black slimline plastic case.

This means you can handle it with complete safety and you do not have to stare at ugly components — as in other makes of 16K. The Rampack NEEDS NO EXTRA POWER and will operate quite happily on your sinclair power supply.

Don't forget you can always order on the telephone with your credit card.

6 Days a week for a same day service

**WHY WAIT TO PAY MORE?
FAST IMMEDIATE DELIVERY**

Post To
Dept CVG5

**KAYDE ELECTRONIC
SYSTEMS**

48/49 Exmouth Road
Great Yarmouth
Norfolk NR30 3DP
Tel 0493 57867

| | | |
|---------------------|--------------------|-------------|
| PLEASE SEND ME..... | RAM PACK/S | £32.95 each |
| PLEASE SEND ME..... | CASED KEYBOARD/S | £37.95 each |
| PLEASE SEND ME..... | UNCASED KEYBOARD/S | £27.95 each |
| PLEASE SEND ME..... | KEYBOARD CASE/S | £10.95 each |

I enclose £.....

NAME

ADDRESS

.....

.....

Please add £1.50 P&P and make cheques payable to

Kayde Electronic Systems.



THE IMPORTANCE OF CURVES...

If you want to produce interesting displays for your video games then it is essential to be able to draw curves.

Straight lines tend to be characteristic of man-made structures and not of natural objects. Most high resolution graphics systems on micros have commands such as DRAW or PLOT for drawing straight lines, but do not have commands for drawing curves. For this reason, a curve has to be approximated by a series of linked line segments.

The shorter the segments are, the more a realistic the approximation to the curve becomes. The limit to which this can be taken is determined by the resolution of the display screen. With any system having a screen resolution of, say, 256 by 192 or better, convincing curves can be drawn by joining points in adjacent screen columns as long as their vertical separation is not too great. These thoughts naturally lead to the problem of scaling.

The basic idea with scaling is that when a particular curve is to

be drawn it must be scaled — magnified or diminished — in such a way that it fits on the screen, and is also displayed to best effect.

This is probably best illustrated by an example, so let us examine how to draw two cycles of a damped sine wave on the Atom's screen, which has a resolution of 256 by 192. With a damped sine wave, the size of the oscillations decreases as the waveform proceeds. The equation of the curve we shall plot is:

$$Y = \sin(X) * \exp(-X/8)$$

Now two cycles are obtained by letting X vary from 0 to 4π . To plot the curve across the screen with full resolution, we start with a dot in column 0, on the left of the screen, and repeatedly draw a line to a dot in the next column, doing this 255 times until we get to the right hand side.

To make X increase from 0 to 4π in this pattern, it must be repeatedly increased by increments of $4\pi/255$. Thus the kernel of the program becomes

```
FOR I = 0 TO 255
X = I*(4*PI/255)
Y = SIN(X)*EXP(-X/8)
DRAW I, Y
NEXT I
```

However, the vertical axis still needs to be scaled. The curve shows to best effect with its

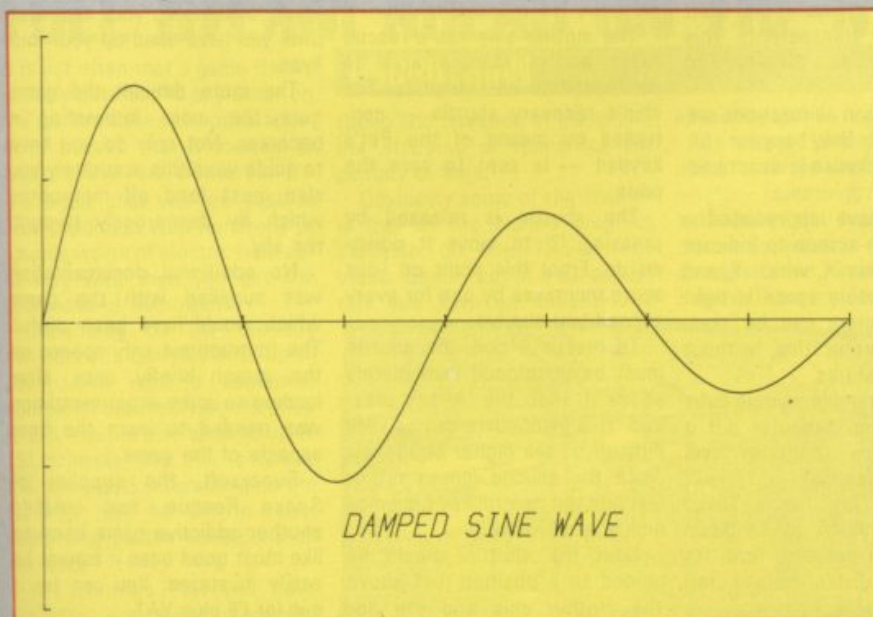
x-axis across the middle of the screen, so we place it along row 95. Assigning 90 dots vertically to the full amplitude of the sine wave gives the final, tided-up, Atom program.

```
10 %S = 4*PI/255
20 CLEAR 4
30 MOVE 0, 95
40 FOR I = 1 TO 255
50 %X = I*%S
60 %Y = % (90 * SIN(%X) *EXP
(- %X/8)) + 95
70 DRAW I, %Y
80 NEXT I
90 END
```

Experimenting with this program by changing the numbers in it will give a further feeling for how the scaling, positioning and damping are achieved.

To illustrate how simple matters such as scaling and positioning can be made, consider the drawing shown in the figure, which includes not only our curve, but also two axes and a label. It was drawn using a Hewlett-Packard HP7225A graph plotter attached to an HP 83 personal computer. The program that produced it is:

```
10 GCLEAR
20 SCALE 0, 4*PI, -1, 1
30 XAXIS 0 PI/2
40 YAXIS 0 0.5
50 MOVE 0,0
60 S = 4*PI/255
70 FORX = S TO 4*PI STEP S
80 DRAW X, SIN(X)*EXP(-X/8)
90 NEXT X
100 CSIZE 6, 0.5, 0.25
110 MOVE PI, -0.2
120 LABEL "DAMPED SINE WAVE"
130 END
```



In this program the SCALE instruction in line 20 gives the lower and upper limits of the X values to be plotted and also of the Y values. All plotting can then be performed using the actual values to be plotted since the system can then automatically position them correctly.

Of course, the HP personal computer is a sophisticated and expensive system, but its capabilities illustrate what can be done, and also the direction which graphics facilities for micros are likely to take.

By Gary Marshall

FINE ART OF SPACE FIGHTING

GAMESTAPE 2

You can journey to the stars, unravel the mysteries of the pyramids or become an artist with Gamestape 2, which has three 16K programs for the ZX81. First on the tape is Starfighter.

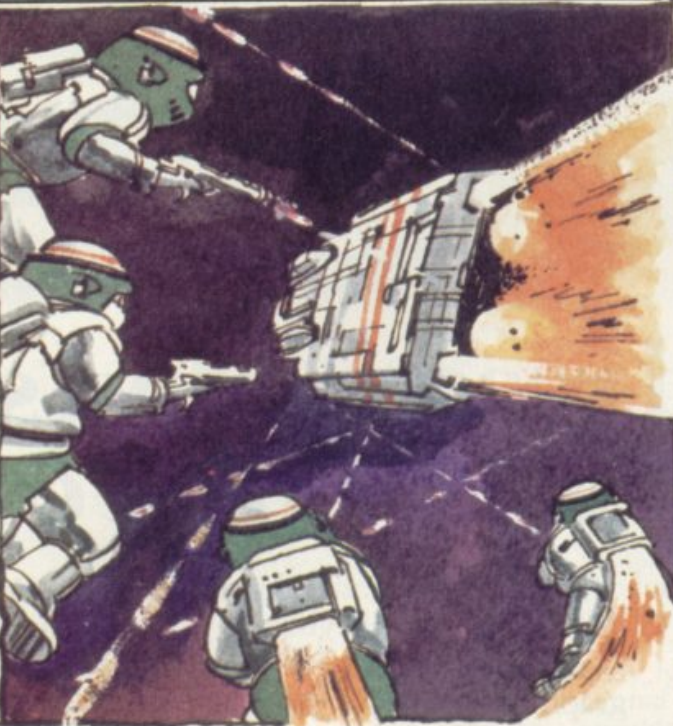
The enemy are trying to destroy your civilisation. You must stop them by flying your Starfighter and shooting them down with your lasers.

The screen displays the view from your cockpit with stars and a firing cursor in front of you. The cursor, your laser sights, are controlled by pressing keys one to nine, while the zero key fires the laser.

This layout can be confusing until you get used to it. I used a sticky label on the keyboard to remind me of the keys that give the diagonal moves, one to four.

The enemy starships are shown as H, X and O on the screen. Each has a different score value. If you can manage to hit twenty of them before your energy runs out you get a replay. I would have liked to have seen two or three starships on the screen at once or see them fire back to liven the game up a bit.

Second on the tape is Pyramid — the classic puzzle where a



pyramid has to be moved from A to B via C piece by piece.

The pyramid shown on the screen has nine layers and the pads lettered A, B, C and a prompt are also displayed. Movement is controlled by pressing the appropriately lettered keys, the computer will automatically move the top layer of the pile. This game takes a very long time to play, the suppliers reckon that 511 moves are the minimum.

Turning over the tape gives us Artist. The usual "draw a picture on your television screen" type

program. However this one does have some major differences. After you have finished your drawing you can store it in one of 10 memories for retrieval later if you wish.

If you own a Sinclair printer the drawing can be copied on to it. The sticky label used in Starfighter can also be used here as the input commands are the same.

This tape must be rated as good value for money and is available from J.K. Grege Software, of Bath, and costs £4.95.

DUCKING AND WEAVING UP IN THE STARS

COSMIC ZAP

Cosmic Zap is one of the new games for the Sharp MZ-80K from the London based firm — Sharpsoft. Written in Basic in under 6K it is fairly slow for a real-time graphics game. However, the quality of finish is very high with some nice trimmings such as storing the top five high scores and initials.

The aim of the game is to pilot your ship through space for ten minutes using left, right and stop controls to dodge asteroids whilst trying to ram assorted aliens with scores ranging from 10 to 100 points. After a while asteroids start appearing in your path and an alien you are about to ram can suddenly turn into a deadly asteroid. If you last 10 minutes, which is some feat, a mother ship appears and uses a tractor beam to draw you in for docking.

At £5.85 all the Sharpsoft games are quite expensive and I do not feel that this game represents such good value for money as say Asteroids or Stockmarket F. As far as I can tell there are no good tactics in this game of reflexes, although on the whole I found it quite good fun.

FULL STEAM AHEAD ON THE MICRO RAILROAD

It is not often that a game that is entirely different to any other on the market makes an appearance, but I believe that Microtrain is one of these rare creatures.

Imagine that you are back in your childhood with hundreds of pounds worth of electric train set to play with then you get the basic idea of Microtrain.

Depending on the memory available you can play with up to 255 trains with a combined number of coaches/wagons of up to 255. You are also allowed up to 255 controls, and this is where the game gets interesting as the controls may be set to react depending on the conditions on the track.

The controls that you have available are points, signals,

MICROTRAIN

speed and direction of trains and the stopping of trains for set periods of time.

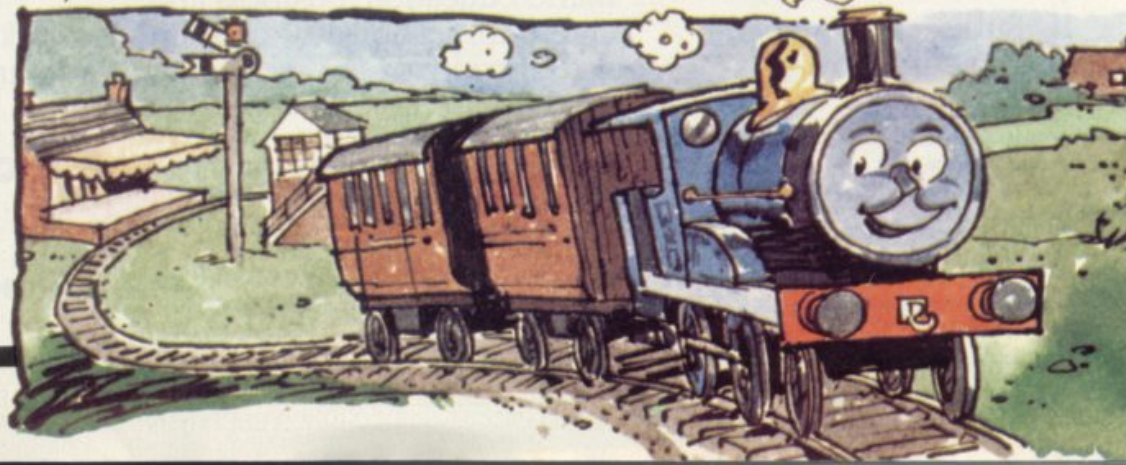
Obviously some of the realism is lost in the limited graphics available on the TRS-80 and Video Genie, but if you accept this you have an unusual and

appealing game.

Be warned though, the automatic controls are not easy to master, something that is not helped by the limited instructions supplied — maybe a demonstration mode would have helped. Once a suitable layout is

achieved, the screen after screen of track may be saved for future loading.

Microtrain is available from Premier Publications of Croydon. It runs on a Tandy TRS-80 model I or III and the Video Genie costing £16.95 for the disc version and £14.95 for the tape.



SEE VIC AT THE INTERNATIONAL
COMMODORE COMPUTER SHOW,
CUNARD HOTEL, HAMMERSMITH,
3rd-5th JUNE.
3rd June 12 noon-6pm. 4th June 10am-6pm.
5th June 10am-5pm.



"Give me one good reason why I should choose a VIC 20 home computer."

1. VIC is outstanding value for money. No other colour home computer can give so much for under £200.

2. Total standard memory 25K made up of 20K ROM and 5K RAM.

3. Fully expandable to 27½K user RAM.

4. Microsoft Basic interpreter as standard.

5. Accessible machine language via plug-in cartridges.

6. Connects direct to monitor or standard television.

7. Full size typewriter style keyboard.

8. Full colour and sound.

9. All colours easily accessible.

10. 62 predefined graphic characters direct from the keyboard.

11. Full set of upper and lower case characters.

12. 256 displayable characters direct from the keyboard.

13. High resolution graphics capability via plug-in cartridges.

14. Programmable function keys can be used with plug-in cartridges.

15. Automatic repeat on cursor function keys.

16. User-definable input/output port.

17. Machine bus port for memory expansion and ROM software.

18. Standard interfaces for hardware peripherals.

19. VIC 20 is truly expandable into a highly sophisticated computer system with a comprehensive list of accessories (see panel below).

20. Full range of software for home, education, business and entertainment on disk, cassette and cartridge.

21. Books, manuals and learning aids from Teach Yourself Basic to the VIC programmers' reference guide (a must for advanced programmers).

22. Full support for VIC owners – their own magazine 'VIC Computing' as well as a national network of VIC user groups.

23. National dealer network providing full service and support to VIC owners.

24. Expertise and experience – Commodore are world leaders in microcomputer and silicon chip technology.

25. Commodore is the leading supplier of micro computers in the UK to business, schools, industry and the home.

26. VIC 20 is the best-selling colour home computer in the UK.

How many reasons was it you wanted?

Accessories include:

- Cassette tape unit.
- Single drive 5¼" floppy disk unit (170 K bytes capacity).
- 80-column dot matrix printer.
- 3K, 8K and 16K RAM expansion cartridges.
- Programming aid packs; machine code monitor cartridge; programmers' aid cartridge; high resolution graphics cartridge.

- Plug-in conversion box for a full 32K, 40-column x 24 lines VIC including Prestel compatibility.
- RS 232C communication cartridge.
- Memory expansion board.
- IEEE488 interface cartridge.
- Joysticks, light pens, paddles and motor controllers.

commodore
VIC 20
The best home computer in the world.

FOR MORE INFORMATION ON THE VIC 20, TELEPHONE OR WRITE TO: COMMODORE INFORMATION CENTRE,
675 AJAX AVENUE, SLOUGH, BERKSHIRE. TELEPHONE SLOUGH 79292.

Kit Korner

THE POWER OF THE ATOM...

It is refreshing to see, in these times when the reliability of some newer machines has yet to be proven, an already well established product which can be expanded from a useful basic kit to a powerful multi-program microcomputer. I have been looking over a kit built Acorn Atom — and found it to be just that.

The Atom is a single board layout, measuring 14 by eight inches. The basic kit has an 8K BASIC and 2K of RAM but can be expanded to 12K RAM. The MPU is the trusty 6502 running at 1MHz, although there is a second crystal to run the Motorola video chip. Make sure which is which, as they are both the same size and shape. Only the numbers are different.

The full QWERTY keyboard is mounted on the other side of the board from the components as is the speaker. The power supply is entirely separate, however.

The Atom has an advantage over some of the smaller and more recent machines in that it has the facility for a 6522 Versatile Interface Adaptor (VIA) on the board.

The Atom also allows for other input/outputs. There is a printer interface, which uses one half of the VIA, a standard CUTS interface for the recording or playing back of programs, a composite video and T.V. output. Not all of these are fitted as standard to the basic model, so find out which ones you are going to need before buying as it will be slightly cheaper.

As there are 52 potential IC sockets on the board it is worth mentioning that 14 pin sockets will go into 16 hole sets, as will 14 and 16 into 18 hole sets. If you do solder in the wrong size it is often impossible to retrieve it unless you have an IC desoldering tool for your soldering iron.

BY KEITH MOTT

The only real way to extract them otherwise is to force the plastic moulding off and to remove the pins individually. You will have to replace the holder then, of course. The same applies to the larger sockets, although these are a little easier to differentiate between.

One major point that does worry me about the Atom is the way Acorn have arranged the keyboard, however smooth it is to operate. Acorn recommend a quite simple way of installing it in the instructions. They also state that insulating washers should be used with the steel



screws to prevent shorting out of the keyboard matrix. This is because all but one of the screws falls between two adjacent pads.

Although the model I was appraising did not have any washers, with the length of connector wire on each of the keys it is possible for them to short out despite this precaution. They also suggest that you do not solder each of the connections too heavily as you may break the plated-through hole. It appears to me that it would be as easy to fracture the lead as it would the pad when the solder contracts as it cools. This would lead to an almost incurable fault as all the keys would have to be removed before repairs could be effected. I am sure the solid contact type would be preferable.

The board has been constructed well on thicker-than-usual piece of fibreglass with

silk screen overlay to help place the components.

There are a few components, however, which have to have their legs bent quite considerably to get them positioned correctly. I am sure that some of the capacitors and especially the crystals could be damaged easily by this action by an over-zealous assembler.

