

No.3

**WIN A REAL
'BATTLEZONE'
ARCADE!**

7 GAMES PROGS

For BBC, Oric, Atari, CBM 64,
ZX 81 and Spectrum

85p

**JUNE
1984**

Australia \$1.70
New Zealand \$2.00
Malaysia \$1.25

Accessing the infinite through
the telephone wires...it's...

**MODEM
LIVING**

**WE ASK (AND ANSWER)
THE 68000 QUESTION**

**ATARI 800X
REVIEW**

Audiogenic Vic-20 Games...



...never turn your back on them.

Spiders of Mars, Outward and Cloudburst - these classic cartridge games - now available on cassette! Donkey and Kung Fu, both bestsellers, are now joined by the latest crazy mazy game - Shifty! From all major software shops everywhere.

These incredible games cassette all require 8K minimum RAM expansion. All prices include S.A.T. and P & P.
WRITE OR PHONE FOR FREE COLOUR CATALOGUES.

Audiogenic LTD



Audiogenic, PO Box 88, Reading, Berks, England. Tel: (0734) 664645.

NOW AT LAST!

Cuthbert

ON THE

Commodore 64



Yes at last those fantastic top selling games for the Dragon are now available for your Commodore 64. Avoid those Marauding Moronians in "Cuthbert Goes Walkabout", Fight for survival in "Cuthbert in the Jungle" or plunder the Moronians planet in "Cuthbert in Space". These great games are a "must" for your software collection.

CASSETTE £8 EACH DISK £9.95 EACH

Mail Order Sales from
Microdeal Mail Order 41 Truro Rd,
St. Austell Cornwall PL25 5JE

Credit Card Sales    
Phone 0726 3456



Dealers Contact
MICRODEAL DISTRIBUTION
0726-3456
or WEBSTERS SOFTWARE
0483 62222

MICRODEAL

Selected Microdeal Titles available from computer dealers nationwide or from larger branches of



CENSORSHIP:

Are You Ready For Software Nasties?

SOFTWARE AUTHORS may soon have to submit their programs to scrutiny by an Official Censor — if a Parliamentary Bill goes through as expected next month.

This is happening because of provisions in MSP (see last month's Video Recorder) Bill designed to deal with so-called Video Nasties. Bright's Bill makes the distribution whatever between computer programs and movies on video.

"I incorporated the software clauses in the Bill," he said. "It's as a result of some obscure video tapes imported by a German company last year." Remember that the real videotapes were never actually programmed for obscenity — and that they had been created by IBM Customs — he said. "That's as near as I can get to let anybody clearly outside the law."

The Tory MP will also reportedly welcome that computer programs can be transmitted in

written form if it's hard to look into this. I, but, incidentally revealed that the Bill has made no provision for this at all.

So, if you're a publisher for writing naughty software, you're going to a BASIC being BBC K forces that some interesting legal arguments might present themselves as a program listing — itself containing no actual obscenity — is to be prepared for this. In the meantime, we're looking forward to seeing the Censor opening his eyes to the fact that in all those being on a more or less (BBC) the software might submit for approval when the Bright Bill becomes the Video Act. Be a bit of a sticking up the system, wouldn't it?

A further disturbing note: the Video Recorder Bill treats Sex and Violence as equally to be censored. What about the violence involved in selling bits of life gear into an obscenity? Will that apply? We're puzzled.



TARRANT RIDES AGAIN

FOR THE SECOND TIME, the video censor, Mr. Tarrant, is back again as he presents The World's Greatest Computer Tapes, a new video cassette for sale on sale from the Video Nasties, all are addressed in 3D dimensions. Check out the monthly tape store made in the whole thing very close. The tape is from Tarrant's Tarrant as well. Check your local video dealer for the computer tapes.

What's the Password Brothers?

HACKERS WITH fine hacking skills may have had themselves being approached by identity-seeking groups in private meetings offering them money in exchange for their talents. This is because as of August 1 the Labour Party is sending itself a piece of Microsoft with a view to using the data base in a future communication between various party HQ's.

"We're a business with it than the other parties," claimed a Labour Party HQ spokesman. "They would say that we're the only one who would go to the top — keep it printable." "We're a business with it than the other parties," claimed a Labour Party HQ spokesman. "They would say that we're the only one who would go to the top — keep it printable." "We're a business with it than the other parties," claimed a Labour Party HQ spokesman. "They would say that we're the only one who would go to the top — keep it printable."

of centralisation might hamper things.

Over at South Coast the Tories are already interested in computing up, with a multi-frame or two-handling computer data on a secure machine. No opportunities here for a 1990 confidential software.

The price of Microsoft the Brothers have noted it, of course, linked and secure. Here it is. Microsoft's Labour have no idea that they'll be back into the market (or whatever it is called) and they're a few years on away from interesting data set of which would be illegal under new Tory proposals which have Labour working.

The Tories have a top priority

only closer enough to do that" would be the Labour man. Probably true, but they're not money, aren't they?

USE YOUR IMAGINATION ...

... and think up some network names that the political parties might adopt if they were all to go on-net. NO POLITICAL PARTY EXCLUDED! (But don't go over the top — keep it printable.)

CASH FOR THE BEST — THE BAI FOR THE BEST!

MORE NEWS PAGE 6

IN NEXT MONTH'S BIG K . . .

MERSEY BEAT: Imagine Software have the highest profile of any successful games company in the UK. They also operate from the country's most notoriously derelict metropolis. We check out their style.

CONFESSIONS OF A COMPUTER SNOB: Unrepentant prose from a loathsome elitist.

KEEP OUT! A watertight security prog for your Beeb.

PLUS

Type-in games prog/Arcade Alley/News/Reviews/and much, much more.

BIG K. PLACE YOUR ORDER NOW. USE FORCE IF NECESSARY

CAN YOU BEAT OUR GREAT GAMES

We've got the biggest (and best) selection of games for the Commodore 64. We think they're unbeatable



MORE THAN GAMES...

Our FREE catalogue lists dozens of programs for your Commodore 64 to help you run your business, write programs, or just enjoy yourself. We've been producing top quality software since 1978. So if you want the best, just remember our name...

SUPERSOFT

SUPERSOFT, Winchester House, Carring Road, Winchester, Hants, Hants, Hants, Hants. Tel: 07-801 1844



**JUST WHEN
YOU THOUGHT
IT WAS SAFE
TO GO BACK INTO
THE JUNGLE.**

PITEA

LOST CAVERNS



PITFALL II



Starring
PITFALL HARRY

And introducing
RHONDA & QUICKCLAW

With
**ANDEAN CONDOR!
VAMPIRE BAT!
POISONOUS FROG!
ELECTRIC BELL!
ALBINO SCORPION!**

And
CAVE RAT AT HIMSELF

Designed and directed by
David "Pitfall" Crane.

An ACTIVISION Production

 **ACTIVISION**

For the Atari 2600, Atari
Home Computers, ColecoVision,
Commodore 64 cassette and disk.

FEATURES

- DMC PROGRAM
- ROME
- DAMAGE CONTROL
- GREAT GRAPHICS
- MAC THE MECHANIC
- DELAY OPTIMA
- EL DORADO
- FAMILIAR SOUND
- FULL INSTRUMENT PANEL
- ETC.



£5.95

**WHAT THE EXPERTS SAY
CBM 64 & SPECTRUM 48K**

Its wealth of detail is amazing. One of the best of games for a long time. The graphics are really excellent, well drawn and animated. A complicated, demanding game which I can't see losing its appeal for a long time. Krakatoa is both addictive and hard to play. It takes ages to get any good and the scope for getting better scores each time is enormous — very good. Highly recommended! (Game of the month)

"Ocean Micro"

An amazing piece of programming, a great program. A year ago we would not have believed it was possible to do this.

"Software Supermarket"



The only video ever licensed to the best of spectrum machines, graphics are excellent and animation superb. A combination of graphics adventure maze and action games make this program interesting and addictive program which must rank among the spectrum classics.

Rate for money	100%
Graphics	100%
Overall score	100%
OS/2	100%

Note: Copying illegal

£2.95



**Fantastic Color as
Flight Simulation**

A serious and realistic flight simulator packed with features and detail. An excellent training and flight control simulator by a professional pilot. It was addictive and challenging whereas which will test the skill of pilots of any standard. A knowledgeable reviewer has recommended this game in 1989.

£2.95

Available at W.H. Smiths

Mail order and trade enquiries to:

Abbey Electronics, 34-36 Bromham Road, Bedford, G231A-213621

ATARI UNVEIL TX-1

FOUR FREE design, your profit rates, sales costs are soaring ahead like an avalanche. Four elements of growth have been your friends in the past. In terms of your profit margin, your volume, in fact, about 80 percent. Only one of eight independent selling circuits which you're responsible for trying to keep your eye on. Other parts come for sale your total production being left and right in the direction of the wind.

One thing's for sure, if you're experiencing the above conditions you're sure an obstacle that blocks the least. However, as long as you're doing it right you are doing it wrong inside. It's, the answer is ready for you.

These projects give "big-around" policy, providing a game, some games as the game here through talent, design, thought, time, success and more. The strategy allows instant feedback so that when you go into it that... you go into a habit.

TX-1 is a game of three Atari arcade releases, designed to provide each and separate title.

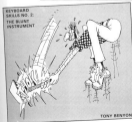
Space Age is a team developed cartoon arcade game from the creators of the phenomenally successful Dragon's Lair. Space does make the most of the advanced action and strategy elements which have been made available.

More on all these games at upcoming Arcade Alley. Watch for us.



The flowchart for TX-1.

But you can't see these!