Everything else seems to go in quite neatly even though the voltage regulators do look a little hidden from view by their common heat-sink.

As is usual with the better designed kits the holes for the transistors are laid out for insulating pads although these are not included. Thankfully these transistors are of a larger body type than the ones which started off my campaign, and should tolerate a little more heat than those could.

As all the IC holders are supplied take care that you insert the right chips in the right sockets. Fortunately, all the chips are orientated with pin one towards the top or right of the board, which helps considerably. Another point about orientation is the electrolytic capacitors which are used to smooth the power supply. They are scattered around about the regulators and vary in their direction of polarity. Each is marked with its own polarity as is the board where it resides, so there should be no excuse for getting it wrong.

The Acorn Atom comes in a very sturdy case which is the size of many machines' keyboard alone. Even though not all the possible options are included in the basic kit the back panel is already cut out to accept them all. It would be a good idea to block up the larger holes to prevent dust and dirt from getting into the machine, so long as the regulators do not get too hot.

The power supply, as I said is separate from the machine, and plugs into the back of the box. It is heavy enough to power all of the options and more. External power is available from one of the back connectors if required.

With the Home Computer from Texas Instruments, you can converse in the five major languages: BASIC, PASCAL, TI-LOGO, ASSEMBLER and it speaks English!



Registered Trade Mark
Texas Instruments

When you compare the TI-99/4A Home Computer to its competition, you'll find it is a truly remarkable machine. For a start, it enables you to use the most important programming languages. Something that is difficult to find on other comparable computers. What's more, it has a large 16 K Byte RAM memory capacity, expandable to 48 K Byte. With the addition of certain peripherals and a Solid State Software[®] Module a total combined RAM/ROM capacity of 110 K Bytes is available. The TI-99/4A Home Computer plugs into an ordinary TV set and can be expanded into a complete computing system with the addition of peripherals such as two ordinary domestic cassette recorders, remote control units, disk memory drives, speech synthesiser, and thermal printer. Via an RS 232 interface option, other peripherals such as communication modems, impact printers and



plotters can be attached. With its high resolution graphics with 32 characters over 24 lines in 16 colours (256 x 192 dots), three tones in five octaves plus noise, and BASIC as standard equipment and options such as other programming languages - UCSD-PASCAL, TI-LOGO and ASSEMBLER - and speech synthesis, you'll find that the TI-99/4A Home Computer more than compares with competition. Especially when the starting price is £340 or less. When you want to solve problems there are over 600 software programs available worldwide - including more than 40 on easy-to-use Solid State Software[®] Modules.

After all, from the inventors of the micro-processor, integrated circuit and microcomputer, it's only natural to expect high technology at a realistic price.

The TI-99/4A Home Computer: another way we're helping you do better.



We'll help you do better.

TEXAS INSTRUMENTS

TEXAS INSTRUMENTS HOME COMPUTER STOCKISTS

ABERDEEN Dixons **ALTRINCHAM** Boots **ASHFORD** Rumbelows **BARNET** Rumbelows **BASILDON** Rumbelows **BASINGSTOKE** Boots **BATH** Boots, Microstyle **BEDFORD** Carlow Radio, Rumbelows, Boots, Comserve **BILLERICAY** Rumbelows **BIRKENHEAD** Dixons **BIRMINGHAM** Dixons, Comet, Hewards Home Stores, Boots **BLACKPOOL** Boots **BLETCHLEY** Rumbelows **BOREHAMWOOD** Rumbelows **BRADFORD** Ackroyd Typewriters **BRAINTREE** Rumbelows **BRENTWOOD** Rumbelows **BRIGHTON** Gamer, Boots **BRISTOL** Dixons **BROMLEY** Rumbelows, Boots **BROMYARD** Acoutape Sound **CAMBRIDGE** Rumbelows, Dixons, Heffers **CANTERBURY** Rumbelows, Dixons **CARDIFF** Boots, Dixons, Computer Business Systems **CARLISLE** Dixons **CHELMSFORD** Dixons, Rumbelows **CHESTER** Boots **CHINGFORD** Rumbelows **COLCHESTER** Rumbelows **CORBY** Computer Supermarket **CREWE** Midshires **CROYDON** Boots, Dixons, Allders **DARTFORD** Rumbelows **DERBY** Datron Microcentre, Boots **DORRIDGE** Taylor Wilson **DUNSTABLE** Rumbelows **EASTBOURNE** Rumbelows **EDINBURGH** Robox, Esco, Texas Instruments, Dixons, B.E.M. **ENFIELD** Rumbelows **EXETER** Peter Scott, Boots, Dixons **GLASGOW** Boots, Esco, Robox, Dixons **GT. YARMOUTH** Rumbelows **HANLEY** Boots **HARLOW** Rumbelows **HATFIELD** Rumbelows **HEMEL HEMPSTEAD** Rumbelows, Dixons **HITCHIN** Rumbelows **HODDESDON** Rumbelows **HULL** Radius Computers, Boots, Dixons, Peter Tutty **ILFORD** Boots **IPSWICH** Rumbelows **KINGSTON** Dixons **LEEDS** Dixons, Boots, Comet **LEICESTER** Dixons, Boots **LEIGHTON BUZZARD** Computopia **LETHWORTH** Rumbelows **LINCOLN** Dixons **LIVERPOOL** Dixons, B.E.C. Computerworld **LONDON:** Balham Argos **Bow** Rumbelows **Brent Cross** Dixons, Boots **Camden Town** Rumbelows **City Road** Sumlock Bondain **Clerkenwell** Star Business Machines **Curtain Road** Eurocalc **Ealing** Adda Computers **EC1** Argos **Edmonton** Rumbelows **Finchley Road** Star Business Machines **Fulham** Mondial **Goodge Street** Star Business Machines **Hackney** Rumbelows **Hammersmith** Dixons **Hendon** Futurtronic **Holborn** Dixons **Hounslow** Boots **Kensington High Street** Video Palace **Knightsbridge** Video Palace, Harrods **Loughton** Rumbelows **Marble Arch** Star Business Machines **Moorfield** Dixons **Moorgate** Star Business Machines **New Bond Street** Dixons **NW1** Mountandene **Oxford Street** Selfridges, H.M.V., Dixons **Regent Street** Star Business Machines **Tottenham Court Road** Landau, Eurocalc **Victoria Street** Army & Navy **Wandsworth** R.E.W. **Wood Green** Boots, Rumbelows **Woolwich** Rumbelows **LUTON** Dixons, Rumbelows **MAIDSTONE** Dixons, Boots, Rumbelows **MALDON** Rumbelows **MANCHESTER** Orbit, Boots, Dixons **MIDDLESBROUGH** Boots, Dixons **MILTON KEYNES** Rumbelows, Dixons **NEWBURY** Dixons **NEWCASTLE** Boots, Dixons **NORTHAMPTON** Dixons **NORWICH** Dixons, Rumbelows **NOTTINGHAM** Bestmoor, Dixons, Boots **ORPINGTON** Rumbelows **OXFORD** Science Studio **PETERBOROUGH** Boots **PLYMOUTH** J.A.D., Dixons **PORTSMOUTH** Boots, Dixons **POTTERS BAR** Rumbelows **PRESTON** Dixons **RAMSGATE** Dixons **RAYLEIGH** Rumbelows **READING** Dixons **RENFREW** Comet **ROMFORD** Rumbelows, Dixons **RUSHDEN** Computer Contact **SANDY** Electron Systems **SCARBOROUGH** Video+ **SHEFFIELD** Datron Microcentre, Dixons, Video+, Wigfalls **SITTINGBOURNE** Rumbelows **SLOUGH** Boots, Texas Instruments **SOUTHAMPTON** Dixons, The Maths Box **SOUTHEND** Rumbelows, Dixons **ST. ALBANS** Rumbelows **STEVENAGE** Dixons, Rumbelows **STRATFORD** Rumbelows **SUDBURY** Rumbelows **SWANSEA** Dixons **TONBRIDGE** Rumbelows **WALTHAM CROSS** Rumbelows **WALTHAMSTOW** Rumbelows **WARE** Rumbelows **WARRINGTON** Boots **WATFORD** Computer Plus, Computer Centre, **WELWYN GARDEN CITY** Rumbelows **WETHERBY** Bits & Pieces **WOLVERHAMPTON** Dixons **WOODFORD** Rumbelows

SILVERSOFT

personal computer software

16K/ZX 81 SOFTWARE

NEW! MACHINE CODE ARCADE GAMES

"SPACE INVADERS"

Simply the best yet, this version is the nearest you can get to the real thing, on the ZX81.

"ASTEROIDS"

This is a de-luxe implementation of this game, which includes 3 sizes of asteroids, alienships, 5-levels of play & full ship controls.

"ARCADE-DROPOUT"

Excellent implementation of this exciting arcade game. Destroy the aliens, before they fill up the chutes and destroy you.

"STARTREK"

16K STARTREK: Exciting space adventure game including klingon, starbases, phasors, 8x8 galaxy, etc.

"SUPER-WUMPUS"

16K SUPER-WUMPUS: Can you hunt and catch the mysterious wumpus in his underground labyrinth? Intriguing underground adventure.

"GRAPHIC GOLF"

16K GRAPHIC GOLF: Test your golfing skills on SILVER-SOFT'S 18-hole golf course. Many hazards including lakes, trees, streams, rough, etc.

"3D-MYSTERY-MAZE"

16K 3D MYSTERY MAZE: Amazing three dimensional maze, uses fast m/c display, hundreds of different mazes. Find your way through the maze in 3D.

"GAMES PACK 1"

16K GAMES PACK: Fantastic value for money, nearly 50K of programs on one cassette. Five games including "Real Time Graphic" Lunar Lander, Starwars, Ham-murabi, Minefield, Mastermind.

**Prices ASTEROIDS OR DROPOUT £5.95
OTHERS £4.95**

Send S.A.E. for catalogue. When ordering 2 or more cassettes deduct £1.00

ZX81, VIC and BBC software wanted, excellent royalties.

Cheques/P.O. payable to SILVERSOFT

Name

Address

Dealer enquiries now welcome.

SILVERSOFT (Dept CVG)
35 Bader Park, Melksham, Wiltshire

DOWN TO BASIC

STORING AWAY YOUR SCORES

Sometimes it is necessary to store a set of related data items while processing them in a program. For example, you might want to store a set of game scores and then sort them into order.

To do this you can store them in a list — or, as it is sometimes known, a one-dimensional array.

To create such a list, you must first of all inform the computer of the name and size of the list. This is done by using a DIMension statement which takes the form

(line no.) DIM (array-list)

For example,

```
15 DIM A(30)
```

would set up a list called A which could hold up to 30 data items. It is possible to declare several lists in one DIM statement.

```
20 DIM L1(5),L2(5),L3(100)
```

In general, the rules for forming names of lists will be the same as those for forming names of variables.

To refer to a particular item of a list, use subscripts enclosed in brackets after the name of the list. The subscript indicates the position of the item in the list.

A(6)

refers to the item in position 6 of the list called A.

A subscript may be a constant, variable or any other valid arithmetic expression. If the value of the subscript is non-integer, then it will be truncated to an integer value.

The value of the subscript should lie in the range:

1 -> (size of list)

In some systems, the subscript may also take the value 0.)

Elements of lists are sometimes referred to as "subscripted variables", and may be used in a manner similar to ordinary variables. The following are all



examples of statements containing subscripted variables:

```
10 INPUT A(2),X,L1(10)
30 LET S = A(1) + A(2)
40 PRINT B(6)
25 IF A(1) = A(2) THEN 10
30 FOR I = A(N) TO A(N+6)
```

LISTS, STRINGS AND CHARACTERS

It is also possible to have a list of character strings e.g. a list of names.

Such a list may be created in a manner similar to a list of numeric values except that the name of the list is followed by a "5".

```
10 DIM A(10),N$(5)
```

would set up a list A, comprising of up to 10 numeric values, and a list N\$, comprising of up to five character strings.

The subscripts of a string array follow the same rules as those of an ordinary one-dimensional array (list), and the items of a string array may be used in a manner similar to string variables.

GETTING THINGS IN ORDER ...

A very common operation in computing is sorting a list of items into order e.g. sort a list of heights into ascending order, sort a list of names into alphabetical order. I will now look at a program that could be used to sort a list of 10 numbers into ascending order.

I should point out that the method I shall use is only one of many sort methods. It is a fairly simple method but not the most efficient. The choice of a sort method depends on the number of items to be sorted and the attributes of these items. Many commercial applications involve sorting very large numbers of items in which case efficiency becomes very important. The method I shall describe should suffice for the most simple applications.

This method basically consists of working through the list comparing pairs of adjacent items —

BY MOIRA NORRIE


```

if necessary swap the items so
that they are in the correct order
with respect to each other.
rem input data
repeat for each position in list
  input item in list-position
end repeat
repeat for each cycle
  let swap count = 0
  repeat for each pair
    if pair in order then goto end
    repeat pair
    swap pair
    add 1 to swap count
  end repeat pair
  if swap count = 0 then goto
print results
end repeat cycle
rem print results
repeat for each position in list
  print item in list-position
end repeat

```

This general program outline can be expanded into the following program. The best way to understand the program is to work through it using pencil and paper with some sample data.

NOW GET DOWN TO WORK ...

```

10 REM SORT 10 NOS IN
   ASCENDING ORDER
20 REM INPUT THE 10 NOS.
30 DIM A(10)
40 FOR I=1 TO 10
50   INPUT A(I)
60 NEXT I
70 REM SORT NOS.
80 FOR I=1 TO 9
   90   LET S=

100  FOR J=9 TO I STEP -1
110    IF A(J)<A(J+1)
120      REM SWAP A(J) AND
      A(J+1)
130      LET T=A(J)
140      LET A(J)=A(J+1)
150      LET A(J+1)=T
160      REM ADD 1 TO
      SWAP COUNT
170      LET S=S+1
180    NEXT J
190    IF S=0 THEN 210
200  NEXT I
210 REM PRINT RESULTS

```

```

220 FOR I=1 TO 10
230   RINT A(I);
240 NEXT I
250 END

```

In the worst case, all cycles would have to be performed before the numbers were in order. However, in many cases the numbers will be sorted before the last cycle. For this reason, a count of the number of swaps in any cycle is included. If in any cycle there are no swaps, then the numbers are in order and there is no need to continue.

COMMODORE BASIC

VARIABLES: Names of variables may be of any length and consist of any combination of letters and digits provided they start with a letter — however, only the first two characters are significant.

If a variable name is followed by %, it is an integer numeric variable and will take only integer values.

Integer variables cannot be used as control variables in a FOR loop.

STATEMENTS: Can have more than one statement per line using a ":" as a separator.

Numeric values will be converted from one type to another type when necessary e.g. if a real value is assigned to an integer variable, then the real value will be truncated to an integer.

The form of the IF statement is either of

```

<line no.> IF <condition> THEN
<statement(s)>
<line no.> IF <condition> GOTO <line
no.>

```

The ON statement can be used to transfer to one of a list of line nos. depending upon the value of a given expression

```

<line no.> ON <expression> GOTO
<list of line nos.>
<line no.> ON <expression> GOSUB
— list of line nos.

```

CLR clears all variables and memory space.

END terminates execution — can appear at any point in the program.

GET reads a character from a file or the keyboard buffer.

NEXT MONTH

It is possible to have an array with more than one dimension. The commonest case being the two-dimensional array — a table of related data items. Next month, I will describe the use of these two-dimensional arrays and I will also include an example showing the use of string arrays.

The version of Basic summarised in the next issue will be the Atari.

NEXT if no variable, then it is matched with the most recent FOR statement.

POKE writes specified value at specified memory address.

SYS used to call an assembly language subroutine.

WAIT used to suspend program execution.

FUNCTIONS: ASC returns the ASCII code of the first character in the specified string.

CHR\$ converts code number to character.

FRE returns the amount of free memory space.

LEFT\$ returns the leftmost characters of a string.

MID\$ returns a specified substring of a string.

PEEK value of byte in specified memory address in range 0 to 65535.

POS returns the cursor position.

RIGHT\$ returns the rightmost characters of a string.

SPC used in a PRINT statement to supply spaces.

STATUS returns status corresponding to last I/O operation.

STR\$ converts number to character string of digits.

TAN tangent.

TIME read internal clock.

USR calls the user's assembly language subroutine.

VAL treats the specified string as an arithmetic expression.

Plus ABS, ATN, COS, EXP, INT, LEN, LOG, RND, SGN, SIN, SQR, TAB.

GRAPHICS: Screen has 25 rows and 40 columns.

Special graphics characters.

AS THINGS GET TOUGH

WHAT DO YOU DESIRE?
UNFORTUNATELY, THIS PROGRAMME CAN
ONLY OFFER TOTAL WINNING KNOWLEDGE,
THE BASIC ELEMENT SO ABSOLUTELY
NECESSARY FOR POSITIVE HUMAN
DEVELOPMENT

As a man thinketh, so he
will be

This is a major break-through programme in human development disciplines which is destined to affect the lives of thousands of thinking men and women. It engages a remarkable new concept — A MULTI-DIMENSIONAL APPROACH TO HUMAN SUCCESS AND TOTAL ACHIEVEMENT

A must for the Listening Library of
every thoughtful man and woman
GROWTH and RENEWAL

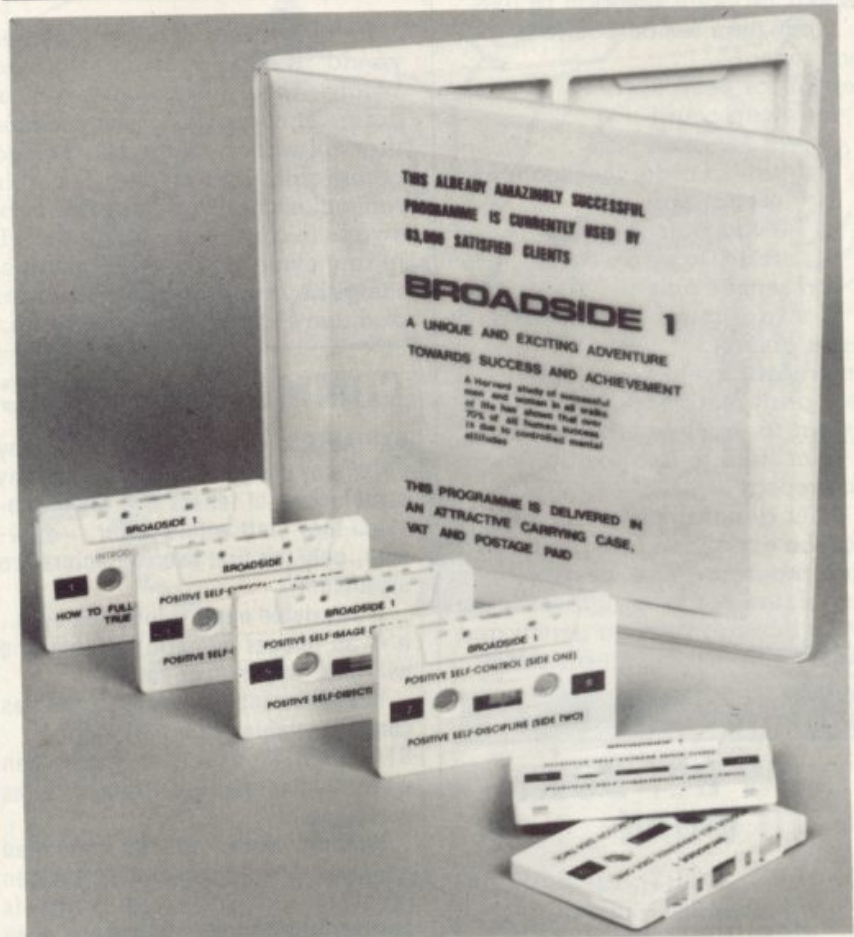


SELF-REALISATION

A lesson in winning — Broadside 1 is not a psychological gimmick but a profound professional in-depth study into the attitudes and the qualities that go into the formation of the total winner. It is a programme based upon years of exhaustive research, using clinically controlled feedback studies, into the ever present human desire for success and achievement as the basic motivating winning force that brings men and women alike to the forefront of our society. It is a unique and masterful attempt to define and to formulate into a controlled audio pack, the exact guide lines for creating the winner.