GARBAGE IN GARBAGE OUT

By The Shadow

HIGH STREET Computer Base following up a reviewer that K-Tel's TX-1 (see above) is that game had been rejected by everybody's favorite newspaper (an account of supposedly featureless lyrics). The Shadow got on the case, only to be told that the station were concerned against no censorship policy "as such" and that the K-Tel prog had been sleep-steal on account of its supposed rough-graphics. K-Tel have now brought out a CD-ROM version of each prog anyway — and yes, the CD-ROM data stops WAV been cleared up.

Funny, that... Compatible to Atari for the current batch of ads they're following in the Dealership — The Shadow particularly likes the one where program Russian lyrics were usually in form of a row of words while a general Gushik figure hovers in the background, only mouthing it,

who could possibly look at that and creep and imagine for a second that such a device would ever become about computers? By the by, any system out there who have the Goods on the real state of computers-in-schools should get in touch with The Shadow (see above) guaranteed... Whoever was running the Snake Mouse stand at the recent BBC Shadow Faire? There was certainly no sign of Making Friends... though in a part way for this quite obvious as influencing People. The Shadow has feelings, too, you know... And speaking of feelings, BP's *Swarm Nights* — the chat behind the new wave of computing — with eddy lyrics as explanation on the ground as our story page 23 notes out.

On a more cheerful note, much thanks for kind words about our first review by John Conway at Tower Street, John Ford, and The Gamma Lines; The Shadow wishes to inform the above that any poem the may have been holding has now been burned out of their gratitude and brother's love...

SAY NO TO YOUR NEIGHBOURHOOD TAPEWORM

THIS ARTICLE was kicked into being by a weighty, slightly ponderous but without a doubt serious-minded 'Round Robin' recently dispatched by the mighty warriors Imagine Software and addressed to 'The Media', i.e., us, and our competitors.

The subject was tape piracy. A rather rather angry at the heart of the industry raved the 'Round Robin' document, 'Imagine (still) copies for every-one else!'. Like groups get it right but never the price. Mini production lines are making an average of 2000 copies of every title at a unit cost of less than 50p. It is, you might say, a wonderful record.

Repeat — but not quite — simultaneously with the Round Robin was an advertisement to the effect that Imagine would benchmark out their prices to 50/50 per — certainly a useful and constructive anti-piracy move.

OK, it's perfectly true that to adopt a 50p, 500-unit price and say, yeah, well Imagine are always making this big deal about how much cash they've got, right? What was a Mark II unit cost, it's sure may have been 50p. The biggest problem I have is in spreading the message. The few letters have a few hundred times off the top of their legendary millions! So what?

Profit

Shortsighted, Mr. Imagine, very shortsighted. Yes, it's perfectly true that Imagine's ultra-high price with regard to profit. 'We've just got Imagine's Lotus Paper' (makes about 1000 copies) about 100p profit each in his sophisticated but really very expensive, or again, has nothing whatever to do with the substance or otherwise of their cost.

Have they got a case? We think they have. Despite the fact that (often you come to think about) how nobody can possibly know exactly how many pieces (copies) circulate, or how anything but a rough guess.

And despite the fact that the Round Robin urges us media types to get our weight behind a campaign for 'harder penalties'.

Despite all this, yes, they still do have a very substantial case.

LET'S FACE it, copying a program written in BASIC is not only easy, it's a vital and necessary feature of every microcomputer. All you do — memorise this, write, draw, David and Ian and all of Science House — in press BREAK or ESCAPE on the (BBC) and there YOU'VE

I'm not giving away any secrets here, just an I consider, the one sort of spirit. It's a well-known technique and — considering that everybody makes backups of his own programs — you're almost not copyable.

If, when you have the same spirit as mine, knowing not only other copy of the same game via the hardware that you have the hardware of a problem.

And when you have an Arthur Daley figure sitting in a Murray basement, making a tape copy while his customer supplies him with THE ORIGINAL copies of a tin Ho. Then, you have a REAL problem.

Unusable

OK, games in BASIC are getting low and the buyers these days tend a good thing too. Machine code programs are quite simply unusable, and therefore, in the home spirit, uncopyable.

Well, surely all these copyright detection devices will be less so much of a deal to you? You may say — but it's almost a tape only a machine of some kind before the tape is broken down the machine code of program with a version of 'GODHELP' — and another electronic equivalent of 'The Mole' will have taken the tape.

Why bother? Because if it's there, you've got the code, but in choosing to report what he does in a sort of challenge, like getting lost on the Labyrinth in real life.

I really wonder that one copy for every tape the original 'Wally' says the original George Hill tape — the kind of deal who carries game machines in his Spectrum, 'Wally Wally' have bought that money.

It's a bit easy Wally won't buy a tape.

'Yarrr! Me!' says the basement Arthur Daley, in his customer duplicatory roll on through the night, 'Well, maybe you have a point. We're little over, though.'

What can be done about it, anyway?

Keeping the price down is constructive level of Imagine's competitors (even like such things). Continuing research into anti-tape copying equipment, for example, is another good point, with obvious benefits at hand.

Imagine want a whole new class of tapes, though. And the trouble with South Sea Lines is that they have a habit of matching only the really valuable. I mean, who wants to see our George Hill tape — or anyone else's — that he's memorised little about the 'Wally' device and therefore for his (probably in Liverpool). And do we really want to



discourage the kind of ingenuity that leads computer makers to devise more refined protection devices? Yes, and no.

And yet something must definitely be done... If these Imagine figures say anything like what they do, the software industry is heading for trouble. The best thing is to make sure all our moral feelings are in machine code. That way a majority of copies simply have no the alternative to copy. Unless they have photo-copies with their tape devices. THEN you need the protection device.

Magazines such as ours should — must — begin to take an in copy program. Some programs are important but have very low sales like

new. A third — really — is those South Sea Lines, with robots built in to protect the BASIC from great surges in the amount of software made for Wally. (The software guys need all the Wally in the UK money in business.)

What can you do? DON'T buy a marked cassette. DISCOURAGE your own group from wholesale piracy. Be really about it, you figure. DON'T buy anything off. And in general — you all know a tip off where it happens in it. Apply the same moral standards. After all, you could be rubbing someone you might need one day.

charts

EP = Spectrum, SC = Amstrad, BR = Commodore BR, V30 = Vc 20, B1 = ZX 81, OR = Oregon 32, OR = Oric-1

key

V30 = Vc 20, B1 = ZX 81, OR = Oregon 32, OR = Oric-1

TOP 30 GAMES

month

		EP	SC	B1	OR	OR	OR	OR	OR	OR
15	CHEQUERED FLAG	Polix	*							£6.95
17	MAGIC MINER	Bug-Byte	*							£7.95
21	AT&T AT&T	Ultimate	*							£6.90
22	FIGHTER PILOT	Digital Integration	*							£7.95
26	SOUBA DIVE	Dave	*					*		£6.95
27	LUNAR JETMAN	Ultimate	*							£6.90
28	ANT ATTACK	Quickalive	*							£6.95
29	FLIGHT SIMULATION	Polix	*							£7.95
30	HUNCHBACK	Goan	*							£6.90
106	SPACE SHUTTLE	Microwad	*	*				*		£9.00
107	JET PACK	Ultimate	*		*					£6.50
11	STONKERS	Imagine	*							£6.50
20	POOL	CDG	*							£5.95
14	JET SET WILLY	Software Projects	*							£5.95
14	BLUE THUNDER	Richard Wilcox	*							£5.95
14	POGG	Goan	*							£6.50
14	WHEEL	Microwad	*							£5.95
14	SUGARBOO	Quickalive	*							£7.95
24	THE HOBBIT	Melbourne	*	*			*			£14.95
24	MR WIMPY	Goan	*							£6.90
24	DEATH CHASE	Micromega	*							£5.95
14	CHINESE JUGGLER	Goan	*							£6.90
24	THE ALCHEMIST	Imagine	*							£5.90
26	HORACE GOES SWING	Polix/Melbourne	*							£5.95
26	CRAZY KONG	Intarcop	*		*					£5.95
102	LONG	Coan	*							£5.90
14	FRED	Quickalive	*							£5.95
14	THE SNOWMAN	Quickalive	*							£5.95
106	VALHALLA	Legend	*							£14.95
11	HORACE AND THE SPIDER	Polix/Melbourne	*							£5.95

Compiled by MRS Computer.

VIDEO GAMES

Continued
Quoted

- 15 KILL POSITION (Atari)
- 16 SUPERCOIN (Polix)
- 106 SPACE SHUTTLE (Activision)
- 18 POPPER (Polix)
- 14 ENRIG (Activision)
- 20 S-BOT (Polix)
- 118 SOUTH SEASATTLE (Polix)
- 14 NANO BROTHERS (Atari)
- 20 THE BUG (Atari)
- 20 NIGHTMARE (Atari)
- 118 FRODOG (Polix)
- 118 BATTLE ZONE (Atari)
- 14 SNOOPY VS THE RED BARON (Atari)
- 118 BONEY HONK (CBS/Colo)
- 118 PETAL (Activision)
- 118 BERNARD (Activision)
- 118 TETRAKOMB (Polix)
- 20 THE BIG EGG CART (Atari)
- 20 GALAXIA (Atari)
- 118 JINGLE BUNT (Atari)
- 118 PIC MAN (Atari)
- 118 SMURF (CBS/Colo)
- 20 SUGARBOO (Atari)
- 118 COOK MONSTER MUNCH (Atari)
- 118 MELANIAN (Atari)
- 118 SORCERER'S APPRENTICE (Atari)
- 118 ONYX (Atari)
- 118 DICE FLOR (Activision)
- 118 SPACE WARRIOR (Atari)
- 118 ROBOT TANK (Activision)

Compiled by MRS Computer.