The motivated need

Have you ever given thought as to why some people are more successful than others? The secret of the successful lies in direct relation to their positive attitudes and their defined purpose control.



ACTION

Each unit of human life is composed greatly from dreams derived from the unconscious. He who has the ability and know-how to translate them into positive reality, will truly be placed amongst the great. **Anais Nin**

BROADSIDE 1—THE INSTRUMENT OF HUMAN DEVELOPMENT

To: Broadside Associates
2 The Spinney
North Cray, Kent

Please send me the full
Broadside 1 programme
for which I enclose a
cheque/postal order
(crossed) for the sum of £25 (incl. VAT and postage) made
payable to BROADSIDE (Allow a maximum 28 days for
delivery)

GUARANTEE

I understand that if I
am not fully satisfied,
I can, within 15 days
after despatch, return
the complete pro-
gramme and obtain a
full refund.

CC

PLEASE PRINT

Name
Address

Postcode County

THE HUMAN RESOURCES ORGANISATION
BROADSIDE ASSOCIATES

2 The Spinney, North Cray, Kent. Tel: 01-302 9119



Apple, Atari and NEC at hard-checked prices*

*Hardware or software, you don't have to shop around. We continually check all our prices and we're certain they are as competitive as you will find anywhere.



Apple VDU Disk Drives and Processor

Atari 800.



PACKAGE SYSTEMS

| | NET | VAT | TOTAL |
|----------------------------|---------|--------|---------|
| Apple Executive System | 1950.00 | 292.50 | 2242.50 |
| Apple Top Secretary System | 2150.00 | 322.00 | 2472.50 |
| Apple Education System | 1425.00 | 213.75 | 1638.75 |

APPLE HARDWARE

| | | | |
|-------------------------------------|--------|-------|--------|
| Apple 48K Video Output only | 625.00 | 93.75 | 718.75 |
| 16K Add on | 45.00 | 6.75 | 51.75 |
| Disk Drive with Controller (16 sec) | 345.00 | 51.75 | 396.75 |
| Disk Drive without Controller | 275.00 | 41.25 | 316.25 |

ACCESSORIES

| | | | |
|--------------|-------|------|-------|
| TV Modulator | 14.00 | 2.10 | 16.10 |
|--------------|-------|------|-------|

INTERFACE CARDS

| | | | |
|---------------------------|--------|-------|--------|
| Prototype/Hobby Card | 12.00 | 1.80 | 13.80 |
| Parallel Printer Card | 79.00 | 11.85 | 90.85 |
| Communications Card | 100.00 | 15.00 | 115.00 |
| High Speed Serial Card | 90.00 | 13.50 | 103.50 |
| Centronics Card | 100.00 | 15.00 | 115.00 |
| Integer Card | 90.00 | 13.50 | 103.50 |
| Language Card | 95.00 | 14.25 | 109.25 |
| Controller Card | 95.00 | 14.25 | 109.25 |
| Eurocolour Card | 65.00 | 9.75 | 74.75 |
| IEEE-48 Card | 200.00 | 30.00 | 230.00 |
| 16K RAM Card (48K to 64K) | 60.00 | 9.00 | 69.00 |

SOFTWARE

| | | | |
|--------------------|-------|------|-------|
| Apple Post Program | 27.00 | 4.05 | 31.05 |
| Apple Writer 1.1 | 34.00 | 5.10 | 39.10 |
| Stellar Invader | 13.00 | 1.95 | 14.95 |
| Apple Plot | 34.00 | 5.10 | 39.10 |
| Apple Adventure | 19.00 | 2.85 | 21.85 |

APPLE DISTRIBUTED SOFTWARE

| | | | |
|--------------------|--------|-------|--------|
| Micro Modeller | 375.00 | 56.25 | 431.25 |
| Visicalc 3.3 | 105.00 | 15.75 | 120.75 |
| VisiFile | 135.00 | 20.25 | 155.25 |
| VisiPlot | 95.00 | 14.25 | 109.25 |
| VisiTrend/VisiPlot | 135.00 | 20.25 | 155.25 |
| VisiTerm | 80.00 | 12.00 | 92.00 |
| VisiDex | 105.00 | 15.75 | 120.75 |
| Desktop Plan II | 105.00 | 15.75 | 120.75 |

LANGUAGES

| | | | |
|-------------------------|--------|-------|--------|
| Pascal Language System | 225.00 | 33.75 | 258.75 |
| Apple Pilot | 75.00 | 11.25 | 86.25 |
| Apple Fortran | 95.00 | 14.25 | 109.25 |
| CIS Cobol with Forms -2 | 410.00 | 61.50 | 471.50 |

PRINTER & ACCESSORIES

| | | | |
|------------------------|--------|-------|--------|
| Silentype Printer | 170.00 | 25.50 | 195.50 |
| 10 Rolls Thermal Paper | 28.00 | 4.20 | 32.20 |
| 10 Blank Disks 5.5/5D | 17.00 | 2.55 | 19.55 |

VIDEO MONITORS

| | | | |
|--------------------------|--------|-------|--------|
| BMC 12" Green Screen | 120.00 | 18.00 | 138.00 |
| 9" Black & White Monitor | 100.00 | 15.00 | 115.00 |
| Cables | 5.00 | 0.75 | 5.75 |

OTHER ITEMS

Z80 Softcard

| | NET | VAT | TOTAL |
|--------------|--------|-------|--------|
| 280 Softcard | 170.00 | 25.50 | 195.50 |

INTEGRATED ACCOUNTING PACKAGES SYSTEMATICS

| | | | |
|--------------------|--------|-------|--------|
| Sales Ledger | 150.00 | 22.50 | 172.50 |
| General Ledger | 150.00 | 22.50 | 172.50 |
| Purchase Ledger | 150.00 | 22.50 | 172.50 |
| Stock Control | 150.00 | 22.50 | 172.50 |
| Payroll | 150.00 | 22.50 | 172.50 |
| Invoicing | 150.00 | 22.50 | 172.50 |
| Financial Planning | 150.00 | 22.50 | 172.50 |

ATARI

| | | | |
|------------------------------|--------------|--------------|--------------|
| 400 16K Computer | 250.00 | 37.50 | 287.50 |
| 800 16K Computer | 500.00 | 75.00 | 575.00 |
| 410 Tape Recorder | 42.61 | 6.39 | 49.00 |
| 810 Disk Drive | 260.00 | 39.00 | 299.00 |
| 822 Thermal Printer | 200.00 | 30.00 | 230.00 |
| 825 80 Column Printer | 400.00 | 60.00 | 460.00 |
| 850 RS 232 Interface | 110.00 | 16.50 | 126.50 |
| 16K Ram Upgrade | 52.13 | 7.82 | 59.95 |
| Conversational French | 28.26 | 4.24 | 32.50 |
| Conversational German | 28.26 | 4.24 | 32.50 |
| Conversational Spanish | 28.26 | 4.24 | 32.50 |
| Conversational Italian | 28.26 | 4.24 | 32.50 |
| Assembler Editor Rom | 30.39 | 4.56 | 34.95 |
| Visicalc | 105.00 | 15.75 | 120.75 |
| Word Processor | 78.22 | 11.73 | 89.95 |
| Pilot | 60.83 | 9.12 | 69.95 |
| Star Raiders | 21.73 | 3.26 | 24.99 |
| Missile Command | 20.86 | 3.13 | 23.99 |
| Computer Chess | 19.09 | 2.86 | 21.95 |
| Super Breakout | 19.09 | 2.86 | 21.95 |
| Basket Ball | 19.09 | 2.86 | 21.95 |
| Space Invaders | 24.30 | 3.65 | 27.95 |
| Music Composer | 26.04 | 3.91 | 29.95 |
| Video Computer System | 69.56 | 10.43 | 79.99 |

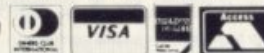
NEW - N.E.C. PC 8000 SERIES

| | | | |
|--|--------|-------|--------|
| PC 8001 Keyboard | 500.00 | 75.00 | 575.00 |
| PC 8011 Expansion Unit | 407.83 | 61.17 | 469.00 |
| PC 8012 I/O Unit | 346.96 | 52.04 | 399.00 |
| PC 8023 Dot Matrix Printer | 326.08 | 48.91 | 375.00 |
| PC 8031 Floppy Disc Drive | 543.48 | 81.52 | 625.00 |
| PC 8041 12" Green or Amber Monitor | 129.57 | 19.43 | 149.00 |
| PC 8043 12" High Resolution CRT Colour Monitor | 477.39 | 71.61 | 549.00 |

CONDITIONS OF BUSINESS.

We accept cheques or Access, Barclaycard, American Express and Diners Club Cards. All prices, specifications and terms are subject to change without notice at the discretion of the management. All offers subject to availability. Prices correct at time of going to press. E. & O. E.

Hardware Post and packaging subject to confirmation.



HARDWARE GUARANTEE

All advertised products are guaranteed one year from date of purchase against defects in materials and workmanship.

During the guarantee period, Metrotech will repair or replace, at no extra charge, components that prove defective - providing that the product is returned, shipping or postage prepaid, stating when bought and enclosing proof of purchase.

This guarantee does not apply if, in the opinion of the Company, the product has been damaged by accident, misuse or misapplication.

HOW TO ORDER

- State disk type and size • Add 15% VAT
- Include £2 per Software item for Postage and Packing
- Enclose cheque/PO's payable to METROTECH



METROTECH

A MEMBER OF THE GRAND METROPOLITAN GROUP

Mail to: METROTECH MAIL ORDER,
WATERLOO ROAD, UXBRIDGE,
MIDDLESEX UB8 2YW

CREDIT CARDS Telephone orders welcome.
Tel: 0895 58111 Ext 265 or 206

TRADE ENQUIRIES WELCOMED

SHARP MZ-80K



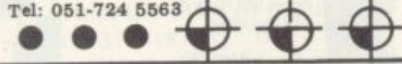
SPACE DEFENDER 11K (M/C) £8.00

A fast arcade-type game. THREE waves of attackers — each totally different. The first wave consists of RAMSHIPS, the second wave drops bombs. If you beat these, the third wave attacks, each saucer behind its own barrier, armed with homing and fragmentation bombs and the dreaded EYES!! Super Sound and Graphic effects — High Score.

KEITH OWENS

10 WAYVILLE CLOSE, LIVERPOOL L18 7LB

Tel: 051-724 5563



TR S80 — VIDEO GENIE

We have an exciting NEW range of software games for your computer and all at incredibly low prices.

Send S.A.E. TODAY for full lists to:- J. T. WILSON, (Dept CVG), 9 Cotswold Terrace, Chipping Norton, Oxon.

ARCADE GAMES FOR ACORN ATOMS

DEFENDER FOLLOWING ITS WORLD WIDE SUCCESS IN THE ARCADES WE BRING YOU THE ATOM VERSION. SAVE YOUR HUMANOID FROM MUTATION IN THIS HYPER-FAST ACTION GAME. MOVING PLANETARY SURFACE LASERS, SMART BOMBS, THRUST SPACE INCREASING ATTACK WAVES & 6 TYPES OF ALIENS. INC. EXCELLENT GRAPHICS (MODE 4) 12K RAM **£7** P&P

OMEGA MISSION AN ACTION PACKED VERSION OF THE ARCADE GAME. SCRAMBLE MOVING LANDSCAPE, MOUNTAINS, CANYONS AND TUNNELS YOUR FIGHTER MOVES IN 8 DIRECTIONS AND FIRES DEADLY LASERS 4 TYPES OF ALIENS. INC. COLOUR GRAPHICS (MODE 3A) 12K RAM **£7** P&P

PUCKMAN 12K RAM THE POPULAR MAZE CHASER. GAME EXCELLENT GRAPHICS (MODE 4) HIGH SPEED HIRES ACTION. ONLY £5 INC P&P

MISSILE COMMAND 12K RAM THE FAMOUS DEFEND YOUR CITIES FROM THE DEATH RAYS. COLOUR GRAPHICS (MODE 3A) ONLY £5 INC P&P

ALL GAMES HAVE SOUND EFFECTS. COLOUR GAMES GIVE B/W ON MONICHOME TV. NO FROM REQUIRED

MICROMANIA 14 LOWER HILL, RELEPSOM, SURREY

RETAIL SHOP, LEICESTER

FOR ZX81

Accessories, Software, Books

MICROWARE

131, Melton Road, Leicester. Tel: 681812

MONOPOLY

TANDY V. GENIE

- Computer challenges you at Monopoly as a player.
- For up to 6 players (including computer).
- Unique system featured whereby computer detects the skill of best player then adjusts its skill automatically to match that player.
- Computer's game at highest level is 'strong'.
- Every game different, close, exciting and challenging.
- Game data can be saved on tape to continue game at another time.
- Easy fool-proof entry ideal even for children to use.
- 2 versions of Monopoly included. 'Standard' — as to rules. 'Popular' — slight variation to rules.
- Many, many hours of fun for all the family.

On tape for the VIDEO GENIE and TRS-80, Model 1 & 3. Level 2, 16k. **£9.95 inclusive**

COMPUTICS MICROSOFT

1 BELL LANE, WHEATLEY, OXFORD OX9 1XY

A GAMES PLAYERS GUIDE TO THE VIC-20

EXPANDING MEMORY

The VIC-20 comes with 3.5K of usable memory and serious users will soon have to start thinking of expanding.

There is quite a choice about how you increase your VIC's memory. Commodore produces a memory expansion board which plugs on to the back of the machine and allows the user to stick in extra memory cartridges.

The Commodore cartridges presently available offer an extra 3K, 8K and 16K of RAM — £29.95, £44.95, £74.95 respectively. The memory board connects to the VIC expansion port, and has six ports to allow the user to have all three memory cartridges, plus programming aid cartridges plugged in at once, it costs £125.95.

Stack has a wide range of memory expansion kits using a piggy-back technique. 3K costs £25; 8K, £82 and £69; 16K, £124 and £99; 24K £167 or £129.

Stack also offers a special memory board which allows the user to protect 16K of memory so that programs can be kept in while the machine is switched off. A battery keeps the programs in memory for up to a year and with 19K of memory it costs £198.

Stack Computer Services is at 290/298 Derby Road, Bootle, Liverpool 20, Merseyside.

Arfon Micro has a VIC expansion system which allows up to seven cartridges to be added on to the machine. The memory expansion board costs £85 and the firm also produces three memory cartridges. 3K costs £26.04; 8K, £39.09 and 16K £65.17 (all plus VAT).

Arfon Microelectronics can be found at Cibyn Industrial Estate, Caernarfon, Gwynedd, North Wales.

Beelines gives the user a chance to expand his VIC up to 35K and have a 40 column by 24 row layout compatible with the viewdata standard. This expansion unit costs £253. Beelines is at 124, Newport Street, Bolton, BL3 6AB.

CHARACTER DEFECTS

The main criticism of the VIC is the lack of character space it allows on the screen.

The screen layout is 23 lines deep and 22 characters long. As a result the text seems too clumsy to be pleasant to read and only short areas of a program can be listed on screen at any time. Each character is formed by an 8 x 8 bit matrix, so in high resolution mode there is a possible 176 x 184 points to play with.

Up to 16 colours can be generated by the machine. Each character and the screen border can be one of eight different colours

The prospect of a low-cost colour computer supported by a company of Commodore's pedigree was the rich promise offered to the personal computer public last summer.

The promise was some time being fulfilled as a large backlog of orders built-up while the bulk shipping of computers from the German factories was delayed. But the personal computer user is used to frustrations of this sort and waited patiently. Now the VIC is rewarding that patience with a quickly growing range of games and game peripherals and a sales figure of 15,000 a month.

For your £199.99 (after VAT) you will receive the VIC computer complete with a QWERTY keyboard, a lead to plug into a home T.V. and a power supply lead. It comes complete with 3.5K of usable memory.

The VIC's bright colours and graphics are well suited to gaming and a dozen firms are producing games software for the machine. The peripherals come from just a few firms but there is already a wide range. Names and addresses are laid out below — if an address is missing it will be included elsewhere.

Commodore is based at 675, Ajax Avenue, Slough Trading Estate, Slough, Berks. SL1 4BG.

and the background, one of 16 possible colours.

Sound wise the VIC is equipped with four voices, alto, tenor, soprano and white noise. It also offers a volume control which ranges from 0 to a very loud 15.

Copying arcade games is usually a good test of a computer's sound and graphic facilities and the VIC produces some very faithful copies. The range of graphics characters provided by the VIC can be supplemented by defining your own graphics made up of 8 x 8 pixels.

Commodore produces a super expander hi-res cartridge to help improve the graph-



Botanist, T.V. presenter and larger than life character, David Bellamy gets to grips with some of the VIC-20's larger than life characters on his T.V. screen.

HARDCORE

A GAMES PLAYERS GUIDE TO THE VIC-20

ics capabilities and it costs £34.95. It includes commands like: paint, colour, draw, circle and sound.

SOFTWARE SUPPLY

Software for the VIC is growing in supply to meet demand.

At least 10 software firms are turning to VIC-20 production, some of which began in the business by supporting the Pet so many of the programs first on sale for the VIC are conversions.