- ADVENTURE LAND (Adventure International)
- ANT ATTACK (Quickalive)
- BLOGGER (Migata)
- BUMPING BUGGIES (Bubble Bus)
- CHUCK E-EGG (A & F Software)
- CONFRONTATION (Lothlorien)

also selling well in mail order...

A monthly selection from the top-selling mail-order games

- DARTS (Mr Chip)
- FIGHTER PILOT (Digital Integration)
- RFTM (CRL)
- FLIGHT SIMULATOR (Bellamander)

- FLYING FEATHERS (Bubble Bus)
- HELLGATE (Ultimate)
- HIGH RESOLUTION (CRL)

- JACKPOT (Mr Chip)
- JOHNNY RED (Lothlorien)
- KILLER WATT (Migata)
- LUNAR JETMAN (Ultimate)
- MEGAHAWK (Big G)
- MONSTERS (Acornsoft)

NEW! From Tandy®

The TRS-80 Colour Computer 2

"What
question
next I
should?"

Let the user's select the
right mouse. The
first step in
taking the
problem is to
ask yourself:



16K Standard
Colour Computer 2

£159⁹⁵

Inc. VAT

26-3026



*Features a Smart White Case and
Low Profile Typewriter-Style Keyboard!*

TRS-80 16K Standard Colour Computer 2. Easily attached to any TV - Program Pak cartridges let you battle standups in water sport - and lots more. But playing games is only the beginning. Your children can learn maths or typing, enjoy literary classics or make glorious computer "paintings". Our entertaining instruction manuals will have you writing programs with colour displays and sound in no time! Colour BASICs simple commands let you quickly produce drawings, diagrams and charts. Choose from eight brilliant colours, create realistic tones, solve problems, analyse data and much more, then save your work on tape with an optional cassette recorder, you can easily and quickly add a pair of joysticks and a printer. The standard colour BASIC language includes data and string handling, dimensioned arrays, matrix functions and 8-digit numeric accuracy. Includes comprehensive manual.

26-3026 **£159.95**

16K Extended Colour Computer 2. All the features of Standard BASIC, plus advanced programming capabilities to create high-resolution colour graphics using simple one-line commands. **26-3027** **£199.95**

48K Extended BASIC Colour Computer. Offers 32K RAM or 64K with optional OS-9 Disk Operating System. **26-30030** **£269.95**

Who Is The Colour Computer For? It's ideal for anybody who wants to enjoy video games in a system that can be used for many other household, business and educational tasks. It's great for beginners who want a computer that's easy to learn on - but not limiting - and it's perfect for hobbyists who want a full-features system with the opportunity for advanced graphics and programming expansion.

Tandy Over 500 Stores
And Dealers
Nationwide

Tandy Corporation (Branch UK), Eastern Avenue, Bridge St.,
Woburn, West Midlands, WB1 1JA. Tel: 0912-648181

Six Great New Games For The Tandy Colour Computer

Cassette Versions of Six
Popular Games!

ONLY **£7.95**
EACH



[A] CRAZY PAINTER. A high-speed arcade action game! Try your hand at painting the road! So easy to play? Yes, if the dogs, moths, caterpillars, boys, balloons etc. don't keep walking over the paint! Eight levels of difficulty. The catchily tunes played while you paint will have you "singing while you work". Keyboard or joystick control. **26-7306**



[B] SKRAMBLE. Your mission is to penetrate the enemy's system and destroy their H.Q. You will start with three spacefighters equipped with repeating cannon and twin bomb launchers. If you succeed in evading the elaborate defences, you will arrive at the core where flying becomes more difficult. Keyboard or joystick control. **26-7306**



[C] FROGGER. The popular arcade game for the Tandy Colour Computer. Safely transverse the frog to its home within the time allocated. Cross the highway without getting run over and cross the river without falling in. Avoid the traffic, snakes, crocodiles and diving turtles. For one or two players. Joystick optional. **26-7306**



[D] OUTBERT GOES WALKABOUT. Outbert must turn the lights of the laser landing pad on by walking across the switches before the invading Moronians get him. Watch him do his victory dance before he tackles the next "pad" and another, larger, set of invaders. Superb colour graphics with music. Keyboard or joystick control. **26-7302**



[E] OUTBERT GOES DIGGING. Outbert is quarrying the site for a new launch pad. However the Moronians are still determined to get him! One touch and Outbert is electrocuted. The only way to cancel them is to trap them in a hole and hit them with his insulated hammer before they escape. Keyboard or joystick control. **26-7302**



[F] OUTBERT IN THE JUNGLE. A high-speed arcade-action game with full colour graphical Outbert failed to overcome the Moronians so he has been sent to the jungle! He must fight his way out collecting treasures, jumping pits and swinging over alligators whilst being aware of the killer raincoat. One joystick required. **26-7301**

Tandy

Tandy Corporation (Branch UK),
Tomerway Tower, Bridge Street,
Walsall, West Midlands, WS1 1LA.

WIDGETS

WONDERFUL



FROM THE FOLKS WHO
BROUGHT YOU THE
BEER... THE
MEGABEER

Acorn have been promised 'gloria' Second Processor's. The BBC for some time now, in March will finally arrive.

There will certainly be 1000 models, this one the 1000 second processor, a 2800 CP/M and a 10000 megabyte. So far the most interesting will be the 10000 machine, but we'll have to wait a while until we get our problems on the...

With a second processor, it means BBC computer only can be used for the laboratory and consuming tasks like talking to the driver, reading the keyboard and drawing on the screen, while the extremely fast and an processor does all the hard work arithmetic and string numbers. This sharing of the workload means the graphics, for example, will be much faster. Because of the BBC, it is having a dual second processor can be working out where the next one is going to go. Overall speed is

STIK WITH ME, KID,
AND WE'LL ZOOM IN
ON THE BIG TIME

ROBOCOM's BITSTICK graphics device surfaced some time last year in the States, coming on an Apple II. It was a sort of glorified joystick with a number of other uses that you can't wait to change the first dimension.

Others played it to their collective doom. Problem was, like an Apple game, it was a little expensive...

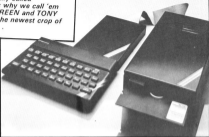
New ROBOCOM means get the stick, now bought out with 40000 to go, improvement version for the BBC have a second processor. The software was already excellent (see the Apple II), it just got a whole new look.

You get sixteen 'columns' (actually only markings on the stick), and the most amazing feature is you can turn the stick's lens (or anything near the professional level support FLEWER BANGS) and the ability to do an eight-bit and use the stick to make a bit of a mess of a line - but that's optional only for you. RoboCOM has a LAMP stick and a redundant keypad (see the article)... you name it!

At the Acorn launch event in London, we were shown the picture of an even better, the BBC, we then returned to the office - where we could see the others come. There it appeared into the picture next to the same, revealing a cable with some tape and a stamp (see the



THINGS THAT PLUG IN IN THE NIGHT . . . are usually called 'Peripherals'. That's why we call 'em 'wizgits'. ANDY GREEN and TONY TYLER investigate the newest crop of hopeful bolt-ons. . . .



THIS DISC JUST SLIPPED IN

WHILE 'UNCLE' Clive pursued his own solution to the problem of mass-storage less costly than the original computer, enterprising folk elsewhere (actually Macronics Systems) gritted their teeth and settled for an orthodox disc drive. Now it's arrived.

It's heavy and solid, black, and comes in two pieces — the interface box and the actual drive unit, with the usual conger-eel of ribbon cable connecting the two. Drive mechanism is a Shugart SA200 which organises your data into 39 2616-byte tracks and 1 directory track. Starting-up automatically boots the operating firmware into the top end of RAM, and reserves space for buffers and reserved variables.

Access to data is enabled by use of the LET command and the F8 reserved variable (e.g. LET F8="filename"). Filenames can be up to 6 characters long.

Now for the shaming confession. We haven't — so far — got our heads down with regard to this one. (We could have cobbled together something but it wouldn't have done the widget justice). So . . . a full review of what promises to be a highly promising product in next month's BIG K. But we thought you'd like to know about it all the same. — T.T.

WE LOVE WIDGETS

There's nothing sets our pulses tingling here at BIG K so much as a really Tantal Peppit. The ingeniousness, the variety, the unique inventiveness — the sheer insanity — of some bolt-ons leaves us aghast with admiration.

If you've heard of — or built — a widget, gizmo, peripheral, attachment, extension or anything else (it can be hardware, software or rubberware for all we care) that you think we should look at, then drop us a line here at:

**BIG K (WIDGETS),
IPC MAGAZINES LTD.,
KINGS REACH TOWER,
STAMFORD STREET,
LONDON SE1 8LS.**

Continued on page 47

improved to about 60%.

The second processor contains a fast 68010 CMOS processor with 256K in the 80C and 1M in the 80C and Commodore 64 and 64K of memory. More than 10K of that 68K is 'wired' to build the BASIC interpreter, but you still get left with 68K memory to use, even in mode 2.

All is not Easy in Acorn's garden. Though it's a multi-processor that can document COMETS and OSWORD calls for interaction with EVERETTAGE will work on the second processor. Big K happens to know that hardly any games software needs this connector — they all access the screen memory directly for extra speed. You can switch off the second processor and do a hard reset, though, to use the programs normally.

The 6800 version will set you back £199.95. — A.J.

Flashed

The system can be made very accurate — more than any other — by using a laser printer. It's not a laser printer, but you can use a laser printer to print the data. The system can be made very accurate, since the cursor will keep you in the required cell.

There's a lot of other things that you can do with the system. You can use a laser printer to print the data. The system can be made very accurate, since the cursor will keep you in the required cell.



Small, illegible text on the far left edge of the page, possibly a page number or reference code.

WIDGETS

WONDERFUL



FOR THE HACK(ER) ON THE MOVE

YES, we know the thing isn't strictly our province, but the widget is so scrumptious, so absurdly wonderful (and we like ours so much) that if we didn't get it in somewhere we'd have to give it back! And that would never do.

So . . . for the discerning tape pirate who operates from the back of a Treasury and yet seems to keep his correspondence tidy, we present the Brother EP-44 electronic typewriter. Also the Brother EP-44 computer printer. All in the same package.

Typewriter-wise, it's a dream. Allegedly dot-matrix, it produces superior letter-quality type on thermal or ordinary paper, with a whispering quiet that puts even Epsoms to shame. You can type either directly onto paper, or phrase-by-phrase store-and-print, or you can create text (up to 4092 characters) directly into memory, printing the whole thing out later. And yes, the memory is non-volatile.

You can also use the EP-44 as a printer via its RS232C interface port, and as a communications terminal. It costs around £240.

★ Open ★ Wide ★ And ★ Say ★ Aaargh

COMPUTER CONCEPTS, the people who are responsible for maintaining the BBC microcomputer, have released another new program over the past few months, but their most useful is a little program called Doc. (short for Doc's Office Word Processor). It's the only one of the BBC software that can be used on any computer and is available on various platforms and is called up by one of the Commodore Ltd's computer file "terminal" and is called "Doc". It's the only one of the BBC software that can be used on any computer and is available on various platforms and is called up by one of the Commodore Ltd's computer file "terminal" and is called "Doc".

Doc really likes Aaargh...



The reason that it is interesting is that it is a special system called "Doc". It's the only one of the BBC software that can be used on any computer and is available on various platforms and is called up by one of the Commodore Ltd's computer file "terminal" and is called "Doc".

Essentially I found the Doc to be a useful addition to my existing BBC software. It's the only one of the BBC software that can be used on any computer and is available on various platforms and is called up by one of the Commodore Ltd's computer file "terminal" and is called "Doc".

Doc and Aaargh of what's on the desk that you're typing. You can also use the Doc to create text (up to 4092 characters) directly into memory, printing the whole thing out later. And yes, the memory is non-volatile.

Talking of which, Doc (short for Doc's Office Word Processor) is a program that can be used on any computer and is available on various platforms and is called up by one of the Commodore Ltd's computer file "terminal" and is called "Doc".

HELP!



We want BIG K to be as good a magazine as we can make it — and we need YOUR help.

Just answer as many of the questions below as you can by ticking the boxes, then send the completed questionnaire to: BIG K (Readers Poll), IPC Magazines Ltd., Kings Reach Tower, Stamford Street, London SE1.

We're also looking for volunteers to serve on our Readers' Panel. Selected Panelists will be sent each issue of BIG K in advance of its appearing in the shops **ABSOLUTELY FREE OF CHARGE**. In return, we'll be keeping in touch with them, asking them their view on BIG K itself plus other computer-related subjects.

Remember — it's YOUR views we're interested in.

1. Do you personally own a computer?

Yes	<input type="checkbox"/>	(70)
No — I use someone else's at home	<input type="checkbox"/>	3
No — I use one sometimes else	<input type="checkbox"/>	4

2. If you, personally, do not own a computer, are you planning to buy one?

Yes	<input type="checkbox"/>	(15)
No	<input type="checkbox"/>	2

3. When you buy a computer game, what do you go for? Write in 1 for first, 2 for second, 3 for third, etc.

Good graphics	<input type="checkbox"/>	(12)
Good graphics	<input type="checkbox"/>	(12)
Smooth machine code programming	<input type="checkbox"/>	(14)
Lots of colour / sound	<input type="checkbox"/>	(15)
"Playability"	<input type="checkbox"/>	(18)

4. About how much money per month, on average, do you spend on software?

Less than £5	<input type="checkbox"/>	(17)
Between £5 and £10	<input type="checkbox"/>	7
More than £10	<input type="checkbox"/>	2

5. Which of the following, if any, do you understand?

BASIC	<input type="checkbox"/>	(18)
Another high level language	<input type="checkbox"/>	7
Assembly language	<input type="checkbox"/>	3
No computer language	<input type="checkbox"/>	4

6. If you had a sudden windfall of £250 to spend on computer equipment, which of the following would you buy? Tick one only.

The best video you could afford	<input type="checkbox"/>	(16)
A disc drive for your existing video	<input type="checkbox"/>	7
A printer	<input type="checkbox"/>	2

THINKING NOW ABOUT BIG K:

7. What do you think of the first 3 issues of the magazine?

	Yes 1 (20)	No 2 (21)	No 3 (22)
Liked it very much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Didn't like it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Didn't like it very much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Didn't see it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Return forms to:
BIG K (Readers Poll),
 IPC Magazines Ltd., Kings Reach Tower,
 Stamford Street, London SE1.

8. For which of the following would you like to see more features, program listings etc. in Big K? You may tick more than one.

Spectrum / 2881	<input type="checkbox"/>	(22)
Commodore 64 / 74 / 80	<input type="checkbox"/>	5
BBC B / Electron	<input type="checkbox"/>	4
Atari	<input type="checkbox"/>	4
Dragon 32	<input type="checkbox"/>	5
Osai / Amos	<input type="checkbox"/>	5
Other (WRITE IN)	<input type="checkbox"/>	(24)

9. In future issues of Big K, which of the following would you like to see?

More program listings in BASIC	<input type="checkbox"/>	(25)
Less program listings in BASIC	<input type="checkbox"/>	7
Program listings in other languages	<input type="checkbox"/>	3
Utility programs	<input type="checkbox"/>	4

10. Which other computer magazines, if any, do you ever buy?

Computer and Video Games	<input type="checkbox"/>	(26)
Personal Computer Games	<input type="checkbox"/>	2
Games Computing	<input type="checkbox"/>	1
Your Computer	<input type="checkbox"/>	4
Personal Computer World	<input type="checkbox"/>	5
Personal Computer News	<input type="checkbox"/>	5
Other (WRITE IN)	<input type="checkbox"/>	(27)

11. When you open computer magazine such as BIG K, which of the following do you turn to first?

Program listings	<input type="checkbox"/>	(28)
Technical features	<input type="checkbox"/>	7
General interest features	<input type="checkbox"/>	2
Software reviews	<input type="checkbox"/>	4
Other (WRITE IN)	<input type="checkbox"/>	(29)

12. Would you like to help us by participating in future surveys like this as part of our Big K Readers' Panel?

Yes	<input type="checkbox"/>	(30)
No	<input type="checkbox"/>	2

Please fill in this coupon, cut out the whole page and send it to BIG K etc.

Name (31)

Address (32)

Age (33)



HE WROTE ONE...

HEAVEN, FOR many non-possessors of the cathedrals, will consist of an eternity spent in a darkened room staring at a wall of rednecks comatose. There in a real-time *Flight Simulation*, load the shoulders of the programmer with awesome responsibility — and you have a vision of paradise devotedly to be watched. By some.

Casualty Mike Male enjoys his work. He full-time, "real" work, that is. As an Air Traffic Controller at London's Heathrow airport, he is one of the genuine whizzes. "Roger Delta Bravo hold flight level 3000, descend clear and then turn on heading two thousand" — *turn right from the line* — *turn right from the line* — always near southern Britain, relatively free of falling aviation debris.

The games he writes in his spare time, mind you, suffer no such inhibitions.

Male is 35, looks like the long-lost pop singer Steve Clark of the Primitives, and has been an ATC for ten years. "I wanted to be an airline

You'dn't go in for writing business. I'd rather have good daylight graphics. After the most important thing is instruments.

pilot, really," he says, with barely a flicker of gloom. And, as such he's trained, only to feel the screws at a late stage.

Flying, however, is one of those occupations that holds you for life. Male has a great deal in his spare time, works at an ATC, and is clearly to purchase his own aircraft. ATCs paid that much, then? No. The cash for the plane has come from the proceeds of the computer flight simulations. Male has written over the last two years for Thomson-Sudairme, namely *Prize For XPR1*, *Nighttime Operations* and *ESQ*, together with his real-time, real-time, Heathrow Air Traffic Controller.

Male started on the IBM PC and wrote *Prize For XPR1* — which now appears to sell like wild-fire — and he made the inevitable simultaneous progression to Spectrum and IBM. *Thunder*, started from scratch again with the original Nighttime and has now recently discovered the Acorn BBC machine, which has — needless to say —



THIS MIKE IS ALL MALE

Flight Simulation writing has its own problems and specialities. MIKE MALE, Air Traffic Controller, brings experience to the job. TONY TYLER interviews...



revolutionized his programming. Upwards.

What, in his view are the special requirements for a successful flight simulator — a relatively new but fast-growing sub-genre of computer game?

"Basically, it all comes down to the screen. The pilot view. Enough has got to be in the program so that when the natural climax is reached — which is when the landing, as it is for

real flight — the player feels he has had a realistic experience."

Male needs to reject the cheap programming conventions of the Tilling Horton ("It never looks right anyway") and concentrate on atmospheric views ("rough objects on the ground to establish pilot orientation") and good, clear instrumentation. "The most important single instrument — is a program as a real pilot — is the artificial horizon, without this you can't do any instrument flying at all. This also need an attitude and

an altitude indicator — digital readouts are OK, especially in reconstructing a workable and readable dial is virtually impossible."

The other main line (according to Male) in most flight simulators programs is the difficulty of building convincing daylight graphics — "This is the thing I most to do most of. All the Microsoft program" for IBM PCs

I absolutely hate Adventures. And I've never had ambition to write anything like an arcade game. Flying's my thing.

"Is the best I've seen in this regard."