Mr Micro of Manchester is an example of this type of firm. It started with Pet programs but now has moved on to VIC games. Over 40 programs are listed in his catalogue including Gold Rush which is a similar idea to the recently solved puzzle, posed in the book *Masquerade*. The object is to win a real nugget of gold by solving the game, the nugget going to the first person to do so. Another is a game entitled the Great Ballon Race.

Mr Micro can be reached at PO Box 24 Swinton M27 3AL.

Bug Byte is another major supplier having moved on from the Sinclair ZX81 and the Acorn Atom. on its lists at the moment are Vicmen, which is a version of Pacman, Vicgammon (backgammon), and a version of breakout called Another Vic in the Wall.

D K'tronics is in the process of building up its VIC-20 software library. Currently with Rox and Deflex on the books and one cassette with ten programmes. They cost £4.95 each and £6.95 for the multi program pack. An 8K hi-resolution Rox will soon be available for £4.95.

Some 17 programs are on the catalogue from Audiogenic including well-known games like Alien in which you have to trap foreign beasts and bury them in holes in the ground. That costs £7.99 for the pleasure. Also on the list is Star Wars the game based on the adventures of film screen hero Luke Skywalker. It costs £6.99.

Audiogenic imports games software from the American firm Creative Software who supplies VIC programs. The firm can be reached through PO Box 34-36, Crown Street, Reading, Berkshire.

Liverpool based Supersoft is just beginning to branch into VIC software after having been one of the leading Pet software suppliers. First off the production line is an eerie game called Nightmare Park which should sell for £4.99. And a war-based game Tank Battle is shortly to be available but has not got a fixed price yet.

For further details write to Supersoft at 1st Floor, 10-14 Canning Road, Wealdstone, Harrow, Middlesex.

Smaller firms providing a more limited range of software are as follows: Anglo American Software, 138a Stratford Road, Sparkhill, Birmingham, B11 1AG; Big Softie, 5, Ashton Park, Belfast, BT10 0JQ; Bridge Software, 36 Fernwood, Marple Bridge,

Stockport, Cheshire; G. Moore, 4, Ackers Road, Woodchurch, Birkenhead, Merseyside; Gibson & Harvey Enterprises, 49 St Leonards Road, Bexhill on Sea, East Sussex; Hi-Tech, 7 Queensway, Hemel Hempstead, Hertfordshire.

Thorn EMI is also in the process of developing software for the VIC-20.

Commodore itself is supporting the VIC with a range of ROM cartridges and also has a very addictive cassette game called Blitz. It costs £4.99.

JOY OF STICKS

Any gamer who has struggled with four directional keys while trying to keep half his mind focussed on the "fire" button knows who put the "joy" in front of "stick".

The VIC-20 currently has two joysticks available. The Commodore version costs £7.50 and includes a fire button.

Stack Computer Services includes joysticks in its large range of VIC peripherals. These retail at £13 each.

Commodore also offers a pair of paddles for £11.74 (plus VAT).

Stack supplies a light pen for the machine which works in both normal and hi-res modes, allowing interaction with the screen without using the keyboard, it costs £25.

Like the Pet the VIC-20 uses a specially made Commodore cassette recorder to load programs. It interfaces directly to the computer and includes a tape counter. The recorder uses standard cassettes and costs £44.95 (after VAT).

A single drive floppy disc unit for the VIC is available from Commodore. It has 174,848 bytes storage capacity and uses standard 5¼" single density floppy discs and costs £396 (after VAT).

The Vic printer's features include: 80 characters per line, a 30 character per second print speed, and double size graphics. It is a dot matrix printer and costs £230 (after VAT).

Stack produces a VIC-RS232 interface which will allow the computer to be connected to mainframe computers and act as a terminal or drive a daisywheel printer. It costs £49. A low-cost version of a bi-directional RS232 interface costs £17.25 and is also available from Stack.

Commodore's RS232C terminal type interface provides the opportunity to connect to telecommunications controllers and other computers it costs £34.95. Daisy-wheel printers can be interfaced to the computer via the Commodore IEEE-488 cartridge for £54.50.

Among Stack's other offerings are: a VIC games port cable adaptor which gives you two games port for joysticks and light pens; £17.25; a games port multiplexer needed for two joystick games, £33; and a VIC toolkit which includes hi-res graphics facilities and renumber and auto number features and costs £25 with a manual.

SUPERMARKET

ZX80 — ZX 81 HARDWARE

Tape recorder interface unit. Designed to help those with **LOADING** difficulties. Self contained at £12.50 inc.

Video amp. unit to allow ZX80/81 to drive standard video monitor. Much better pictures than on the T.V.'s. Self contained at £12.50 inc.

SAE for details

D. BRUCE ELECTRONICS
THE BEACON
BLACKHALL ROCKS
CLEVELAND TS27 4BH
TEL. 0783 863612

VIC 20 GAMES TAPES

Tape 1. Six super games all with great graphics, colour and sound. Four in a Row, Mean Maze, Pontoon, Bustabrick, Higher or Lower, Fruit Machine. Price £3 incl. P&P

Tape 2. Golf and Polaris Three, Advanced games. Price £2.50 incl. P&P

All run on standard machine. Send now to:
M. GARDINER, 103, Holmes Chapel Road, Congleton, Cheshire.

VIC VALUE NO. 1

4 great games on one cassette for the basic Vic 20. Complete with guide.

No. 1. **HELICOPTER** — can you land a helicopter at sea?

No. 2. **VIC HUNTER** — Can you rid the Vic jungle of strange creatures?

No. 3. **DRAGON** — feed the dragon before he feeds on you. Excellent graphics.

No. 4. **ALIEN PLOT** — you are at the controls of a strange alien craft. Will you land it safely?

For the above at introductory price of £7.95 inc. write to MR MICRO LTD, PO Box 24, SWINTON MANCHESTER M27 3AL.

T.V. GAME OWNERS

TIRED of playing the same old games?
FRUSTRATED by the growing number of high-priced cartridges?
THEN join our **CARTRIDGE EXCHANGE CLUB**.
Send large SAE for details stating Console owned.

VIDEOCOMP

57 Woodlands Road, Ilford, Essex IG1 1JN.

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

ZX81 GAMES

HIGH QUALITY,
LOW COST SOFTWARE
(ABSOLUTELY NO RUBBISH)
GAMESTAPE 1, for 1K, only £3.95
10 Games incl. Asteroids, UFO, etc
GAMESTAPE 2, for 16K, only £4.95
Starfighter, Pyramid, Artist.
GAMESTAPE 3, for 16K, only £5.95
Catacombs... A Graphics
Adventure.
GAMESTAPE 4, for 16K, only £5.95
3D Monster Maze... Unbelievable
Graphics.

Cheque/P.O.s to

**J.K. GREYE SOFTWARE, Dept CVG,
16 PARK ST., BATH, AVON BA1 2TE.**

GOLD RUSH NEWS

You could still be the one to find over
£250 in your 3.5k Vic. Tape & prospect-
ing guide £16.00 Inc.

BALLOON RACE NEWS

Highest scores reached to date: 196.
By R Browne of W. Midlands and P A
Brain of Middx. Join the balloon race.
Every entrant has 3 chances to win for
£16.00. Runs in 3.5k Vic. Both the
above games are available from **MR
MICRO LTD, PO Box 24, SWINTON
MANCHESTER M27 3AL.**

SHARP AMERICAN-FOOTBALL

Excellent arcade game with great graphics
and sound. Pass ball and score goals for
points, but watch out for the other team's
players. High Score. **£5.00**

ACROBAT — burst balloons with flying man.
With graphics, sound and High Score. **£3.00**
Or Both for **£8.75**. Supplied on quality casset-
tes. Cheques payable to:

EXCALIBUR Software

6 Grange Avenue, Shiremoor, Tyne/Wear
NE27 0SZ.

**ADULT
ONLY**

VIDEO CLUB!

Ring: **0373:**
day or evenings (cheap rate)

830563

or send coupon to:

**VIDEO CLUB
1, DREWSTEAD RD.,
LONDON S.W.16**

Please send FREE details, I am over 18

NAME

ADDRESS

PHONE

Please remember to fill in your telephone number

HARDCORE

A GAMES PLAYERS GUIDE TO THE VIC-20

FOR AND AGAINST

The VIC-20 has various bad points for the
user. Other than the obvious 22 column
problem there is a distinct lack of expan-
sion sockets, any expansion being forced
outside the computer. This implies buying
expensive motherboards that aren't really
performing any expansion themselves.

There are a few software nuisances such
as input prompts being limited to 22
characters and extra scrolls when writing
at the bottom of the screen.

The cassette storage system could be
better. Load and verify errors are not log-
ged until the end of a file and the data rate
is no faster than normal audio techniques
— the special system used by Commodore
could be a lot faster without increasing
errors.

In its defence, the VIC has good Basic,
super graphics and is of good mechanical
construction. The package seems excellent
value for money being compatible with the
Pet and having oodles of add-on peripher-
als.

The after sale support is alright consider-
ing that add-ons, software and literature
are not really around yet. I had the misfor-
tune to be caught up in the power unit
recall by Commodore and their approach
and speed in this matter could not be
faulted.

All in all, an excellent machine and well
worth its purchase.

PLUG-IN GAMES

One of the VIC-20's great gaming advan-
tages over other computers is its plug-in
cartridges.

Commodore is supporting the computer
with a range of games programs recorded
on cartridge which plug into the back of the
machine and include enough extra memory
for the unexpanded VIC to recreate popular
arcade games.

These sell for £17.35 (plus VAT) and the
range is expanding quickly. It includes a
marvellously accurate copy of arcade space
invaders (complete with 21-14 flying sauc-
ers) which sells under the name VIC
Avenger. And just released a Packman
game called Jelly Monsters which com-
pares well with the arcade original.

Galaxians is to be found in this form as
Star Battle and my own favourite is a Rally
X variant called Rat Race. Also out are
Alien, Road Race, Super Lander and Super
Slot.

Due out soon in cartridge are a series of
five Scott Adams Adventures, including:
Adventure and Mission Impossible and an
exciting and imaginative Pinball game.

Commodore has taken its time to bring
these games out but it is aiming for a high
quality rather than quantity and in the case

of Avenger, Rat Race Jelly Monsters and
Star Battle has succeeded in this aim.

Arfon Micro hopes to have a range of
cartridges available for the VIC ready by
this summer. Similar to the Commodore
games cartridges and costing around £30,
the Welsh firm has plans for a dozen games
initially, including space invaders,
Richochet and City Bomber.

WRITTEN WORDS

The time to write books on the VIC has
been short but there is already a selection
on sale rushed out to meet demand.

Getting Acquainted With Your VIC-20 is
by Tim Hartnell, author of a book going by
the same name for the ZX81. It costs £5.95
and is obtainable from Kuma Computers, 11
York Road, Maidenhead, Berkshire.

The VIC Revealed by Nick Hampshire is
said by some buyers not to live up to its
name, causing them confusion. It is pub-
lished by Nick Hampshire Publications at
PO Box, 13, Lysander Road, Yeovil, Somers-
et and costs £10.00.

Touching on machine code for those
users interested in the subject is a book
called **Assembly Language for VIC-20** by Dr
P. Holmes, price £10.00. Copies can be
obtained from the author by writing to 21
Colin Drive, London NW9 6ES. This 20
page book contains a 6502A instruction set,
programs, exercises and an assembler list-
ing.

At the beginner's end of programming
try **Start With Basic on the Commodore
VIC-20** which costs £4.95. Written by Don
Munro and illustrated by Bill Tidy it is
available from Tiny Publishing, 25, Beech
Hill, Haywards Heath, Sussex.

Sigma Technical Press is planning to get
in on the act and is in the process of
compiling a book about the VIC-20 but
precise details are not yet available.

Commodore publishes several books on
the machine, including: **Learn Computer
Programming with the Commodore Vic** by
L. Carter and E. Huzan which costs £1.95
the **VIC-20 Programmer's Reference Guide**
is by A. Finkel, N. Harris, P. Higginbottom
and M. Tomczyk. It costs £14.95.

Commodore also produces books with
demonstration cassettes to help users get
the most out of the computer. **Introduction
to Basic** (part 1) costs £14.95 and the
Programmer's Aid Cartridge gives 20 extra
command words to help make the pro-
grammer's life easier. It includes advice on
using the function keys and includes AUTO
TRACE, RENUMBER and MERGE com-
mands. It costs £34.95.

A **Machine Code Monitor** cartridge ar-
book helps the user get to grips with 6502
assembly language. It has assembly
disassembly, hex dump, relocate, brea-
point and transfer among its features and
costs £34.95.

SOFTWARE GLOSSARY

A beginner's guide to plain jargon

ADVENTURE: A type of game in which the player has to take a character role and retrieve a number of treasures or objects by a trial and error process giving instructions to the computer. The player encounters a variety of hazards often taking the form of dangerous monsters, wizards and animals. Some Adventure games are so complex that they take weeks or months to solve. Adventure games were originally written for massive mainframe computers.

ARRAY: A series of items — data or information — arranged to form a meaningful pattern.

BASIC: The most widespread computer language which is one of the easiest to learn and is used on all microcomputers.

BUG: A slang term given to a mistake in a computer program which prevents it from working. It can refer to a mechanical, electrical or electronic fault.

CHIP: A tiny piece of silicon which holds all the components which make up a microprocessor.

COMPUTER PROGRAM: A specified set of instructions which perform an operation or task for the computer user.

COMPUTER LANGUAGE: A language is used when writing programs and is vital for making the computer perform operations. A language consists of computer instructions or commands. There are different types of languages for carrying out different tasks.

CONCATENATION: To unite in a series, to form a link or a chain.

HARDWARE: The general term given to all pieces of electronic and mechanical devices which make up a computer system, i.e. the actual machines.

HIGH RESOLUTION GRAPHICS: Graphics which can be reproduced in great detail or to a high degree of accuracy.

KILOBYTE: A measurement of memory capacity. 1024 bytes of memory, so 8K is equivalent to 8192 bytes.

LOOP: A Basic function referring to the repeated execution of a series of instructions for a fixed number of times.

MACHINE CODE: The term used to refer to symbols or numbers assigned to parts of a machine. It is the same as operation code which is the symbol

telling the computer which operation to perform. When a game is written in machine — sometimes known as assembly language — it speeds up the action.

MAINFRAME COMPUTER: The jargon word used to describe a very large computer capable of storing a vast amount of information in its memory banks.

MICROCOMPUTER: A tiny computer consisting of hardware and software. The main processing blocks are made of semiconductor integrated circuits.

MINICOMPUTER: A small computer system which gives higher performance than a microcomputer, costs more, has richer instruction sets and a proliferation of high level languages and operating systems.

OPERATING SYSTEM: Firstly, this can be used to describe an organised collection of techniques and procedures for operating a computer. Secondly, it refers to a part of a software package — the program or routine — defined to simplify procedures including input/output and data conversion routines.

PERIPHERALS: Equipment which is used with a computer system, e.g. printers, disc drives, and VDUs.

PSEUDOCODE: Computer instructions written in a symbolic language by the programmer which must be translated into machine language.

RAM (Random Access Memory): This is a memory chip which you can load programs and data to and from.

ROM (Read Only Memory): A memory chip which can only be read from but not written into after the initial data has been input.

ROUTINE: A set of coded computer instructions used for a particular function in a program.

SOFTWARE: Another name for computer programs. It can also refer to computer documentation.

STRUCTURED PROGRAMMING: A set of techniques designed to increase the reliability and comprehensibility of programming by making the programmer more disciplined.

SUBROUTINE: A computer program routine that is translated separately.

VDU (Visual Display Unit): A monitor, like a television, which is connected to a computer and is used to display information from the system's memory.

Bridge Software

Invaders

VIC20

VIC INVADERS in machine code for speed.
Full colour. 8 sound effects. No extra RAM needed.
Cassette and instructions£6.90

ZX81 Invaders

1k Games

ZX81 INVADERS IN MACHINE CODE FOR SPEED.
20 Invaders in 4 rows of five. Min. 4k RAM needed.
Cassette and instructions£3.00
1K GAMES (5 games) cassette and instructions £3.00

16k RAM Pack *only £35*

including FREE ZX81 Invaders cassette
** 64k RAM available soon **

Send s.a.e. for details, describing your system
Prices include post and packing in British Isles

BRIDGE SOFTWARE (G)

36 FERNWOOD, MARPLE BRIDGE
STOCKPORT, CHESHIRE SK6 5BE

Mail order only

DATABASE for VIC 20

Standard Machine, Custom Security,
Pass Word, 30 Addresses, Search,
Look. £5.95.
Games 1 = £4.95; 2 = £7.95; 3 = £9.95.
SAE for list.

CASS CONCERNS LTD. Maxet House,
Liverpool Road, Luton LU1 1RS.

DO YOU PLAY TV GAMES?

It could cost anything up to £1000 to own your own comprehensive library of cartridges for your TV games console.

We have such a comprehensive library for most systems, and are prepared to offer this facility to you at low daily rentals, with the option of purchasing at Special Discount Prices those cartridges which give you most pleasure.

For further details please send a large S.A.E. to E&E ENTERPRISES, P.O. BOX 8, SALTASH, CORNWALL PL12 6 YU.

HAVE YOU SEEN MR MICRO'S CATALOGUE? IT CONTAINS OVER 40 PROGRAMS FOR THE VIC 20. For your copy send a 9 x 4 SAE to MR MICRO LTD, PO Box 24, SWINTON MANCHESTER M27 3AL.

AD INDEX

| | | | |
|----------------------------|-------|----------------------------|-------|
| Acorn | 70 | Ibek Systems | 87 |
| Adda | 84 | Jennings | 61 |
| Addictive Games | 40 | Kayde Electronics | 68 |
| Algray | 12 | Leisurronics | 61 |
| Anglo-American Software Co | 96,97 | Low Electronics | 99 |
| Audio Computers | 2 | Macronics | 56 |
| Audio Video Offers | 95 | Maplin | OBC |
| Avon Computer Rentals | 95 | Memotech | 53 |
| Bug Byte | 20 | Metrotech | 79 |
| Bullock Computers | 56 | Micro & Video Palace | 28 |
| Broadside Associates | 78 | Microdeal | 62 |
| Calisto | 26,34 | Microtronic Software | 48 |
| Cambridge Learning | 61 | Molimerx | 16 |
| Caps Ltd | 98 | Orwin | 45 |
| Carnell Software | 85 | Personal Computer Palace | 45 |
| Chromasonic Electronics | 6 | Pleissis Electronics | 61 |
| Commodore Vic | 72 | Program Power | 14 |
| Compshop | 92,93 | Protos Computers | 91 |
| Computer Centre | 40 | Quicksilver | 38 |
| Control Technology | 71 | REW Video Products | 4 |
| Croydon Micros | 45 | Silica Shop | 15 |
| Data Asstette | 86 | Silversoft | 75 |
| DK'tronics | 91,94 | SRS Microsystems | 12 |
| Electronequip | 85 | Silversoft | 75 |
| Essential Software Co | 56 | SRS Microsystems | 12 |
| Everyman Computers | 85 | Superior Systems | 24 |
| Fuller Microsystems | 89 | Technomatic | 8 |
| Gala Set | 10 | Texas Instruments | 74,75 |
| Gemini Electronics | 89 | Twickenham Computer Centre | 95 |
| Henry's Radio | 40 | Video Services Bromley | 71 |
| Hewson Consultants | 70 | | |
| Holdco | 87 | | |

**the vic
centre**

Big savings for starters

If you're looking for a home computer, you'll already know that the VIC does it all. To help you get started, we have put together this attractive cost-saving package.