Has he ever wanted to try his hand at other genres of computer games?

"I can't do RPG adventures — just not my sort of thing, and I've never wanted to write arcade games." They're not his sort of thing either. In fact, except in one respect — his target users — Male doesn't really consider to the reality-grazing strategy. No games, no sex, no means sensationally. He's just a guy who loves flying and computers and knows a great deal about them, and who has got all of what he knows — well, nearly of — into a progression of specialist "games" of very high quality. And with the ever increasing popularity of flying simulators — one needs no flight in our simulators — you can see how a hobby on a full service can grade can now afford to buy his own plane.

Could you write a Flight Simulator?

If you've got the blood of the Red Baron in your veins and noobies you can handle this most demanding of programming skills... if your footloose till and your instruments work... if you know the difference between an altimeter and a compass indicator... if your sense happens to be flippin'... if any of these remarkable statements apply then IT'S TIME TO CALL ME. I WANT TO HEAR FROM YOU. I'VE BEEN IN CONTACT WITH ANY NUMBER OF THEM IN SUCCESS. WE CAN OVER AND OUT.

...entire
...develop
...to meet
...the story
...of a real
...action.
...variety of
...it offers
...not only
...entertaining
...promising
...entirely
...and you
...of a full
...and the
...entire
...forward



Game: CITY
Makes: TERMINAL
SOFTWARE
Machine: SPECTRUM 48K
Format: cassette
Price: \$5.95
Rating: KK

HERE THEY COME AGAIN

It's going to be inevitable. The Electronic Success means an increase and not a step back for a little familiar game format that has already become the classic and more established machines.

That said, *Blam!* is an early entry in the "Blam!" series as far as the Electronic Success means an increase and not a step back for a little familiar game format that has already become the classic and more established machines.

The action is reasonably fast even on the standard of the two speeds. Graphics are average and sound is poor. It may be the first time I've come across a game that is so good.

Control is adequate with two versions of keyboard support for a joystick set up on the Electronic Success. Instructions are sparse but there is a good help screen that takes you from "Blam!" to "Super Blam!"

An OK game for the arcade looks but I'm sure there is more to come. — R.R.

Game: KAMAKAZI
Makes: APP
Machine: ELECTRONIC
Format: cassette
Price: \$7.95
Rating: K



SUPER NUDGER



YOU LOSE, PAL

Here, *This* is interesting: an unassociated idea of one for slot-poker gamblers. Or, to be more precise, a low-key double bill featuring that indelible slot-pull slot, the fruit machine and a version of the popular card game, Blackjack.

The former consists of the features you'd expect from a quality fruit such as mango, kiwi and gambles but it's covered with a cluttered screen layout and some poor animation. These all-important reels refuse to scroll the way reels should. They merely change in flickering sequences. It's far too crude a display to really entice the discerning player.

The Blackjack program is marginally more interesting. As with *Poker* (see 27), the idea is to beat the bank with a few

card tricks. The game's a double to play and the visuals are quite neat, with the "dealer" speedily unveiling your hand as you nervously look. Unfortunately, though, there's no option to alter the stakes. A flip-wager is mandatory — not much help for us strategic players. Not that it would have made much difference anyway as I'm sure the deck was rigged. These amazing "Two Deal" promotions were far too frequent to be useful. Still I guess it's cheaper than a Greyhound to Vegas. — S.R.

Game: LAS VEGAS
Makes: TEMPTATION
SOFTWARE
Machine: SPECTRUM 48K
Format: cassette
Price: \$3.95
Rating: K

Quick, Nurse — the Screens!



A *KAMAKAZI* don't forget, no least in this top offering from *Blam!* you become a minuscule beam of energy, increased when the big robot comes of a not-so-good robot. These bugs are busy sabotaging the job of about by trying up for something. As a result more screen you must deal around the 12 screens of the *Blam!* don't forget, no least in this top offering from *Blam!*

You'll need to repair the bugs and your star balls and repair the display game before cumulative damage occurs the job of about by trying up for something. As a result more screen you must deal around the 12 screens of the *Blam!*

Then, if you get the damage level down to around 12, you're transported to another stage. *Blam!* don't forget, no least in this top offering from *Blam!*

The concept behind *Blam!* is a rather simple novel, uninteresting idea of one for slot-poker gamblers. Not that it would have made much difference anyway as I'm sure the deck was rigged. These amazing "Two Deal" promotions were far too frequent to be useful. Still I guess it's cheaper than a Greyhound to Vegas. — S.R.

Game: MICRODOT
Makes: BOTTIC
Machine: SPECTRUM 48K
Format: cassette
Price: \$5.95
Rating: KK

DRAGON

Hackers Against the Bomb

CASTLE HASSLE

Whispering text adventures that dare you to venture into a dark old castle in search of the legendary Staff of Oscuria. The program features 120 locations, but whether you'll feel seduced to roam them all after your local teenage movie stars (or wonder why is another matter. In any case, there are so many leads with this that it is almost become a deep maze of puzzles. A narrative stands up fairly to its title. Locations should be clearly described and messages interesting. After all the more worded the better (most appreciate the adventure's leads to become Unfortunately, "Learn an effort" is not my idea of an elaborate description, but it's typical of Castle Adventure, not only in the text but in its peppered with misspelled orthog-



FOR THE DRAGON 32

interesting strategy game that has you donning the somewhat pedantic guise of a bomb disposal officer. As in your job you've been called to defuse one of those old wartime devices that are dug up with such alarming regularity. Their waxes it's not one that you'll see often, so you'll require all your skill and ingenuity to defuse it. Mainly staff. Just choose the correct items from your toolkit and decide what course to take. The program enables you to view the one exploded device from three angles before choosing from a menu of actions. Will you lift the bomb, explode with the hydraulic jack or blast it with the sledge hammer? Nervous of steel and it's necessary. Should you manage to make any headway at all a help routine becomes available to guide you through the trickiest moments. I must certainly will not be taking up bomb disposal work full time. Almost every move I make resulted in a loud raspberry which either symbolically denoted my premature exit. Still for those of a methodical (not necessarily scientific) nature this might well provide amusement. — S.K.

Game: CCB
Makers: VIDEO GAMES
Machine: DRAGON 32
Format: cassette
Price: £6.95
Rating: C.C.



FOR THE DRAGON 32

total pages. I mean, what's an AI for if not to do it? (Sounds like a little better.) Even worse, you are unable to go in any interesting way within the program. Try something interesting and you'll get the inevitable response: "So? What? Fender? Didn't mention it." Sudden death that's about it. For no apparent reason you'll top over a cassette recorder and break your neck. What is a cassette recorder doing in a game adventure? Why are you given no indication of its presence? The whole thing is exceptionally tedious. This is one game most definitely not worth giving your time to. An AI for what? ... — S.K.

Game: CASTLE
ALPHAVISION
Makers: VIDEO GAMES
Machine: DRAGON 32
Format: cassette
Price: £6.95
Rating: cassette



MICRODEAL

Perhaps one of the more curious game adaptations for the home video is that of Pool. Seldom a hot subject with many an alien to be seen, this gut-baited parental fiasco surprisingly well. Despite a minimal graphics effort, it is most definitely unimpressive, and the skill level (pleasantly high). The rules are also refreshingly simple. Just put all your colours and get the cue ball into your opponent. Incidentally you will doubtless have to either an opponent as this Pool has no computer player option. The actual game is cleverly simulated. Once you've selected the angle of your shot using the joystick, a cue ball is displayed at the top of the screen along with a power bar indicator. This enables you to select outside the strength of your strike, but the amount of spin that you want to put on the ball. Master this and you're well on your way to becoming a top player.

Although visually less exciting than some of the versions around for the Spectrum, this feature combining sound effects and super smooth movement. My only real grip is with its failure to display a score during play. Most of the usual Pool rules apply and I have my regular player well find this a welcome supplement to that usual lot. — S.K.

Game: FIGHT BALL
Makers: MICRODEAL
Machine: DRAGON 32
Format: cassette
Price: £6.00
Rating: C.C.



It's another winner from the brilliant sights of Ken Katz, who almost single-handedly has introduced the world of Dragon with a man to make a name for. This feature retains features all of his excellent trademarks — exceptional fire graphics, exciting sound and imaginative gameplay.

There are three screens to play via. The first features more complex barriers drop bombs and divide into two if hit by your laser fire. Knock one of these smaller bits out and its team will start screaming down to rain you. It's rather like a turbo-charged Game Attack analysis targeting. Clear two screens of these bits and you'll be rewarded with a rather stark little on-screen target display. About the centre of the screen—dragging death and destruction at every turn.

There are five skill levels to play. Should you be foolishly enough to hit the upper levels there's a fair chance that you'll meet all the boss (hence the title). True to form, he'll unleash havoc with a lightning bombardment that'll rip up your statistics something rotten. Devil's Assault is a fast old game for those with an iron trigger-finger. It's superbly well coded and breathtakingly smooth. — S.K.

Game: DEVIL'S ASSAULT
Makers: MICRODEAL
Machine: DRAGON 32
Format: cassette
Price: £6.00
Rating: C.C.C.

Advertisement

POCKET THIS WALLET AND CALCULATOR. THEN WORK OUT HOW MUCH YOU'VE SAVED.



When you open savings account, you've to keep track of how much you've got in it.

That's why the first thing we give you when you open a NatWest ON LINE account is a calculator. A water-tight, always brought out of 1985, with continuous memory that keeps all balances, even when the module is switched off.

Not that you won't receive semi-annual statements of your account. But as an ON LINE Codeholder, you'll have the chance to buy the things you want through a special telephone ordering system. And since you can't buy what you can't afford, you'll need to know how much you can spend before you pick up the phone.

The calculator comes in a stylish wallet along with your Codeholder card. On this card, you will keep your personal number - the one you must quote when ordering items from the exclusive catalogue you will also receive upon joining the scheme.

The catalogue contains a wide range of specially selected goods, including electronics, games, cameras and even a portable TV.

Of course, you don't have to buy from the catalogue if you don't want to. Leave your savings in your account and they will accrue compound interest*. And we won't deduct income tax from the interest payments - unlike the building societies.

As an ON LINE saver you will regularly receive a special magazine containing features on music, careers and fashion.

You don't need a calculator to tell you that all of this adds up to a pretty impressive package.

To open a NatWest ON LINE account, you need £5, of which £2 covers membership.

Drop into your local NatWest branch today and do it.

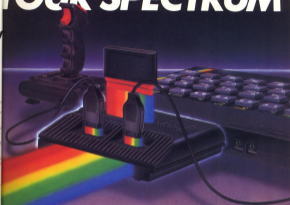
NatWest
The Action Bank

NatWest Westminster Bank PLC, 41 Lombard Street, London EC3P 3DF

All orders to goods supplied through the ON LINE system will be fulfilled by Express Delivery Ltd, an RCI Group Based Bradford, West Yorkshire. This scheme is available to any applicant under the age of 70. For complete information please visit us at your local NatWest branch.



TURBO CHARGE YOUR SPECTRUM



Outperforms any Spectrum interface

The unique Turbo interface from Ram gives you all these features – and more – in one unit:

- A variety of interfaces including Ram cartridges, two 5.25" D platters for standard joysticks, PLUS full-expression bus at rear.
- Compatible with Kempston and Protek protocols.
- Works with latest Quickshot II! auto repeat joystick!
- Choice of Rom cartridge or tape-cassette software.
- Instant program loading with cartridge software.
- Built-in power safety device – unique to Ram Turbo.
- Full one-year guarantee.
- Immediate availability – 24 Hr despatch on receipt of PO / credit card details (cheques – seven days).
- Incredible value – only £22.95.

So don't wait around – simply complete the coupon and send it to us today.

Or call our credit card line on 0254 25252. (Access and Visa welcome).

Ram Electronics (Fleet) Ltd, 106 Fleet Road, Fleet, Hampshire GU12 5RN.

Please send me:

- _____ Spectrum Turbo Interface(s) at £22.95
 + £1 p.p. (postage orders only p.p.)
 _____ Quickshot II joystick(s) at £9.95
 (Only when purchased with Turbo – normally £22.95 + £1 p.p.)

I enclose cheque/postal order or charge my Access/Visa if:

Name _____

Address _____

Tel _____

24 Hr despatch to credit card and postal orders



© Ram Electronics (Fleet) Ltd, 106 Fleet Road, Fleet, Hampshire GU12 5RN.

Trade and export enquiries welcome.

To date, Atari's most astonishing game is Pole Position... If you are only going to buy one game, then this is the one you should get.

COMPUTER & VIDEO GAMES.

...Pole Position gives a very strong sense of speed as you hurtle round the track. The super-realism of the three-dimensional effect adds a lot to the game. It is a great graphics demo.

PRACTICAL COMPUTING.

Brilliant!

WHICH MICRO? AND SOFTWARE REVIEW

...a terrific version of the arcade motor racing game... graphics are superb... sound, too is very good as brakes screech and engines rev-up.

PERSONAL COMPUTER GAMES.

Exciting, exhilarating, excellent, Pole Position takes the lead as the best Atari race game around.

PERSONAL COMPUTER NEWS.

What can we say?



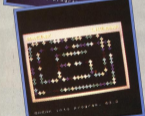
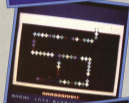
We're overwhelmed. Though we should just add that with AtariSoft, you can now play Pole Position[®] on the Commodore 64, BBC and Spectrum computers, as well as on all Atari[®] systems. Oh, and we're giving away free a Grand Prix kit and full colour wall chart with every game.

POLE POSITION
from ATARISOFT

EGBERT

Guide Egbert, the Silicon Snake, around the room and munch everything you can. Warning: Egbert moves VERY fast. Second Warning: touch your own tail or the walls of the room and you FRY. Slither on!

By STEVEN BARCLAY for SPECTRUM



```

1 GO TO 200
2 CLS LET X=0
3 Y=0
4 P=0
5 R=0
6 S=0
7 T=0
8 U=0
9 V=0
10 W=0
11 X=0
12 Y=0
13 P=0
14 R=0
15 S=0
16 T=0
17 U=0
18 V=0
19 W=0
20 W=0
21 W=0
22 W=0
23 W=0
24 W=0
25 W=0
26 W=0
27 W=0
28 W=0
29 W=0
30 W=0
31 W=0
32 W=0
33 W=0
34 W=0
35 W=0
36 W=0
37 W=0
38 W=0
39 W=0
40 W=0
41 W=0
42 W=0
43 W=0
44 W=0
45 W=0
46 W=0
47 W=0
48 W=0
49 W=0
50 W=0
51 W=0
52 W=0
53 W=0
54 W=0
55 W=0
56 W=0
57 W=0
58 W=0
59 W=0
60 W=0
61 W=0
62 W=0
63 W=0
64 W=0
65 W=0
66 W=0
67 W=0
68 W=0
69 W=0
70 W=0
71 W=0
72 W=0
73 W=0
74 W=0
75 W=0
76 W=0
77 W=0
78 W=0
79 W=0
80 W=0
81 W=0
82 W=0
83 W=0
84 W=0
85 W=0
86 W=0
87 W=0
88 W=0
89 W=0
90 W=0
91 W=0
92 W=0
93 W=0
94 W=0
95 W=0
96 W=0
97 W=0
98 W=0
99 W=0
100 W=0
101 W=0
102 W=0
103 W=0
104 W=0
105 W=0
106 W=0
107 W=0
108 W=0
109 W=0
110 W=0
111 W=0
112 W=0
113 W=0
114 W=0
115 W=0
116 W=0
117 W=0
118 W=0
119 W=0
120 W=0
121 W=0
122 W=0
123 W=0
124 W=0
125 W=0
126 W=0
127 W=0
128 W=0
129 W=0
130 W=0
131 W=0
132 W=0
133 W=0
134 W=0
135 W=0
136 W=0
137 W=0
138 W=0
139 W=0
140 W=0
141 W=0
142 W=0
143 W=0
144 W=0
145 W=0
146 W=0
147 W=0
148 W=0
149 W=0
150 W=0
151 W=0
152 W=0
153 W=0
154 W=0
155 W=0
156 W=0
157 W=0
158 W=0
159 W=0
160 W=0
161 W=0
162 W=0
163 W=0
164 W=0
165 W=0
166 W=0
167 W=0
168 W=0
169 W=0
170 W=0
171 W=0
172 W=0
173 W=0
174 W=0
175 W=0
176 W=0
177 W=0
178 W=0
179 W=0
180 W=0
181 W=0
182 W=0
183 W=0
184 W=0
185 W=0
186 W=0
187 W=0
188 W=0
189 W=0
190 W=0
191 W=0
192 W=0
193 W=0
194 W=0
195 W=0
196 W=0
197 W=0
198 W=0
199 W=0
200 W=0

```




DARK HORSE or LAST

PLUS POINT

Safe power switch at rear

PLUS POINT

Cartridge ports rationalised to 1

PLUS POINT

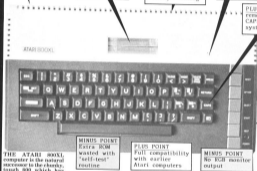
single i/o peripheral port enables 'daisy-chaining'

PLUS POINT

new slimline keyboard and casing design

PLUS POINT

remodelling CAPS LOCK system



THE ATARI 800XL computer is the natural successor to the chunky, tough 800 which has served the company so well for so long. As the medium-range model in the all-new XL series — with the 800 (38K) and the 1650XL2 at either extreme — it lines up naturally against the IBM 640/Electra price bracket. Actual cost: £249.99.

What do you get for the money? More importantly, how does it compare with its immediate ancestor?

To begin with, the case has been slimmed down, and narrow little items have been ditched up. There is no longer any second cartridge slot; more importantly, the Atari BASIC is built-in to the machine, obviating the need for the original BASIC ROM cart. Joystick ports are reduced

MINUS POINT

Extra ROM wasted with 'self-test' routine

PLUS POINT

Full compatibility with earlier Atari computers

MINUS POINT

No LCD monitor output

PLUS POINT

BASIC built-in

MINUS POINT

Atari peripherals only accepted

The sleek 800XL is the latest machine to be launched by a company which, years ago, became a legend in its own lunchtime. Is it the right product too late? TONY TYLER reviews...

from four to two, and moved from the front to the side of the machine. The power switch is now at the back, along with the remaining peripheral ports.

The keyboard has been changed in various subtle and pleasing ways. The Atari logo key remains, but is re-labelled with an anonymous graphic (this key is used for shifting into and out of reverse video). More importantly, the caps/lock system of the old 800/800 series has been

scrapped; the new arrangement resembles the BBC arrangement — though an LED to show when caps lock is on would have been a good idea. Otherwise the touch is light, sensitive and positive, with the keys falling nicely under the hand.

The main problem? HOLD! but it is, of course, merely an addition to the row of function keys. These, in brushed aluminium, are arranged vertically down the right hand side replacing the old

yellow plastic gobstopper of yore. There are now four such keys, all of which can be programmed via a PEEL (CODE) to achieve effects desired.

So much for the externals. Internally the circuitry has been re-designed, though it still owes most of its structure to the earlier 8000 chip choice and layout. Most evident change is in the size of the 8008, which is now considerably larger in order to accommodate the BASIC — though why Atari had to go and have

STASP?