VIC-20 Colour computer

- + Cassette Deck
- + 10 Blank Cassettes
- + Introduction to Basic Part 1
- + User Manual



- + 12 months warranty
- + Fitted 13 amp plug

for only
£ 212

(price plus VAT £243.80)

NEW

Convert your VIC to a 40 Column 32k machine with this exciting new add-on
32k RAM Expansion + 40 column screen format
£199.95 plus VAT
40 column screen format only
£99.95 plus VAT

Dot Matrix Printer

Tractor feed, 80 characters per line at 30 characters/seconds.
£199.96 plus VAT

Memory Expansion Board

Multi-slot unit used to accept memory and/or game and program cartridges
£85.00 plus VAT

Plug-in Memory Expansion Cartridges

3k - **£26.04**, 8k - **£39.09**,
16k - **£65.17 plus VAT**

Single Drive Floppy Disk Unit

£395.00 plus VAT

The standard features of the Vic are: ★ 5K RAM expandable to 32K ★ 16 screen colours ★ 8 character colours ★ 3 tone generators, each of 3 octaves - plus white noise generator ★ Screen display 22 characters x 23 lines deep ★ Full PET type graphics ★ High resolution graphics capability ★ 8 programmable special functions.

Goods required

Price

| | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Add £4.00 post, packing and insurance for special deal and £1.00 post, packing and insurance for all other items. Add 15% to all prices for VAT

Total £

Name: _____ C.V.

Address _____

TERMS & CONDITIONS: All goods sold subject to Adda terms and conditions of sale. Full details available on request, but include 14 day money back guarantee. Adda 12 month hardware warranty. Please allow 21 days for delivery. Allow 7 days for personal enquiries to be cleared. Quoted price is exclusive of VAT.

MAIL ORDER to: Adda Home Computers Ltd.
FREEPOST, London W3 6BR or telephone your order (24 hours a day) to 01-992 9904 quoting your Visa, Access or American Express number.

* I enclose a cheque, made payable to Adda Home Computers Limited for

£ _____
* Please charge my Visa/Access/American Express account. My account number is

* Please add my name to your mailing list
* Delete as applicable

Date _____

SHOP ADDRESS: Adda Home Computers Ltd.
154 Victoria Road, Acton, London, W3.
(near North Acton tube station)
Tel 01-992 9904
OPEN: 10am-6pm (Tuesday-Friday),
10am-5pm (Saturday).

adda

**From West London's
mail order specialists:**

Latest special offers:

| | |
|--------------------------------|------|
| 48K Apple | £768 |
| 12in Green monitor | £115 |
| 12in Amber Phillips monitor | £135 |
| Epson printer | £399 |

ALL PRICES INCLUDE VAT

TWICKENHAM COMPUTER CENTRE LTD

72 Heath Rd Twickenham Middx TW1 4BW (01-892 7896/01-891 1612)

COLOUR ATOMS

Colour Atom (ATM3) £197.80

Acorn Atom ass. 5Kram 8Kram
+ new PAL Colour Encoder,
1.8A power supply and 4 free

Acornsoft cassettes

| | |
|----------------------------|---------|
| New Colour Encoder (ATM25) | £43.70 |
| Acornsoft cassettes | £10.81 |
| BBC21 Upgrade Model A to B | £115.00 |

*Prices inc. of VAT and Postage
All items in stock — quick delivery.*

ELECTRONEQUIP

128 West Street,
Portchester,
Hants PO16 9XE.
Tel: 0705 325354



ZX81 ADVENTURE SPECIALISTS

C2: VOLCANIC DUNGEON/HANGMAN £4.50

- A) VOLCANIC DUNGEON: Rescue if you can, the Elfin Princess. Mythical monsters, pits, fiery caverns, diminishing strength and water make your quest anything but easy.
FULL 16K PROGRAM ** SAVE GAME ROUTINE ** SINGLE KEY ENTRY
"Volcanic Dungeon is terrific value and I would recommend it to anyone."
Mrs. Thomas, Cornwall
- B) HANGMAN: Deluxe version of the classic game. Play against an opponent, or the computer's 400 word vocabulary. Good graphics.

C3: ALIEN INTRUDER/HIEROGLYPHICS £5.00

- A) ALIEN INTRUDER: You awaken to find you are the only survivor on the Explorer Class 3 Starship. Can you escape before you also fall victim to the Alien monstrosity that devoured the crew? There are many ways to end this adventure but only one way to survive!
FULL 16K PROGRAM ** INTERACTIVE GRAPHICS ** SAVE GAME ROUTINE **
- B) HIEROGLYPHICS: Decode the ancient 39 symbol alphabet in time to save the famous explorer, "Wullie Makeit" from a sandy grave.
FULL 16K PROGRAM ** ANIMATED GRAPHIC DISPLAY ** RANDOM CODE **

C4: WUMPUS ADVENTURE/MOVIE MOGUL £5.00

- A) WUMPUS ADVENTURE: FOR 1 TO 4 PLAYERS!: Seek the famous creature in the most dangerous Wumpus hunt ever. All the usual features are there: SUPER BATS ** PITS ** TREMORS ** SWAMPS ** MAGIC ARROWS **
PLUS Exciting new features: EVIL GOBLINS that will try to sacrifice you to the Wumpus. GIANT SERPENTS ** WUMPUS MUCK ** MAGIC SPRINGS
FULL 16K PROGRAM ** RANDOM & PRESET CAVE PATTERNS ** YOU CONTROL THE LEVEL OF DIFFICULTY ** GREAT FUN FOR YOU AND YOUR FRIENDS **
- B) MOVIE MOGUL: Guide your film through the often hilarious traumas of production. Use your budget wisely and you may make a fortune. Success depends on many factors and not just luck.
FULL 16K PROGRAM **

ORDERS: Plus 50p P&P or large S.A.E. for list to:

CARNELL SOFTWARE
4 Staunton Road, Slough, Berks. SL2 1NT

The above are also available from: BUFFER MICROSHOP, STREATHAM, LONDON

SPECIAL OFFERS

Prices include VAT

- * NEW SHARP MZ-80A Personal computer. 48K Green screen, free software + dust cover. £549.00 ☐
- * VIC 20 Colour computer and cassette player. £244.94. Free introduction to Basic worth £14.95 + Free dust cover. ☐
- * GENIE I £10 off — only £333.00. Free software and dust cover. ☐
- * DAI 48K colour computer. Free cassette player. Free software and dust cover. £688.00. ☐

Name:

Address:

Access/Barclaycard No.:

Everyman Computers



14 Edward Street, Westbury, Wilts
Tel.: 0373 864644/823764
Phone for Credit details



ZX99

AUTOMATIC TAPE CONTROL

The logical extension for the Sinclair ZX81 giving data retrieval & word processing

£59.95
plus P & P

The ZX99 Tape Control system is a sophisticated extension to the Sinclair ZX81 Microcomputer, providing remarkable additional capabilities, which allow both the beginner and expert access to a professional computing system without the expected expense.

★ DATA PROCESSING

The ZX99 gives you full software control of up to four tape decks (two for loading and two for saving) allowing 'mixing' of data files to update and modify them. This is achieved by using the remote sockets of the tape decks to control their motors as commanded by a program.

★ PRINTER INTERFACE

The ZX99 has a RS232C interface allowing you direct connection with any such serial printer using the industry standard ASC11 character code (you can now print on plain paper in upper and lower case and up to 132 characters per line.)

★ MANY SPECIAL FEATURES

There are so many different features that it is difficult to list them all:
For example:

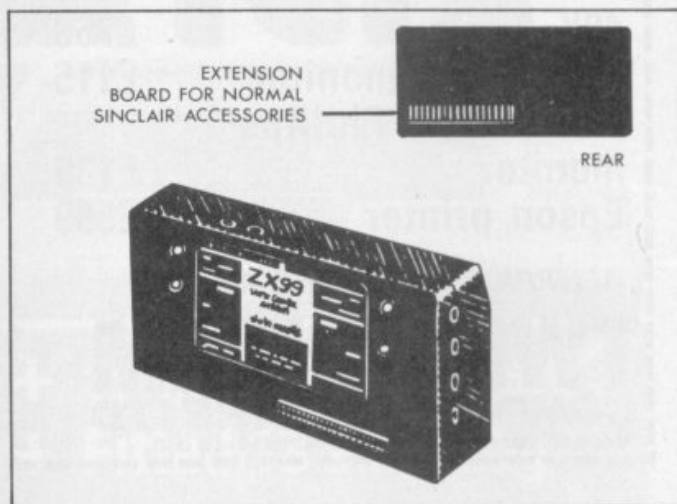
AUTOMATIC TAPE TO TAPE COPY: You can copy any data file regardless of your memory capacity (a C90 has approx 200K bytes on it) as it is loaded through the Sinclair block by block.

TAPE BLOCK SKIP without destroying the contents of memory.

DIAGNOSTIC INFORMATION to assist in achieving the best recording settings.

The ZX99 contains its own 2K ROM which acts as an extension to the firmware already resident in your ZX81's own ROM. The ZX99's ROM contains the tape operating system, whose functions are accessed via Basic USR function calls. Each function has an entry address which must be quoted after the USR keyword. All of the functions can be used in program statements, or in immediate commands (i.e. both statements with line numbers and commands without them).

COMPREHENSIVE USER MANUAL INCLUDED IN PRICE



BUSINESS, EDUCATION & FUN



| COMPUTER CASSETTES | QTY | PRICE | TOTAL | ITEM | QTY | PRICE | P&P | TOTAL |
|----------------------------|-----|-------|-------|---|-----|---------|--------|-------|
| C5 | | 35p | | ZX99 Automatic Tape Controller + Super Software | | £ 59.95 | £ 2.95 | |
| C10 | | 37p | | E312 Cassette Tape Drive | | 24.00 | 1.00 | |
| C12 | | 38p | | | | | | |
| C15 | | 39p | | | | | | |
| C20 | | 41p | | | | | | |
| C25 | | 43p | | | | | | |
| C30 | | 44p | | | | | | |
| C15 Leaderless | | £1.00 | | | | | | |
| Add min £1.50 or 10% P & P | | | | | | | | |



Cheque/PO payable to Storkrose Ltd.

or Charge my Access/Visa card no:

SIGNED

ORDER FORM TO:

data-assette

Dept: CVGI
44 Shroton Street,
London NW1 6UG Tel: 01-258 0409
Telephone enquiries welcome

NAME

ADDRESS

GAMES

THE NAUGHTY ONE

An adventure for (very) broadminded people. Pay your way through gambling dens, bars and houses of vice, be secluded or seduced, earn a slave, acquire part of your opponents' bodies. Loose your money and borrow... (ha... there is no bank, only a pawnbroker, whose sole collateral will be some of your clothes) Gamble for the clothes of your opponents, force the pawnbroker to auction some clothes (preferably from other players...), be given some saucy tasks or dole some out. Build a massage parlour and bankrupt (or undress) your opponents, if they are unlucky...

A mini version of this game is now available on cassette. The maxi version on disk is much more expanded and contains in between other things 40 pubs and bars, 20 gambling houses, and also... .. no, we won't tell.

Play it safe (for tokens) or play it hard. If you dare, that is...

A SPHINX COMPUTER GAME

GOLD

Find your way to more than forty rooms, collect the treasures and try to get out with them.

Very addictive. With the game come instructions on how to win a Memotech Memory Expansion.

On the same tape: Pick a Word, a game of skill. Try and beat your children at it.

A HILDERBAY GAME

CENSORED



THE SECRET OF TAMWORTH MANOR

A chance to WIN £1000 in real money, and have a lot of fun into the bargain!

William Tamworth buried the Tamworth family fortune near Tamworth Manor during the Civil War. The Manor was razed to the ground, and William was killed. Only old Charles Tamworth knows about the tragedy. He learnt about it from the family archives and has spent many years on research which has convinced him that the treasure is still there, just a few feet under the surface. But he no longer needs the money. Charles Tamworth is dying. He has no descendants, and chooses to leave the family secret to his best friend, wrapped up in riddles which only his friend should be able to understand.

Somewhere in British soil is a real treasure, worth "ONE THOUSAND POUNDS". Can you find it?

We are talking about a "Real Treasure!!!"

Our adventure-game, "THE SECRET OF TAMWORTH MANOR" consists of two cassette tapes and runs on Atari or ZX81. The first cassette which is available now contains enough information to keep you busy for quite some time.

In order to keep things fair and give everybody an equal chance, we shall dispatch all the second tapes together, on the 31st of May. This does not mean that the adventure will not be available thereafter. It will be.

Somewhere in your travels (yes, there is some real 'out of doors adventure' involved) you may find unexpected help.

The treasure is buried in token and only genuine purchasers of the game can exchange this token for a cheque worth "ONE THOUSAND POUNDS". It is therefore necessary to send us the form which comes with the tape.

Please note that we shall only pay to a person whose form is in our possession, so make sure that it arrives, e.g. by sending it recorded delivery.

Do not ask for any more information. All we are prepared to say is that the treasure is buried somewhere in the Home Counties, and definitely not near the first place you have to find. Only clues there...

ORDER FORM

| GAME TITLE | cassette (16K) | | diskette (48K) | |
|--------------------------------|----------------|-------|----------------|----------|
| | ZX 81 | Atari | Atari | Apple II |
| THE NAUGHTY ONE (mini version) | 9.50 | 9.50 | — | — |
| THE NAUGHTY ONE (maxi version) | — | — | 24.50 | 24.50 |
| GOLD (A Hilderbay Game) | 8.50 | 8.50 | 12.00 | 12.00 |
| TAMWORTH MANOR I | 14.95 | 14.95 | — | — |
| TAMWORTH MANOR II | 9.50 | 9.50 | — | — |

Circle items wanted.

Name

Address

Town Postal Code

Remittance enclosed

V.A.T. is included. Please add 50p for P&P if order less than £10.00.

Send to

HOLDCO LTD. 14 BRITTON STREET LONDON EC1M 5NQ

SPECIAL FREE OFFER READ ON! VIC-20

THE FIRST FULL FEATURED COLOUR
COMPUTER AT UNDER £200!!



FEATURES

*Sound *Colour *5K Memory Expandable to 27K *Standard PET Basic *Full size typewriter Keyboard *Graphics *Plug-in memory expansion *Low-priced peripherals.

SPECIAL OFFERS AVAILABLE WHEN ORDERING YOUR VIC 20 COMPUTER

3K RAM CARTRIDGE FREE
or 8K RAM CARTRIDGE £32.95 incl. VAT
or 16K RAM CARTRIDGE £54.95 incl. VAT

PLUS FREE GAMES TAPE WITH
EVERY CASSETTE DECK ORDERED

THE FOLLOWING ITEMS NOW AVAILABLE

| | |
|------------------------------------|---|
| VIC 20 Colour/Sound Computer | <input type="checkbox"/> £189.95 incl. VAT* |
| VIC Data Cassette Deck | <input type="checkbox"/> £44.95 incl. VAT |
| VIC 3K RAM Cartridge | <input type="checkbox"/> £29.95 incl. VAT |
| VIC 8 K RAM Cartridge | <input type="checkbox"/> £44.95 incl. VAT |
| VIC 16K RAM Cartridge | <input type="checkbox"/> £74.95 incl. VAT |
| VIC Joystick Control | <input type="checkbox"/> £7.50 incl. VAT |
| Arfon VIC Expansion Unit | <input type="checkbox"/> £97.75 incl. VAT* |
| Machine Code Monitor Cartridge | <input type="checkbox"/> £34.95 incl. VAT |
| Programmers Aid Cartridge | <input type="checkbox"/> £34.95 incl. VAT |
| "Avenger" ROM Games Cartridge | <input type="checkbox"/> £19.95 incl. VAT |
| "Super Slot" ROM Games Cartridge | <input type="checkbox"/> £19.95 incl. VAT |
| "Alien" ROM Games Cartridge | <input type="checkbox"/> £19.95 incl. VAT |
| "Super Lander" ROM Games Cartridge | <input type="checkbox"/> £19.95 incl. VAT |
| "Road Race" ROM Games Cartridge | <input type="checkbox"/> £19.95 incl. VAT |
| Introduction to Basic (Part I) | <input type="checkbox"/> £14.95 incl. VAT |
| Carriage & Ins. on items marked* | <input type="checkbox"/> £3.45 incl. VAT |

TOTAL

All prices Subject to Manufacturers Price Changes

437 Stoney Stanton Road,
Coventry, CV6 5EA
West Midlands
Tel: (0203) 661162

IBEK
SYSTEMS

Name:

Address:

Please charge my Barclaycard/Access No.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

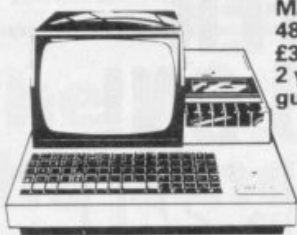
Signed:

Or telephone order.

CVG 6/82



COMPUTER SYSTEMS FOR THE HOME & BUSINESS ENTHUSIAST



Sharp MZ80K
48K RAM
£379
2 year guarantee

Twin Disk Unit £620
Column Printer £399
Single Disk Unit £412
FURTHER ACCESSORIES AVAILABLE



Sharp MZ80B
64K RAM
£1064
Fully Guaranteed

Twin Disk Unit £620
Column Printer £356
Single Disk Unit £412
Graphic RAM II....CPM....RS232
Basic compiler....Pascal....Double
Precision Basic....FDOS....IEEE Interface
...132 Col Printer... & many more
accessories available

Sharp 3201
Business Computer £1449
Monitor £240
Printer £434
Twin Disk Unit £649
Interface £118

SPECIAL OFFER ON COMPLETE SYSTEM £2772

Sharp PC1211 Pocket Computer
£93
• Programs in basic • Query
Alphabetical Keyboard • 1.9 K RAM •

(Long Battery Life with Interface £105)
Printer for the above £67

VIC 20
£199



Disk Drive,
Printer & Cassette
Deck Available P.O.A.