Atari 800XL Technical Specification

Model: 800XL
 Color: up to 256
 Sound: five octaves, four channels
 Memory: 64K (32 available in free RAM)
 Price: \$349.95

white-address 14's look in the middle of a rich blue background turned out yellow-green. Not as precise as Atari have accustomed us to expect.

Carping criticisms over, this is really an excellent machine; and for games writers, I have to say (personal opinion) it's the best. 256 colors fill the largest palette in microchips. In the OTMA chip mode — 9 through 10 — up to 16 can be placed on the screen in any combination. The excellent Atari Player-Missile graphics are unchanged. I could only wish they'd seized the opportunity to clean up the BASIC.

Standard

Tread carefully here. Atari BASIC is nowhere near as unfriendly as Commodore's version. With its American spelling COLOR, etc, and its abandonment of POKE's and PEKE's, and its half-numbered device numbers, it looks like what it is: standard U.S. grade two Microsoft, neither remarkably horrible nor particularly useful. Color, sorry color, is easily accessible either through SCREEN parameters or much easier through POKE's. 500/500 parameters are definitely easier to manipulate than Commodore's or especially Acorn's (and the sound itself no whit less good in substance). But on HENDRICK! No REPEAT ... UNTIL! None of the nuances of 'structures' which have slowly been creeping into all other BASIC's with the exception of Commodore's. One machine has a pretty mishmash of SIN and COSINE; PEEK, in BASIC, are via the cumbersome all-purpose special X10 statement

The functional and tidy rear end of the Atari 800XL.

(from the top down, with only certain changes being acceptable. Mind you, the screwdriver is a piece of cake to use i.e. it's interchangeable, and the low interpreter whacks it with PEEK's signals whenever your syntax gets everything wrong.

Existing programs for Atari computers will all run — as far as I know; though machine code programs require use of the OPTION key to load.

A particularly nice facility

'This is really an excellent machine — the best for games. I only wish they'd cleaned up the BASIC'

of the old 800 which thankfully has been retained in the use of the RESET key to get into direct mode and clear the screen without affecting the RAM. For keeping track of the state of variables during debugging this is particularly useful.

Not there are some annoying things, too. For example the 800XL runs off a non-bulkier transformer, which unfortunately has no socket — an odd fit predecessor — for the power supply to the dedicated cassette recorder. Nor will the original 1980 transformer mate with the 800XL. Result: you now have to have a transformer for each peripheral; you see (though I personally made use of a 6x battery with the cassette recorder's power jack soldered to the terminals — such is the hi-tech life we all lead. But the worst problem is the documentation.

It beats me, it really does, why Atari have had so much trouble getting a decent manual together. Originally the 800 was sold with a clever, multi-colored volume which was like O level BASIC being taught by an arithmetic teacher about to drop dead from terminal exhaustion. Then they changed it (for the better) to Bill Currie's updated but slightly yabby re-

placement. The 800XL has nothing comparable in either — just a short guide in their language and a connect-up booklet. No memory map. None of the simpler PEKES and POKES. No index chart. No main register. Nothing, in short, of any real use.

Peripherals are disconnected from the single output socket; this system with 510 disc drive, cassette recorder and 1807 letter printer worked perfectly. The 16 socket labelled 'Monitor' em-

phatically handles, so, not RGB output (yet), but your Commodore-style TV output. There is also a mysterious parallel bus.

In conclusion: the Atari 800XL is not a vast improvement over the earlier 800; it is a slight improvement. Better styling, a better keyboard and rationalization of the 16 ports are pluses, as is the provision of an extra function key and the built-in BASIC. Essentially it's still the same machine — but as the 800 was, and is, such an excellent value, I'm not surprised that Atari took this decision. All in all, the adaptation of an outstanding design into a whole family of computers is an advance.

At £249.99 the 800XL is significantly pricier than its direct competitor, the IBM 84 and the Electron. Is it sufficiently better than these to justify the extra bucks? Depends what you want. It is easier to program and has better colour than the 84. It has more memory than the Electron. I should say, myself, that the price is just over the top.

For all that, the 800XL is a superb micro based on tried and trusted technology and an intelligent ancestor. Will it sell? It deserves to...

PLUS POINT
 joystick ports reduced to 3, moved to side

PLUS POINT
 Extra 'Help' function key

is the pretty but somewhat and finally under 740-Tera! better looks too. In fact, although the machine is advertised as possessing — and in theory possessing — 64 Kib K's of memory, what you get when typing PRINT FRE(0) is 32 and a half.

Generally speaking — as a dedicated 800 user — the operating system does have a different feel. The RESET key (usually a 'warm start', non-destructive facility) takes slightly longer to do its stuff. The SOUND statements produce slightly different effects in different sound chips, and the colours are more apt to bleed — not up to snuff by 800 standards. Example: a pure

KOSMIC KANGA



KOSMIC KANGA, a multi-screen, amazing, arcade standard original action game. Featuring superbly animated graphics and packed full of arcade features. Help **KANGA** find his space ship so he can return home to his planet. Leap about buildings, trees, clouds etc., pick up bonuses and throw boxing gloves at the enemies.

Keyboard or most joystick. **48K SPECTRUM** for most other Computers seen.

ONLY £5.95 EACH

Available from most good software retailers. If your local software retailer is out of stock, send cheque/P.O. to Micromania, 14 Lower Hill Rd., Epsom, Surrey, KT19 8LT., and we will send your order by first class post free.

MICROMANIA



Tutankhamun



48K Spectrum

Pengy



128K/48K Spectrum

Invasion Force



48K Spectrum price each £5.95



THE VERY first contact of any sort I had with "computer" was some time ago now, when a friend lent me an Intellivision system with a few random cartridges.

It was late, and inside the windows of the small store I'd left the wind howled furiously. One-on-one, a small determined figure stalked casually through a labyrinth of endless branching corridors, low in hand. All was silence save for my own increased breathing and the occasional faintest rumble of a sleeping dragon— and, of course, the wind.

A bat appeared, flapping rapidly toward my lead. Backward, I shot it. You arrive left. Another bat appeared, I flit, precipitately— straight into the air of a giant rat, which gnawed me, squawking wickedly. Pounding in fear, I shot that too—but not before the elf-knight had turned out with his own gun, having taken a severe wound from the overcast and maddening rains.

The third level got me just around the next corner. Blazing like a fire, it came at me with terrible speed. One arrow—my last—had no effect. I flit. The last, in my terror, I missed up my arch, and the serpent was on me.

A frenzied gasping... a convulsive struggle... and what was left of my primitive mortal soul went up in a swirl of steam.

Shuddering with terror, I sat out with a raw, expiring member. Surely he could make the Cloudy Mountains, claim the two lost halves of the Crown of Kings, and declare himself The Winner?

He didn't. Nor did his son reemerge.

I eventually got to bed at 4 a.m., having totally failed to crack *Advanced Dungeons and Dragons* on my level, even the first.

It was the standard of video games, I told myself, I was going to enjoy this new diversion. Also, it wasn't though it came to enjoy the diversion anyway. In fact, as I soon realized—and was later to have confirmed by personal experience (as well as others' opinions)—this particular game cartridge, coded by some anonymous Mattel keyboard slave for the Intellivision machine, was, and remains, in a class of its own.

For the uninitiated, the game plays a three-man expedition

at the far side of a Middle-earth-like map—different every time—made up of mountains (both passable and impassable), forests, rivers and fortress walls. The mission of the team is quite simple: to cross the landscape from left to right, reach the fabled Cloudy Mountains, enter it, and find the halves of the Lost Crown.

To do this you start your team towards visible mountains, taking the obstacles as they come, and choosing your own route. If a mountain is completely impassable it will change colour; if not, it won't, and you have to make other arrangements.

Each creature, which moves very slowly indeed, and can't be shot—be avoided, otherwise it will instantly die—and they cannot be shot. This can be aided with one arrow—but snakes, demons and dragons take two-winged dragons, which appear only in the last mountain, take three. They also move extremely fast and will chase you. Ever tried shooting while running? Can't be done. You must flee. And suitable terrain (long straight corridors are

But when you finally do cross all the mountains, forests and rivers the two halves of the Crown... then there's an immense feeling of satisfaction, considerably enhanced by a rest, reverberating chains of solemn celebration which almost outlast the famous long-distance march at the end

ADVANCED DUNGEONS AND DRAGONS

No. 2

MATTEL

Once inside the mountain the screen changes with a corresponding "whoosh". You are inside the tunnel system, armed with three magical red arrows and your wits. The administrative screen recedes, while the labyrinth unfolds around invisibly. As he advances, the tunnels light up and stay lit, so you can tell where you've been before. Your object is to find one of the magic crown half-halos which you will need to complete the journey; you can find more arrows in a cavern. You will also need to find the way out to holders.

Preventing you from carrying out these remarkable tasks are bats, spiders, giant rats, giant snakes, liches, demons and dragons. They are all extremely nasty.

Data Kap and make you panic but are otherwise quite fun to kill. Beware those only when you have a generous surplus of arrows. Spiders crawl slowly and are easily avoided, though if they touch you they will drain an arrow for

each, plant your feet, slowly, and be the last to have it, as it changes. Keep your nerves and don't be seduced to look for it.

Additional touches emerge as you get into the game. Monsters will wake and make some noise or other if you are unseen (whether visible or not), thus allowing you to deduce where they must be lurking. Monsters will pursue you in a surprisingly long way, investigating absolute nonsense of touch with their claws, since these corridors twist and turn a lot, a hallway when some food remains is closing fast, but, in fact, it remains dead. And, as the more difficult levels of play (there are five), even when you run for it the things run faster than you. In "Hell" level Dragons and Demons and Poles, in particular, attack with unbelievable speed that it becomes absolutely essential to have a good sense of where they are before advancing. They shoot into the dark.

of the *Book of A Day In The Life*.