Atari 2600 plus Combat £95.45
Philips G700 Computer
Game of the Future only £84
Mattel Intellivision the most advanced
computer game an unbelievable £189

* Credit facilities available
* Mail order - make cheques/P. Order
payable to Video Services Bromley.
PHONE FOR FURTHER DETAILS

The Amazing Atari Personal Computers



32K upgrade for Atari 400 POA
Atari 400

16K RAM from only £299
Expandable to 32K - amazing
graphics & sound effects. The game
computer of the future must be seen
to be believed. Programs in "Basic"
"Assembler" "Pilot"

Atari 800 16K RAM £599
(Accessories for the Atari 400/800)
Single Disk Drive £435
16K RAM £65
Atari 41C Recorder £50
Joysticks £12.50
Printer Phone For Details

SPECIAL DISCOUNTS ON COMPLETE SYSTEMS

SOFTWARE

Philips (G7000) from £12.99
Matel Intellivision £16.75
VIC 20 from £14.95
Sharp Software from £6.32
Atari 400/800 from £9.95 (offering Arcade
& adventure games + education
& Business Applications)
Atari 2600 from £15.50

VIDEO SERVICES (BROMLEY)

8 SUNDRIDGE PARADE
PLAISTOW LANE BROMLEY KENT
near Sundridge Park Station

THE BROMLEY COMPUTER CENTRE

Prices include VAT
& may change during month

TELEPHONE 01-460 4169/8833



CONTROL TECHNOLOGY ZX81 16k SOFTWARE

PACK 16/1 includes all of:
AIR TRAFFIC CONTROL: Animated radar screen of busy
airport shown, you must bring planes into land;
INVADERS SELF PLAY; PHONEBOOK - keep friends
& relatives' numbers on cassette; DATE 81 -
computer dating program. Who will it pick for you?
ALL ONLY £4.95

PACK 16/2 includes all of:
ADVENTURE ATLANTIC: You may become very rich or
you may be marooned forever; BREAKOUT: SQUASH
PRACTICE: LANGUAGE TRANSLATOR translates any
European language to any other; COMPUTAPRINT -
use this program to predict results of horse races,
football pools, etc.
ALL ONLY £4.95

PACK 16/3 includes all of:
INDI 500: video roadrace; DRAUGHTS; Computer
Chequers; BATTLESHIPS - nautical warfare on your
own computer;
MASTERMIND - Brain Teaser, see if you can beat a
microelectronic mind.
ALL ONLY £4.95

The breakthrough you've waited for:
PROGRAM THE ZX81 IN ENGLISH!!
With GAMAL 81 you can now write adventure programs
in hours not weeks and with GAMAL 81 you'll have
every adventure you'll ever want for the price of one.
Comes on cassette with instruction book, £7.95

All our software comes with full instructions and is **SAVED** and ready to RUN,
no need to spend hours laboriously typing in from books.

CONTROL TECHNOLOGY - PERSONAL COMPUTER SCIENCE

Cassette 1½

A super value cassette of 16K and 1K software written in
Machine Code and Basic.
Includes:
Reed, Invaders, Phantom Aliens, Maze of Death,
Planetlander, I Ching, Hangman, Invaders, Laser Base,
rectangle plus more.
ALL ONLY £4.95

Tapebook 50, Version 3

50 programs for the 16K ZX81.
Latest version includes:
SQUASH, BREAKOUT, COLUMBIA SPLAT,
INTEGRATION, CREDIT CARD CALCULATOR, BANK
A/C, VATCHHECK, TANK BATTLE, TORPEDO,
HEXLOADER, BINARY CONVERTER, AND LOTS, LOTS
MORE.
Still amazing value at £8.95 the lot.

ZX-81

PACK 16/1 + 16/2 + 16/3
(any two only £5.95)
ALL THREE ONLY
£8.95

TAPEBOOK 50.3 + CASSETTE 1½
BOTH ONLY
£9.95

All prices include VAT and postage and packing

CONTROL TECHNOLOGY
39 GLOUCESTER ROAD, GEE CROSS, HYDE, CHESHIRE, SK14 5JG
061-368 7558



Ctech Software Simply Megabytes Ahead!

AT NEW M

DEFENDER: You defend the planet against UFO's, fast
moving, Hires Graphics, Sound effects, Thrust, Laser Torpedo,
climb, descend, superbly detailed G4 + T5 £4.00

ASTRO BATTLEZONE: fastened in the cockpit of your
starcruiser, you view the 3D graphics of the earth revolving
silently below, staring down your head up display you suddenly
glimpse the enemy hurtling towards you, you turn at them, the
horizon rolls over, the engines roar as you climb to the
stars G4 + T5 £5.00

FRUIT MACHINE: Our version has HiResgraphics, nudge,
collect, respin, gamble and even plays "Oranges
and Lemons" when you win G3 + T5 £4.00

POLECAT: Countryside Pacman, you must move your Rabbit
through the underground maze, but you are being chased by a
polecat so you must run like a rabbit until you've collected all your
your carrots growing on the top of the Burrow. G4 + T5 £5.00

MINEFIELD: You must steer your way through a perilous
minefield without exploding any mines; blasting mines can
cause chain reactions. G0 + T5 £5.00

EARLY WARNING: Atomic Missile Command, destroy the
attacking ICBMs using a realistic radar screen and intercept
missiles. G4 + T5 £5.00

N.B. G = GRAPHICS T = TEXT

ANY 3 ONLY £9.00

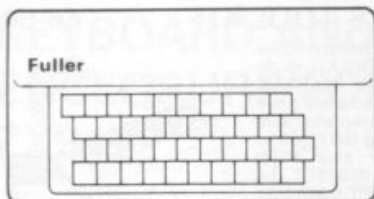
**Control Technology, 39 Gloucester Rd,
Gee Cross, Hyde, Cheshire SK14 5JG.**

All prices include VAT, P&P.

FULLER FD SYSTEM FOR ZX80/81

THE MOST VERSATILE SYSTEM FOR EXPANDING YOUR ZX

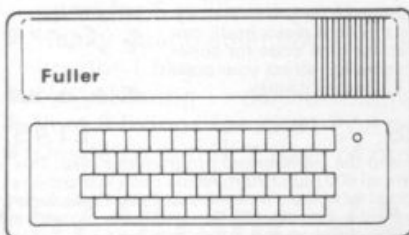
STANDARD KEYBOARD AND CASE



This splendid keyboard and case houses your ZX81 printed circuit board, which is simply screwed into place, the keyboard plugs into the ZX. You can now enter data with ease. The 40 key switch board is a custom unit not made up out of other manufacturers parts. The keytops are our own design and have the ZX Qwerty and functions foil printed onto them. Access to the user port, TV, MIC, and ear sockets are as per the ZX case.

Built keyboard and case £36.70 or £30.70 as a kit plus £2.10 postage and packing.

EXTENDED KEYBOARD AND CASE

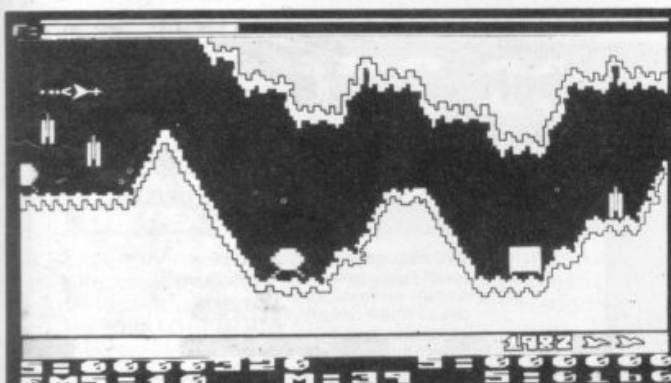


The case is designed to house not only the keyboard and ZX but also our motherboard, power supply, RAM cards and two other boards, not necessarily of our manufacture. The injection moulded case measures 200 mm x 350 mm x 60 mm and houses a 42 keyswitch board, the extra keys can be assigned to other functions. The case is supplied with a "Power On" LED.

Built keyboard and case £39.95 or kit £33.95 plus £2.50 postage and packing. Motherboards £15.95 plus 80p postage and packing. 16k RAM board £35.95. 64k RAM board £79.95.

Keyboard Only Available!
Built £24.95
Kit £18.95 (+P.P. 80p)

Send SAE for details to:-
**FULLER MICRO SYSTEMS, The ZX Centre,
Sweeting Street, Liverpool 2.**



AIRSTRIKE For The ATARI 400/800

● INTRODUCING THE NEW 'SCRAMBLE-TYPE' 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 £15.95 Plus 50p P & P
32K DISK £18.95

NEW TITLES: ● CRYPTS OF TERROR-16K ADVENTURE ● K-RAZY SHOOT OUT CARTRIDGE
● AMERICAN FOOTBALL-16K ● CAVERNS OF MARS-16K
● COMPUTE BOOK OF ATARI ● SANTA CRUZ TRICKY TUTORIALS

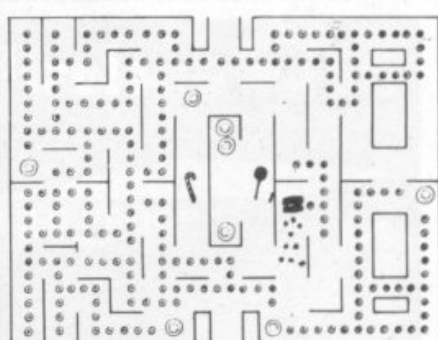
NOW IN STOCK: ATARI TV GAMES PLUS ACTIVISION CARTRIDGES AT DISCOUNT PRICES! WATCH OUT FOR PACMAN AND DEFENDER!

NATIONWIDE MAIL ORDER SERVICE ON ALL PRODUCTS - SEND STAMP OR CALL NOW FOR DETAILS

NOW IN STOCK ON 16K CASSETTE:

FROGGER @ £22.95
CROSSFIRE @ £19.95
SHOOTING GALLERY @ £15.95
RACE IN SPACE @ £15.95
Plus: on 32K DISK:
MOUSKATTACK @ £22.95
*THRESHOLD (unbelievable graphics!)
*RASTER BLASTER (real pinball!)
*ALI BABA & 40 THIEVES
*ULYSSES & GOLDEN FLEECE
*Call for Prices Add 50p P&P

MORE ATARI SOFTWARE DUE SHORTLY !!



For The ATARI 400/800

JAW BREAKER

16K CASSETTE/32K DISK £19.95 Plus 50p P&P

This arcade game takes you to the candy store for a wild game of tag with some of the rowdiest playmates you'll find anywhere. If you can eat all the sweets, the bratty kids will stop bothering you and after a quick stop and a brushing of the teeth, it's off to the store for another day of sweets and tag.

- Full Color Hi-Res Graphics
- Automatically Escalated Skill Level
- Quick Moving Animation

GEMINI ELECTRONICS

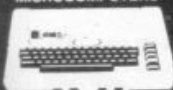
50 Newton St., Off Piccadilly, Manchester M1 2EA. Tel: 061-236 3083.

★ COMPUTER CHESS GAMES

Commodore VIC

PLUS GAMES NOW IN STOCK!

ATARI
MICROCOMPUTERS



ATARI
PERSONAL GAME SYSTEMS

400 & 800

ZX81**ZX81**

HEWSON CONSULTANTS

HINTS & TIPS for the ZX81 £3.95

by **ANDREW HEWSON**

THE MOST COMPLETE BOOK AT THE PRICE

"Good value and quite fascinating ... a very inexpensive way of acquiring months of programming experience" **YOUR COMPUTER** Nov 81

"Excellent ... very good value for money" **SYNC**

Saving Space ... Understanding the Display File ... Converting ZX80 Programs ... Chaining Programs (pass data between programs, call subroutines from cassette, establish data files) ... Machine Code Programs (write, load, edit, save and debug machine code). Routines and programs are scattered liberally throughout the text and the final chapter consists of twelve useful, interesting and entertaining programs.

16K RAM PACK

£34.95

A top quality add-on 16K dynamic memory specially designed for the ZX81. Simply plugs into the port at the back of your Sinclair. Can be used in conjunction with the ZX printer. Neatly packaged in a black plastic shell to match your ZX81. Incredible value, why pay more?



64k MEMOPACK

£79.00

Developed by Memotech this amazing 64K RAM needs *no* extra power supply. Simply plugs neatly and firmly into the rear port of your ZX81. Can be used with the ZX printer and other add-on hardware.

Just look at these features:

- * 8-16K can be switched in and out in 4K blocks to leave space for memory mapping
- * 12-16K can be protected against overwriting during loading from cassette
- * Directly addressable and user transparent
- * Up to 15K of basic program area
- * 32K or more of variables area
- * Additional rear edge connector for use with other add-on hardware
- * Facts sheet **FREE** with each RAM purchased.

16k SOFTWARE OR CASSETTE

PROGRAMMERS TOOL KIT

£6.50

Are you writing your own programs for the ZX81? Then use our **TOOLKIT** to do the donkey work. Copy it into RAM before you start work then you will have it at your fingertips. Comprehensive **LINE RENUMBER** including GOTOs and GOSUBs; **LOAD**, **EDIT** and **RUN** machine code programs; **INSPECT** the ZX81 system routines; **COPY** them into RAM and **PATCH** and/or **EXTEND** them; **FIND** a given piece of Basic code and **REPLACE** all occurrences of it; move blocks of Basic lines with **EDIT**. Sits above ramtop so you can use it with existing programs.



SPACE INTRUDERS

£5.95

40 alien ships in each squadron. All action display. Automatic option — the machine plays itself, can you do better? Written in machine code for super fast fun. Squadron after squadron attack your position. Three laser bases. Full score display.



Z80 OP CODES

£1.45

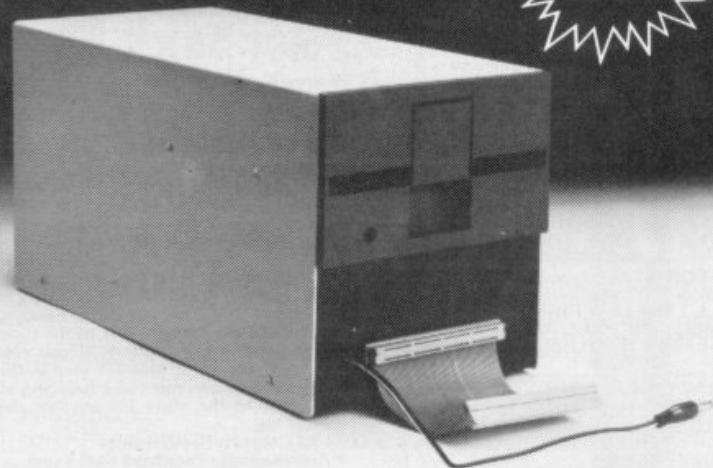
A must for the beginner and the experienced programmer alike. This handy ready reckoner lists all 600 plus Z80 machine code instructions in decimal and hexadecimal with their mnemonics. Each Op Code is succinctly explained and cross-referenced. Supplied in a protective transparent wallet for easy reference and durability.

Send SAE for full catalogue of software and hardware. Software titles include 'Pilot', 'Statistics', 'Planetlander' ...

All prices include V.A.T. and P&P.

Cheque with order or quote Access or Barclaycard number to:

HEWSON CONSULTANTS, Dépt C.V.G., 60A St. Mary's Street, Wallingford, Oxon, OX10 0EL.
TEL: (0491) 36307. PHONED ORDERS WELCOME.

it's here at last!**NEW**

Disc pack for the atom

Upgrade your atom with our new low cost disc pack only **£299** plus VAT

- 40 — track single-sided 5¼" disc drive
- power supply to run both the disc pack and a fully expanded Atom
- disc controller card with 4K DOS ROM
- 3k bytes of static RAM
- 64-way Euro-connector plug and cable
- full operating instructions and manual

The disc controller is based on the Intel 8271 chip. This highly intelligent device minimises the amount of control software and memory requirement and so allows phenomenal high speed operation. Both soft and hardware has been vigorously tested and proved very, very reliable.

You will need an Atom with bus buffers and indirect edge connectors. The mail order price is £350 including VAT post, packing and insurance, the price at your Atom dealer £345.

If you do not have a dealer near you just write to us at the address below, or credit card holders can ring Cambridge (0223) 245200 and order directly.



Acorn Computers Ltd.,
Fulbourne Road,
Cherry Hinton, CAMBRIDGE

The disk operating system (DOS) decodes the following commands used to control the storage of files on disk:—

- * **CAT** catalogue files on disk
- * **LOAD** load image of memory contents as file
- * **SAVE** save image of memory contents as file
- * **DELETE** delete file from disk
- * **SPOOL** store all printer characters on disk
- * **EXEC** read characters from disk as if from keyboard

The DOS also replaces the cassette operating system vectors as used by BASIC to allow the use of the following commands in Atom BASIC:—

- LOAD** load BASIC program from disk
- SAVE** save BASIC program to disk
- FOUT** open file for output
- FIN** open file for input
- SHUT** close file
- EXT** find extent of file
- PRT** find value of pointer into file
- PUT** put number to file
- BPUT** put byte to file
- SPUT** put string to file
- GET** get number from file
- BGET** get byte from file
- SGET** get string from file

These commands provide full random access of up to 5 disk files simultaneously.

PROTOS 2

KEYBOARD AND ENCLOSURE FOR ZX81



IDEAL FOR THE CLASSROOM, INDUSTRY, OFFICE OR HOME

- Top industry specification computer keys, not calculator types, and good for 6 million operations.
- Heavy gauge steel body enclosing ZX81 PCB and keyboard — weight 1.5kg.
- No soldering — connectors mimmick ZX81 connectors.
- Just 3 fixings for ZX81 PCB and 2 screws fix case.
- Despatch within 7 days of order.

£57.95 inc VAT + £2.50 p+p

CHEQUES TO "FROME COMPUTING". Details large SAE.

PROTOS COMPUTER SYSTEMS,
FROME COMPUTING, 20 ASHTREE ROAD,
FROME, SOMERSET, DA11 2SF.



VIC 20 SOFTWARE

QUALITY SOFTWARE FOR THE 3.5 VIC 20 COMPUTER

DEFLEX

Fast-moving action and spectacular colour and sound effects add to the excitement of this original game. Deflect the rapidly moving ball to hit stationary or moving targets. Records top ten high scores. 20 skill levels.

ROX

At last an original and compulsive space game. Defend your moon base from the deadly ROX from space. Increasing levels of difficulty and superb visual and sound effects make this the greatest new arcade-type game since Space Invaders.

DEFLEX and ROX on same cassette £4.95

ROX III

8K version of a popular 3.5K game.

3D LABYRINTH

VIC version of the Labyrinth game using excellent hi-res graphics.

Both program run hi-res graphics on Basic machine plus 8K of RAM. Both for £5.95.

SOFT KEY DEFINE PROGRAM

Written in machine code, allows you to program your function keys with 24 of the most popular keyboards i.e. FI=RUN etc. Runs on any memory size £3.95.

TEN SUPERB 3.5 PROGRAMS — ALL TEN FOR £6.95

GEM+

Create and store your own custom character sets.

TANX

Tank battle for 2 players.

MUSIC

Encode tunes in three-part harmony up to 130 notes long on 3.5k machine.

SPACE ZAP

Destroy alien spacecraft attacking your space station.

BREAKOUT

Superb sound and colour effects.

HI-RES

Sketch on a 128 x 128 pad using keyboard or joystick.

SPIRO

Create spirograph-type patterns in hi-res.

VIC TRICKS

Program demonstrates the special uses of VIC chip registers.

MASTERMIND

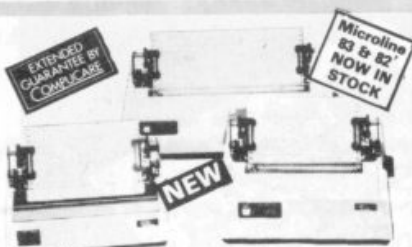
Uses colour and sound to the full.

WORD GAMES

Unusual and challenging game for 2 or more players.

dk'tronics

23 Sussex Road, Gorleston, Great Yarmouth, Norfolk.
Telephone: Yarmouth (0493) 602453



MICROLINE 80 £289 + VAT

● 80 cps Uni-directional ● Small size: 342 (W) x 254 (D) x 108 (H) mm. ● 160 Characters, 96 ASCII and 64 graphics ● 3 Character sizes: 40, 80 or 132 chars/line ● Friction and Pin Feed ● Low noise: 65 dB ● Low weight: 6.5 kg

MICROLINE 82 £449 + VAT

● 80 cps Bi-directional logic seeking ● Small size: 360 (W) x 328 (D) x 130 (H) mm. ● 160 characters, 96 ASCII and 64 graphics, with 10 National character-set Variants. ● 4 Character sizes: 40, 66, 80 or 132 chars/line. ● Built-in parallel and serial interfaces. ● Friction and Pin Feed ● Low noise: 65dB ● Low weight: 8kg

MICROLINE 83 £649 + VAT

● 120 cps bi-directional logic seeking ● 136 column printing on up to 15in forms ● Small size: 512 (W) x 328 (D) x 130 (H) mm. ● 160 characters, 96 ASCII and 64 graphics with 10 National character-set variants ● 3 Character spacings: 5, 10 and 16.5 Chars/in. ● Built-in parallel and serial interfaces ● Friction and Pin Feed ● Low noise 65dB ● Low weight: 13 kg

THE ANADEX DP9500 and DP9501 A PROFESSIONAL PRINTER



DP9500 — ONLY £845 + VAT
DP9501 — ONLY £895 + VAT

WE ARE NOW STOCKING THE APPLE II AT REDUCED PRICES AUTOSTART EURO PLUS



Getting Started APPLE II is faster, smaller, and more powerful than its predecessors. And it's more fun to use too because of built-in features like:

- BASIC — The Language that Makes Programming Fun.
- High-Resolution Graphics (in a 54,000-Point Array) for Finely-Detailed Displays.
- Sound Capability that Brings Programs to Life.
- Hand Controls for Games and Other Human-Input Applications.
- Internal Memory Capacity of 48K Bytes of RAM, 12K Bytes of ROM; for Big-System Performance in a Small Package.
- Eight Accessory Expansion Slots to let the System Grow With Your Needs.

You don't need to be an expert to enjoy APPLE II. It is a complete, ready-to-run computer. Just connect it to a video display and start using programs (or writing your own) the first day. You'll find that its tutorial manuals help you make it your own personal problem solver.

APPLE DISC II 3.3 Dos



Disc with Controller £339 + VAT
Additional Drives £289 + VAT

- Powerful Disk Operating Software Supports up to 6 drives
- Name Access to Files for Ease of Use
- BASIC Program Chaining to Link Software Together
- Random or Sequential File Access to Simplify Programming
- Dynamic Disk Space Allocation for Efficient Storage
- Individual File Write-Protection Eliminates Accidental File Alterations
- Loads an 8K Byte Binary Image in 6.5 sec. (1.2 sec. in Pascal)
- Storage Capacity of 116 Kilobytes (143K Bytes with Pascal) on Standard 5 1/4" Diskettes
- Powered Directly From the APPLE (Up to 6 Drives) for Convenience and High Reliability
- Packaged in Heavy-Duty, Colour-Coordinated Steel Cabinet
- Colour Monitors for Apple — £295 + VAT

LUXOR 14" COLOUR MONITOR FOR THE APPLE £295 + VAT

THE EPSON MX SERIES



MX80T £339 + VAT
MX80F/T £389 + VAT

- 80/132 Column
- Centronics Parallel
- Bi-directional
- Upper & lower case
- True Descenders
- 9x9 Dot Matrix
- Condensed and Enlarged Characters
- Interfaces and Ribbons available



CENTRONICS DOT MATRIX PRINTERS

737 £369 + VAT
739 £469 + VAT

- Standard Features
- Proportional Spacing
 - Right Margin Justification
 - 3 way paper handling
 - Upper and lower case
 - True Descenders
 - Bi-directional Paper Mode
 - Underlining capability
 - Condensed/Expanded Print
 - Sub-Scripts and Super Scripts
 - Pin and Friction Feed
 - 80/132 Column

739 as above with special feature of Dot Resolution Graphics.

NEC SPINWRITER



only £1490 + VAT

NEC's high quality printer uses a print "thimble" that has less diameter and inertia than a daisy wheel, giving a quieter, faster, more reliable printer that can cope with plotting and printing (128 ASCII characters) with up to five copies, friction or tractor fed. The ribbon and thimble can be changed in seconds. 55 characters per second bidirectional printing — with red/black, bold, subscript, superscript, proportional spacing, tabbing, and much, much more.

HITACHI PROFESSIONAL MONITORS

9" — £129 £99.95 + VAT
12" — £199 £149 + VAT

- Reliability Solid state circuitry using an IC and silicon transistors ensures high reliability.
- 500 lines horizontal resolution Horizontal resolution in excess of 500 lines is achieved in picture center.
- Stable picture Even played back pictures of VTR can be displayed without jittering.
- Looping video input Video input can be looped through with built-in termination switch.
- External sync operation (available as option for U and C types)
- Compact construction Two monitors are mountable side by side in a standard 19-inch rack.



ACORN ATOM

UNIQUE IN CONCEPT — THE HOME COMPUTER THAT GROWS AS YOU DO

Fully Assembled £157.50 + VAT inc. PSU

- Special features include
- Full Sized Keyboard
 - Assembler and Basic
 - Top Quality Moulded Case
 - Optional High Resolution Colour Graphics
 - 6502 Microprocessor

4K FLOATING POINT ROOM

£19.50 + VAT

COI OUR ENCODER £19.00 + VAT

We give a full one year's guarantee on all our products, which normally only carry 3 months guarantee.

A SELECTION OF APPLE INTERFACES ARE NOW AVAILABLE AT OUR EDGWARE ROAD SHOWROOM

INTRODUCING THE NEW GENIE

Ideal for small businesses, schools, colleges, homes, etc. Suitable for the experienced, inexperienced, hobbyist, teacher, etc.



GENIE I

STILL ONLY £279 + VAT

NOW INCLUDED: Sound, Upper and lower case, Extended BASIC and Machine Code enabling the Writing and Execution of Machine Codes Programming direct from Keyboard. 16K RAM, 12K Microsoft BASIC Extensive Software Range. Self-Contained PSU UHF Modulator Cassette. External Cassette Interface. Simply plugs into TV or Monitor. Complete and Ready to Go. Display is 6 lines by 32 or 64 Characters Switchable. 3 Manuals included, Users Guide, Beginners Programming and BASIC Reference Manual. BASIC Program Tape Supplied. Pixel Graphics.



GENIE II

£299 + VAT

The NEW GENIE II an ideal Business Machine: 13K Microsoft BASIC in ROM. 71 Keyboard. Numeric Keypad. Upper & Lower Case. Standard Flashing Cursor. Cassette Interface 16K RAM Expanded externally to 48K.

GENIE I & II EXPANSION UNIT WITH 32K RAM £199 + VAT

PARALLEL PRINTER INTERFACE CARD £35.00 + VAT



TEAC DISK DRIVES

- TEAC FD-50A has 40 tracks giving 125K Bytes unformatted single density capacity.
- The FD-50A can be used in double density recording mode.
- The FD-50A is Shugart SA400 interface compatible.
- Directly compatible with Tandy TRS80 expansion interface.
- Also interfaces with Video Genie, SWTP, TRS80, North Star Horizon, Superbrain, Nascom, etc., etc.
- Address selection for Daisy chaining up to 4 Disks.
- Disks-plus power supply housed in an attractive grey case.

| | | | |
|----------------------------|------------|-------------------|------------|
| 40 TRACK Single Disk Drive | £225 + VAT | Double Disk Drive | £389 + VAT |
| 77 TRACK Single Disk Drive | £299 + VAT | Double Disk Drive | £499 + VAT |

SALE MEMORY UPGRADES

16K (8 x 4116) £12.90 + VAT
4K Compukit (8 x 2114) £12.90 + VAT

WE HAVE ONE OF THE LARGEST COLLECTIONS OF COMPUTER BOOKS UNDER ONE ROOF, ALONG WITH SOFTWARE FOR THE GENIE, TRS80 AND APPLE.

NOW IN STOCK

THE NEW & EXCITING TRS80 MODEL III



48K £599 + VAT

The Radio Shack TRS-80™ Model III is a ROM-based computer system consisting of:

- A 12-inch screen to display results and other information
- A 65-key console keyboard for inputting programs and data to the Computer
- A Z-80 Microprocessor, the "brains" of the system
- A Real-Time Clock
- Read Only Memory (ROM) containing the Model III BASIC Language (fully compatible with most Model I BASIC programs)
- Random Access Memory (RAM) for storage of programs and data while the Computer is on (amount is expandable from "16K" to "48K", optional extra)
- A Cassette Interface for long-term storage of programs and data (requires a separate cassette recorder, optional/extra)
- A Printer Interface for hard-copy output of programs and data (requires a separate line printer, optional/extra)
- Expansion area for upgrading to a disk-based system (optional/extra)
- Expansion area for an RS-232-C serial communications interface (optional/extra)

All these components are contained in a single moulded case, and all are powered via one power cord.

Disc Drives Kit with 2x40 Track Drives — £599 + VAT
Disc Drives Kit with 2x80 Track Drives — £729 + VAT



SHARP PC1211
£69.95 + VAT

COMPUTER POWER THAT
ONCE FILLED A ROOM
CAN NOW BE CARRIED IN YOUR POCKET!

- Programs in BASIC • "QWERTY" Alphabetic Keyboard
- 1.9K Random Access Memory
- Long Battery Life.

SHARP CE122 PRINTER & CASSETTE INTERFACE £75 + VAT
CASSETTE INTERFACE ONLY £14.90 + VAT



£999 + VAT.

- 4 Mhz Z-80C™U • Dynamic RAM • 2K ROM • BASIC is provided • High Resolution Graphics • 9" High Focus Green Display • Upper and Lower Case • 80/40 Characters x 25 line display • Electro Magnetic Cassette Deck included • ASCII Keyboard • Numeric Keypad • Sound Output • Built-in Clock and Music.

Available Soon-Discs, Printers and other Accessories.

DUE TO IMMENSE POPULARITY SALE CONTINUED

UNTIL STOCKS LAST

- 6502 based system — best value for money on the market.
- Powerful 8K Basic — Fastest around
- Full Qwerty Keyboard
- 1K RAM Expandable to 8K on board.
- Power supply and RF Modulator on board.
- No Extras needed — Plug-in and go
- Kansas City Tape Interface on board.
- Free Sampler Tape including powerful Disassembler and Monitor with each Kit.
- If you want to learn about Micros, but didn't know which machine to buy then this is the machine for you.

Build, Understand and Program your own Computer for only a small outlay.

NEW MONITOR IN ROM — available separately at £7.90 + VAT.

Improved BASIC 3 ROM — revised GARBAGE routine allows correct use of STRING ARRAYS £4.90 + VAT
This chip can be sold separately to existing CompuKit and Super board users.

FOR THE COMPUKIT — Assembler Editor £14.90 Case for UK101 £29.50
GAME PACKS — 1. Four Games £5.00 2. Four Games £5.00
Super Space Invaders (8K) £6.50 Chequers £3.00 Realtime Clock £3.00
10 x C12 Cassettes £4.00 40 pin Expansion Jumper Cable £8.50 All Prices exclusive VAT

EUROPE'S FASTEST SELLING ONE BOARD COMPUTER COMPUKIT UK101



COMPUKIT WITH ALL THE FEATURES THAT MADE IT THE MOST PROFESSIONAL COMPUTER KIT ON THE MARKET. NOW WITH FREE NEW MONITOR (a saving), which includes Flashing Cursor, Screen Editing, & Save Data on Tape.

KIT ONLY £99.95 + VAT

Fully Assembled — £149 + VAT

PLUS £4.80 Post & Packing

4K Upgrade Kit £12.90 + VAT

YOUR ZX80 IS NOW NO LONGER REDUNDANT

Upgrade your ZX80 to the full animated graphics of the ZX81. (No screen flicker).

FOR ONLY £12.95 + VAT IN KIT FORM
Works only in conjunction with **NEW 8K ROM** from Sinclair (Not Included).

OUR NEW SUPER LOCATION IN IRELAND

19 Herbert Street, Dublin 2.
Telephone: Dublin 604165

HEAR OUR ADS ON RADIO NOVA 88.1 VHF Stereo

NEW The PEDIGREE PETS

RRP £795 for 32K



32K ONLY £569 + VAT

Very popular for home & business use. 8K Microsoft Basic in ROM. 32K with new improved keyboard. 12" screen. Cassette Deck £55 extra



8032 80 COLUMN PET

ONLY £825 + VAT

The reliable value for money system with after sales support, instruction and training facilities and a wide range of programmes.

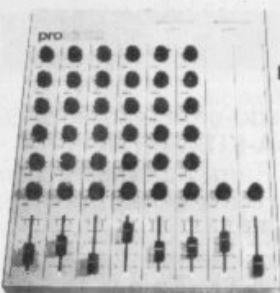
CASIO VL TONE

NEW £31.25 + VAT



It's a new kind of musical instrument. A computer controlled synthesiser that helps you create, play and arrange compositions that normally take years of music training. Also a calculator.

SECK 62 MIXER



Professional audio mixer that you can build yourself and save over £100.

Only **£99.90** plus VAT for complete kit. Plus **FREE** power supply valued at £25.00

COMMODORE VIC-20

ONLY £159 + VAT



- 16 foreground colours
- 8 background colours
- Real typewriter keyboard with full graphics
- Music in three voices and three octaves
- Language and sound effects

BBC COMPUTER

Please 'phone for availability and price



"Europe's Largest Discount Personal Computer Stores"

Delivery is added at cost. Please make cheques and postal orders payable to **COMP SHOP LTD.**, or phone your order quoting **BARCLAYCARD, ACCESS, DINERS CLUB or AMERICAN EXPRESS** number.

MAIL ORDER AND SHOP:

14 Station Road, New Barnet, Hertfordshire, EN5 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

NEW WEST END SHOWROOM:

311 Edgware Road, London W2. Telephone: 01-262 0387
OPEN (LONDON) — 10am - 6pm — Monday to Saturday

- **IRELAND:** 19 Herbert Street, Dublin 2. Telephone Dublin 604165
- **COMP SHOP USA,** 1348 East Edinger, Santa Ana, California, Zip Code 92705. Telephone: 0101 714 5472526

CREDIT FACILITIES ARRANGED — send S.A.E. for application form.

TELEPHONE SALES
OPEN 24 hrs. 7 days a week
01-449 6596



ZX 80/81 HARDWARE/SOFTWARE

ZX KEYBOARD

Now with repeat key and facilities to add numeric pad. The keyboard has all the 80/81 functions on the keys, and will greatly increase your programming speed. It is fitted with push type keys as in larger computers.

The keyboard has been specially designed for the Sinclair computer and is supplied ready-built. It also has facilities for 3 extra buttons which could be used for on/off switch, reset, etc. **£27.95.** Numeric add on **£10.**



4K GRAPHICS ROM

The dK 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 448 extra pre-programmed graphics, your normal graphic set contains 64. This means that you now have 512 graphics and with there 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/RAM. This holder is fitted with a 1K/2K RAM and can be used for user defineable graphics so you can create your own custom character sets. **£29.95.**

MEMORY 80/81

16K RAM

Massive add-on memory for 80/81. **£32.95.**

16K KIT-A-KIT VERSION

of a 16K Ram. Full instructions included. All memory expansions plug into the user port at the rear of the computer. 16K RAM **£42.95** 16K KIT **£32.95**

2K & 4K RAM

Static Ram memory expansion for the 80/81. They both work with onboard Ram i.e. 4K plus onboard = 5K. This is the cheapest small memory expansion available anywhere. 2K RAM **£14.95.** 4K RAM **£19.95.**

IO PORT

Interface your computer with the real world, our IO port has holders to add up to 6K of RAM. **£12.95.**

16K 81 SOFTWARE

As seen at the ZX Microfair.

DEFLEX This totally new and very addictive game, which was highly acclaimed at the Microfair, uses fast moving graphics to provide a challenge requiring not only quick reaction, but also clever thinking. One and two player versions on same cassette. **£3.95**

3D/3D LABYRINTH You have all seen 3D Labyrinth games, but this goes one stage beyond; you must manoeuvre within a cubic maze and contend with corridors which may go left/right/up/down. Full size 3D graphical representation. **£3.95.**

CENTIPEDE. This is the first implementation of the popular arcade game on any micro anywhere. Never mind your invaders, etc., this is positively stunning, the speed at which this runs makes ZX invaders look like a game of simple snap. **£4.95.**

Graphic ROM Software Centipede. The graphic ROM version of our popular Centipede game. The only real version of Space Invaders on the ZX81.

dK'tronics

23 Sussex Road, Gorleston,
Great Yarmouth, Norfolk.
Telephone: Yarmouth (0493) 602453

micro markets Ltd



**THIS IS FRED McNASH
WHO HAS NO CASH
HE CAN'T COMPUTE
WITHOUT SOME LOOT
WITH THINGS SO EXPENSIVE
HE FEELS VERY PENSIVE
BUT DON'T BE SAD
IT'S NOT THAT BAD
WE'VE MANY PERMS
OF EASY TERMS
APPLY FOR QUOTATION
FOR YOUR EDIFICATION**

THE SOLE OFFICIAL AGENT FOR THE BBC COMPUTER ON CREDIT TERMS

Avon Computer Rentals

FREEPOST 16 THORNBURY BRISTOL BS12 1BR
TELEPHONE (0454) 415460

BBC
ACORN
VIC
ATARI
SHARP
TEXAS
COMMODORE
APPLE
SUPERBRAIN
SIRIUS
PRINTERS
DISK DRIVES
SOFTWARE
SHORT-LONG RENTAL
CREDIT SALE
PERSONAL LOAN
HIRE PURCHASE
BUSINESS LOAN
LEASING

QVO

MORE SUPER PROGRAMS FOR APPLE'S & ATARI'S

APPLE PANIC.

HI-RES arcade madness! You have to climb ladders and dig holes to try to trap the monsters that pursue you, then cover them up before they can escape. Many levels of play to keep you enthralled.

Apple 48K Disk

£20.70.

Atari 32K Disk

£20.70.

TANKTICS.

Armoured combat on the Eastern Front of WWII. For strategists, this game will give hours of enjoyment and comes complete with large full colour map board and over 200 counters.

Apple 16K Cass

£16.50.

Atari 24K Cass

£16.50.

ALI BABA & THE FORTY THIEVES.

Guide your alter ego Ali Baba through the thieves mountain den in an attempt to rescue the princess. Treasure, magic and great danger await you! One or more players can guide up to 17 friendly characters through the many rooms and halls. Some characters just wander around randomly. This program is written in Hi-Res Colour and includes sound and music. Adventures can be saved to disk to complete later.

Atari 32K Disk

£23.00.

GALACTIC CHASE.

Galaxians type arcade fun.

Atari 16K Cass

£17.25.

Atari 16K Disk

£20.70.

ADVENTURE TO ATLANTIS.

Adventure to Atlantis has just made computer adventuring better than before. Can you imagine the most exciting adventure game ever composed with more colour, sound, highly detailed animation, arcade style action, true role playing, greater challenge, unending variety and endless enjoyment? That is what this is, together with a super adventure where the forces of sorcery are gathering to repulse the marauding scientific Atlantean Kingdom. The epic battle can end in the enslavement of the world or the absolute destruction of Atlantis.

Apple 48K Disk (DOS 3.3)

£27.60.

HADRON.

Hadron is a wild chase through a speeding Asteroid belt. Fabulous 3-D effects actually allow your ship to duck behind asteroids while following enemy space craft to their base.

Apple 48K Disk

£24.15.

SNACK ATTACK.

A Pac-Man type arcade game which is one of the Top Five best sellers.

Apple 48K Disk

£20.70.

DEALERS!

Check out our list of over 170 selected programs, from more than 20 manufacturers, for Apple's, Atari's, Pet's, TRS-80's, VIC-20's and even IBM. The best American games software available from one source at a full trade discount — and that can save you a lot of time, effort, trouble and money.

Allow up to 28 days for delivery.

All prices include V.A.T. and P & P

AUDIO VIDEO OFFERS.

FREEPOST, HODDESDON, HERTS. EN11 8BR.

Please rush me the following Programs/Dealer Information.

1.....

2.....

Name.....

Address.....

Postcode.....

1982 World Cup



Follow England, Scotland and Northern Ireland along the 1982 World Cup Trail. Every week there's the latest news and pictures to keep you up to date, as well as all the Football League reports and gossip.

match
weekly

ORDER IT WITH YOUR NEWSAGENT NOW

ANGLO AMERICAN SOFTWARE CO

UK Distributors for Automated Simulations

Hellfire Warrior

The sequel to the best-selling "Temple of Apshai", "Hellfire Warrior" gives you the challenge of more command options and more detail than you've ever imagined!

Four new levels with sixty rooms each will test the character of the most experienced, the most intuitive, the most intelligent adventurer. On Level 5, you'll have to outwit giant insects to stay alive. On Level 6, you'll discover that it's as much a puzzle to solve as a dungeon to explore —

because the only exit is hidden somewhere within the complicated labyrinth. On Level 7, you're constantly trying to escape from skeletons, ghouls, mummies, and even invisible ghosts. But the culmination of your adventure is on Level 8, an underworld haunted by lost souls, guarded by dragons, riddled with bottomless pits and blasts of hellfire.

Price £19.50

Crush, Crumble and Chomp!

JUST RELEASED

Breathe fire, terrorise cities, snack on a horrified populace, and further develop your villainous personality. CRUSH, CRUMBLE, and CHOMP!

Is there a particular city against which you crave to wreak revenge? Do you have a grudge against the Golden Gate Bridge? Lunch on San Francisco, then. Can't control your burning desire to consume the Pentagon? Dine on Washington, D.C. Fed up with cheap imports? Tokyo, perhaps. Do you hunger for the Big Apple? Munch on New York.

Be the deadly amphibian who longs to leave trails of poisonous nuclear pollution, simultaneously smash street cars with a single blow of your scaly tail, lunch on helpless humans, and radiate a ray of death from your malevolent eye.

Or would you like to be, perhaps, not even of the fallible flesh but, rather, of horrendously heartless steel? A lifeless, but life-like, mechanical gizmo preprogrammed by zero population-growth professionals for the destruction of all things earthly.

If you were a giant winged creature, think of the aerial attacks you could make on the terrified but tasty tidbits beneath you.

Take on the persona of any of six demonic beasts (even more for those who have a disk). Select from four mouth-watering metropolises and five different objectives, over 100 possible scenarios, complete with graphic mayhem and the resounding thunder of your monstrous presence await your beasts appetite.

But wait! The National Guard is out to get you. The local police are sworn to your destruction. Even as you read this, a secret weapon is being readied against you by mad and skillful scientists. Are you truly prepared to face helicopters, tanks, artillery, and more, driven by those who are literally dying to get at you?

Sooner or later, humanity will triumph . . . maybe. Or maybe vengeance will be yours. Price £15.50

Temple of Apshai

Now, you can enter a universe in which quick wit, the strength of your sword arm and a talisman around your neck might be what separates you from a pharaoh's priceless treasure — or the death-grip mandibles of a giant mantis.

Enter the "Temple of Apshai", the first in our DUNJONQUEST series, the computer game that offers you the chance to undertake heroic acts in a labyrinth filled with treasures, traps and monsters.

"Temple . . ." is a role-playing game (RPG) that catapults you into a world of magic and monsters, doomed cities and damsels in distress.

More than a game, it's an alter ego

experience. In an RPG, complex factors that make up a human being are abstracted into a few basic characteristics; strength, constitution, dexterity, intelligence and ego. Via your role playing character, you'll venture into an essentially unknown world, and be at home with the likes of skeletons, zombies, spiders and wraiths.

When you play the "Temple of Apshai", you'll be both a character within and a reader of the epic you're actually helping to create. In this labyrinth, the choice is always yours . . . fight or flee, parry or thrust, slay the monsters or see if they'll listen to reason. Price £19.50

DEATH-MAZE

5000



A new breed of adventuring! Venture through a graphically represented 3-D maze, with halls that could dead end — or recede to infinity. Step through the doors or drop into the pits. Will you encounter monsters and mayhem, or will you be treated to useful objects and information? Will you ever get out alive? Price £11.75



A nightmare of an adventure in graphically depicted three dimensions. Corridors stretch toward infinity right on your TRS-80 screen as you search this maze for treasures. If you get the feeling you're not alone. It's because you're not!

You use the arrow keys, plus two-word commands to move, manipulate objects and avoid the many pitfalls (pun intended) that await you in Labyrinth.

Price £11.75

ASYLUM

You are sitting alone at 2am. Your eyes are bloodshot as you peer into your computer's screen and cry, "I must be crazy!" if this has never happened to you, you've never tried ASYLUM. It's Med Systems most ambitious 3-D graphics adventure yet!

ASYLUM places you on a cot in a small (padded?) room. Periodically the janitor lobbs a hand-grenade through the window. What you do next could mean escape — or disaster. Price £13.75

Send 75p for full catalogue

(Refundable against purchase)
Dealer Enquiries Welcome

ANGLO AMERICAN SOFTWARE CO

138a Stratford Road,
Sparkhill,
BIRMINGHAM, B11 1AG
021-771 2995



24 hour ansaphone

ANGLO AMERICAN SOFTWARE CO

TRS-80 ≈ ATARI ≈ APPLE ≈ VIC

We know what it is like out there, because that's where we came from. Before we decided to become software entrepreneurs, we were just like you enthusiasts searching through magazines for the ideal mail order software source. What we hoped to find was a single entity that offered an ultra-wide selection for our micro-computer. That pre-selected only the best of many similar sounding programs that reached the market every month. That could give us personal assistance with the purchase-decision process, and that stood behind its products. When we couldn't find it we decided to become it. So **ANGLO-AMERICAN SOFTWARE CO WAS BORN.**

Please state clearly the program(s) you require. Include your name, address & machine type + memory size. Prices include VAT, postage & packing.

COSMIC PATROL

Skilled players soon master many difficult computer games, but COSMIC PATROL is in a world of its own. The challenge intensifies! Supporting graphics and sound (optional) make each encounter an exciting new experience. It all adds up to a Super 3-S package... Skill, Sight and Sound.

The Cosmic Patrol program is not just another search and destroy game. With its fast real-time action, impressive sound options and superb graphics, this machine language program is the best of its genre.

Price: Cassette £12.50; Disc £16.25

BATTLEGROUND

Here is a program that should interest you war-gamers.

It is late 1944, and the Allied Forces are sweeping towards Berlin. As General of your sector, you have at your command tanks, planes, artillery, infantry, engineers and vehicles — an awesome array of fighting men and the machines of war. From intelligence reports you know that the enemy General is a shrewd tactician, not to be underestimated. It will take planning and strategy to outwit this wily old campaigner.

The battle map of your sector will fill with markers, each showing the deployment of your forces. You and another player will slip into the roles of opposing German and American commanders as yet another battle unfolds. Battleground allows you to experience the total responsibility of a battle-area command. It will be up to you to deploy your forces. On your shoulders rests the decision whether to call for direct artillery gunfire or to order your planes into the air. You will constantly be watching for an enemy airdrop, always carefully manoeuvring your forces.

The stark reality of World War II comes alive in BATTLEGROUND. **Cassette Price £8.00**

PROGRAM OF THE MONTH

TLDIS & DLDIS

You've bought a super machine-code program, but now wonder how it works. Maybe you even use a quick peek routine to glance through it when it was in memory. If so you definitely noticed the complete lack of comments in the code making it almost impossible for you to decipher and understand it.

Well, Instant Software's Labelling Disassemblers are the answer to your problem.

TLDIS (Tape-based Labelling Disassembler) and DLDIS (Disk-based Labelling Disassembler) make three passes to assign labels (where appropriate) to the routines in a machine-language program. Their output is almost identical to that of a hand-assembled source code.

You can send the disassembly to a line-printer (Radio Shack parallel port) for either TLDIS or DLDIS. (The difference between these utilities is the storage mode of the disassembly.)

TLDIS can send the disassembly to cassette tape. DLDIS can send it to disk: both send it to the video monitor. The stored disassembly from TLDIS may be reassembled with Radio Shack's EDTASM™ the disassembly from DLDIS with Apparat's extension of EDTASM™. Because of the use of labels it is a simple matter to change any object code program by disassembling it and then making changes to the resultant source code without losing track of jump/load addresses. Labels start with "AA00" and increment up in even numbered steps (AA02, AA04, etc.). The odd numbers (AA01, AA03 etc.) are left for you to use for the source code during reassembly.

The printing of the disassembly may be temporarily halted by using ((SHIFT)) (just as in basic) or it may be ended by pressing the (BREAK) key. It also has a comments column to display ASCII characters used in a LD or CP opcode.

TLDIS and DLDIS may be relocated in memory to avoid conflict with the program you disassemble.

The next time you need to "climb inside" a machine code program take TLDIS or DLDIS with you. We promise that it will be an easier journey. TLDIS £11.50 cassette. DLDIS £15.50 disk.

THE ALL STARS

Here's a collection of our best selling games... the ones you'll want to play again and again. It includes: SANTA PARAVIA AND FIUMACCIO — Become the ruler of a medieval city state as you struggle to create a kingdom. Up to six players can compete to see who will become the King or Queen.

OIL TYCOON — Avoid oil spills, blowouts and dry wells as you battle to become the world's richest oil tycoon. Two players become the owners of competing oil companies... and there's room for only ONE at the top!

PARADISE TRADER — You're the captain of a trading schooner, sailing the Caribbean in search of profits. As you sail from island to island beware the dangers of the deep: pirates, ghost ships and hurricanes. Good sailing, skipper!

MILLIONAIRE — Here's \$1000. Can you turn it into a million dollars in fifteen (simulated) years? It depends on your strategy as you buy and sell properties, negotiate bank loans, collect rentals and accept sealed bids.

TIMBER BARON — An in-depth experience of the timber business, from dropping trees, until the milled lumber reaches the market. Your transactions are affected by those unexpected eventualities that can upset even the most careful plans.

BATTLEGROUND — European Theatre, 1944; Your forces are sweeping towards Berlin. At your command are tanks, planes, artillery, infantry, engineers and vehicles. The battle map will fill with markers showing the development of your forces and the location of the enemy in one day of fighting. This two-player game will provide hours of entertainment. **Price £26.50**

DOCTOR CHIPS

DR CHIPS is a great icebreaker at cocktail parties. And if the need arose, he could entertain your early arriving guests while you finished dressing! Your friends will be asking you how the guy got into the computer.

Why shoulder the burdens of modern life in silence? Put your DR CHIPS to work today and get it all off your chest **Price £12.50 cassette, £14.75 disk.**

Send 75p for full catalogue

(Refundable against purchase)

Dealer Enquiries Welcome

ANGLO AMERICAN SOFTWARE CO

138a Stratford Road,
Sparkhill,
BIRMINGHAM, B11 1AG
021-771 2995



24 hour ansaphone

ALL PRICES INCLUDE VAT & POSTAGE
24 Hour answering service
for Access orders
021-771 2995



PLEASE SUPPLY

I enclose a cheque/PO for £..... made payable to Anglo American or Debit my Access card number

Signature

NAME

ADDRESS

MORE FUN WITH YOUR ZX81!



The addition of our fully-compatible,
assembled, tested and guaranteed

16K RAM PACK

PUSH-ON PLUG-COMPATIBLE MEMORY

Means more memory for better games
and bigger programs

ORDER YOURS TODAY FROM:

CAPS LTD. Dept. B, 28 The Spain, Petersfield, Hants GU32 3LA

Please send me my Byg Byte 16K Ram Pack. I enclose cheque/
postal order for £34.95 (includes VAT, Postage & Packing)

Name

Address

.....

.....

Dept. B

Allow 28 days for delivery

Fully inclusive price

£34.95

PERSONAL COM

LONELY Genie I Microcomputer, early eighties, with large peripheral family but currently unattached, would like to meet interesting, attractively packaged software, Genie or Tandy specification, for programming, problem solving, entertainment and long-lasting friendship. Reply in confidence. Box No RS232.

ANSWERING MACHINES

Office certified

LON
intel
vated

ATTI
wish
may
mar

SO
med
(mu
tion.
hum

MAI
to c
war
wis



ingenious ...but lonely!

Buying your first Genie I microcomputer is just the start of a long and enthralling adventure, for it won't be long before you will want to expand your system with some of the wide range of peripherals which make up the complete Genie System.



Firstly there is the **Expansion Box**, which immediately expands your Genie's capacity to 32K RAM, and up to 48K RAM if required. It can be connected to 4 disk drives, a printer, RS232 interface or S100 cards.

Then there is the **Printer**,

a compact unit with 80 column, 5 x 7 matrix print-out, which connects to your Genie through the Expander, or via the Parallel Printer Interface.



The **Disk Drive** gives you greater storage capacity and full random access file handling, with the option of double-density through a special adapter. New Dual Disk Drive now available!

Finally, there is Genie's very own **12" Monitor**, a must if you want to let the rest of the family watch their T.V. in peace! Available in B & W or green tube.



The supreme advantage of the Genie I system is its compatibility with the TRS 80, which means that literally 1000's of pre-recorded programs are already available, just waiting to be plugged into your Genie!

The recent improvements in the Genie system, including Extended Basic, sound unit and machine language monitor, make it the ideal system for the committed hobbyist, and an excellent and easy-to-use educational tool.



SPECIAL TECHNICAL GENIE

HOT - LINE ON 0629 4995

for all your technical advice and service back-up on any aspect of the Genie system direct from the experts!

Please send me FREE, 16 page colour brochure on the Genie Computer System. I enclose 25p postage.

Name

Address

Telephone CVG-82

LOWE
electronics

Chesterfield Road,
Matlock,
Derbyshire DE4 5LE.
Telephone: 0629 4995.
Telex: 377482 Lowlec G.



Adventure into ATARI With Maplin...

Through a thousand galaxies of time and space... From across the ravaged oceans...
From dungeons of fantasies... After battles with enchanted dragons...
Come the fabulous Atari computers... the ultimate creative game computer!

Command a space-ship through the dangers of deep space where alien contact is inevitable or take your chances as you adventure through forbidden lands in search of secret treasures or play Space Invaders, Asteroids, Missile Command, Super Break-out, Shooting Gallery, Jawbreaker etc, etc, just like they are in the arcades, but in the comfort of your own home.

Or discover the superb Atari teach-yourself programs that will help you learn: Programming, French, German,

Spanish, Italian and Touch-Typing. Or just use the Atari to create your own programs – the Atari makes it so easy to generate really incredible graphics. It's all part of the magic of Atari.

When you decide to buy Atari, you're choosing one of the most advanced personal computers there is.

When you decide to buy Atari from Maplin, you've made the best choice of all... because Maplin support Atari...totally!

Write or phone for your Maplin/Atari information pack NOW!

MAPLIN

Maplin Electronic Supplies Ltd P.O. Box 3, Rayleigh, Essex. Tel: Southend (0702) 552911/554155

Demonstrations at our shops NOW
See Atari at 284 London Road, Westcliff-on-Sea, Essex.
Tel: (0702) 554000 and at
159-161 King Street, Hammersmith, W6
Tel: 01-748 0926