Advanced Dungeons and Dragons is an odd, outlandish but game, a piece of programming wizardry and an absolutely superb example of overall game design (not at all the same thing) in the heyday of microcomputer business. It was rarely out of the ROM charts, everywhere, for almost as long as only to introduce owners (I remind one of them, for the sake of this game alone).

Unfortunately this situation is not now likely to change. More's the pity. The system has been overtaken by events and by technology—and fashion—but it remains a very good video game system (based, as so much on accounts of the hardware which the data apart, is excellent, but for the spectacularly high standard of the software). And of the latter, too I think will agree if I claim, premier status, since for the Jewel in Mattel's Crown.

TONY TYLER

for SINCLAIR ZX81



```

005 PRINT AT 3.0;"ECONOMIC FORE
CAST FOR COMPANIES TO 1985"
010 PRINT AT 5.0;"GROSS PROFIT
S"
020 PRINT AT 7.0;"
030 PRINT AT 9.0;"UNEMPLOYED",TAB
10
040 PRINT AT 11.0;"2..NO EMPLOYE
E"
050 PRINT AT 13.0;"3..GROSS INCO
ME"
060 PRINT AT 15.0;"4..R.N.D."
070 PRINT AT 17.0;"5..ADVERTISING
PER ITEM"
080 PRINT AT 19.0;"6..GROSS PROFIT
PER ITEM"
090 PRINT AT 21.0;"7..NO OF LOANS"
100 PRINT AT 23.0;"8..GROSS PROFIT
PER ITEM"
110 PRINT AT 25.0;"9..GROSS PROFIT
PER ITEM"
120 PRINT AT 27.0;"10..GROSS PROFIT
PER ITEM"
130 PRINT AT 29.0;"11..GROSS PROFIT
PER ITEM"
140 PRINT AT 31.0;"12..GROSS PROFIT
PER ITEM"
150 PRINT AT 33.0;"13..GROSS PROFIT
PER ITEM"
160 PRINT AT 35.0;"14..GROSS PROFIT
PER ITEM"
170 PRINT AT 37.0;"15..GROSS PROFIT
PER ITEM"
180 PRINT AT 39.0;"16..GROSS PROFIT
PER ITEM"
190 PRINT AT 41.0;"17..GROSS PROFIT
PER ITEM"
200 PRINT AT 43.0;"18..GROSS PROFIT
PER ITEM"
210 PRINT AT 45.0;"19..GROSS PROFIT
PER ITEM"
220 PRINT AT 47.0;"20..GROSS PROFIT
PER ITEM"
230 PRINT AT 49.0;"21..GROSS PROFIT
PER ITEM"
240 PRINT AT 51.0;"22..GROSS PROFIT
PER ITEM"
250 PRINT AT 53.0;"23..GROSS PROFIT
PER ITEM"
260 PRINT AT 55.0;"24..GROSS PROFIT
PER ITEM"
270 PRINT AT 57.0;"25..GROSS PROFIT
PER ITEM"
280 PRINT AT 59.0;"26..GROSS PROFIT
PER ITEM"
290 PRINT AT 61.0;"27..GROSS PROFIT
PER ITEM"
300 PRINT AT 63.0;"28..GROSS PROFIT
PER ITEM"
310 PRINT AT 65.0;"29..GROSS PROFIT
PER ITEM"
320 PRINT AT 67.0;"30..GROSS PROFIT
PER ITEM"
330 PRINT AT 69.0;"31..GROSS PROFIT
PER ITEM"
340 PRINT AT 71.0;"32..GROSS PROFIT
PER ITEM"
350 PRINT AT 73.0;"33..GROSS PROFIT
PER ITEM"
360 PRINT AT 75.0;"34..GROSS PROFIT
PER ITEM"
370 PRINT AT 77.0;"35..GROSS PROFIT
PER ITEM"
380 PRINT AT 79.0;"36..GROSS PROFIT
PER ITEM"
390 PRINT AT 81.0;"37..GROSS PROFIT
PER ITEM"
400 PRINT AT 83.0;"38..GROSS PROFIT
PER ITEM"
410 PRINT AT 85.0;"39..GROSS PROFIT
PER ITEM"
420 PRINT AT 87.0;"40..GROSS PROFIT
PER ITEM"
430 PRINT AT 89.0;"41..GROSS PROFIT
PER ITEM"
440 PRINT AT 91.0;"42..GROSS PROFIT
PER ITEM"
450 PRINT AT 93.0;"43..GROSS PROFIT
PER ITEM"
460 PRINT AT 95.0;"44..GROSS PROFIT
PER ITEM"
470 PRINT AT 97.0;"45..GROSS PROFIT
PER ITEM"
480 PRINT AT 99.0;"46..GROSS PROFIT
PER ITEM"
490 PRINT AT 101.0;"47..GROSS PROFIT
PER ITEM"
500 PRINT AT 103.0;"48..GROSS PROFIT
PER ITEM"
510 PRINT AT 105.0;"49..GROSS PROFIT
PER ITEM"
520 PRINT AT 107.0;"50..GROSS PROFIT
PER ITEM"
530 PRINT AT 109.0;"51..GROSS PROFIT
PER ITEM"
540 PRINT AT 111.0;"52..GROSS PROFIT
PER ITEM"
550 PRINT AT 113.0;"53..GROSS PROFIT
PER ITEM"
560 PRINT AT 115.0;"54..GROSS PROFIT
PER ITEM"
570 PRINT AT 117.0;"55..GROSS PROFIT
PER ITEM"
580 PRINT AT 119.0;"56..GROSS PROFIT
PER ITEM"
590 PRINT AT 121.0;"57..GROSS PROFIT
PER ITEM"
600 PRINT AT 123.0;"58..GROSS PROFIT
PER ITEM"
610 PRINT AT 125.0;"59..GROSS PROFIT
PER ITEM"
620 PRINT AT 127.0;"60..GROSS PROFIT
PER ITEM"
630 PRINT AT 129.0;"61..GROSS PROFIT
PER ITEM"
640 PRINT AT 131.0;"62..GROSS PROFIT
PER ITEM"
650 PRINT AT 133.0;"63..GROSS PROFIT
PER ITEM"
660 PRINT AT 135.0;"64..GROSS PROFIT
PER ITEM"
670 PRINT AT 137.0;"65..GROSS PROFIT
PER ITEM"
680 PRINT AT 139.0;"66..GROSS PROFIT
PER ITEM"
690 PRINT AT 141.0;"67..GROSS PROFIT
PER ITEM"
700 PRINT AT 143.0;"68..GROSS PROFIT
PER ITEM"
710 PRINT AT 145.0;"69..GROSS PROFIT
PER ITEM"
720 PRINT AT 147.0;"70..GROSS PROFIT
PER ITEM"
730 PRINT AT 149.0;"71..GROSS PROFIT
PER ITEM"
740 PRINT AT 151.0;"72..GROSS PROFIT
PER ITEM"
750 PRINT AT 153.0;"73..GROSS PROFIT
PER ITEM"
760 PRINT AT 155.0;"74..GROSS PROFIT
PER ITEM"
770 PRINT AT 157.0;"75..GROSS PROFIT
PER ITEM"
780 PRINT AT 159.0;"76..GROSS PROFIT
PER ITEM"
790 PRINT AT 161.0;"77..GROSS PROFIT
PER ITEM"
800 PRINT AT 163.0;"78..GROSS PROFIT
PER ITEM"
810 PRINT AT 165.0;"79..GROSS PROFIT
PER ITEM"
820 PRINT AT 167.0;"80..GROSS PROFIT
PER ITEM"
830 PRINT AT 169.0;"81..GROSS PROFIT
PER ITEM"
840 PRINT AT 171.0;"82..GROSS PROFIT
PER ITEM"
850 PRINT AT 173.0;"83..GROSS PROFIT
PER ITEM"
860 PRINT AT 175.0;"84..GROSS PROFIT
PER ITEM"
870 PRINT AT 177.0;"85..GROSS PROFIT
PER ITEM"
880 PRINT AT 179.0;"86..GROSS PROFIT
PER ITEM"
890 PRINT AT 181.0;"87..GROSS PROFIT
PER ITEM"
900 PRINT AT 183.0;"88..GROSS PROFIT
PER ITEM"
910 PRINT AT 185.0;"89..GROSS PROFIT
PER ITEM"
920 PRINT AT 187.0;"90..GROSS PROFIT
PER ITEM"
930 PRINT AT 189.0;"91..GROSS PROFIT
PER ITEM"
940 PRINT AT 191.0;"92..GROSS PROFIT
PER ITEM"
950 PRINT AT 193.0;"93..GROSS PROFIT
PER ITEM"
960 PRINT AT 195.0;"94..GROSS PROFIT
PER ITEM"
970 PRINT AT 197.0;"95..GROSS PROFIT
PER ITEM"
980 PRINT AT 199.0;"96..GROSS PROFIT
PER ITEM"
990 PRINT AT 201.0;"97..GROSS PROFIT
PER ITEM"

```

```

404 PRINT AT 1.0;"THE YEAR 1985"
410 PRINT AT 3.0;"UNEMPLOYED",TAB
10
420 PRINT AT 5.0;"2..NO EMPLOYE
E"
430 PRINT AT 7.0;"3..GROSS INCO
ME"
440 PRINT AT 9.0;"4..R.N.D."
450 PRINT AT 11.0;"5..ADVERTISING
PER ITEM"
460 PRINT AT 13.0;"6..GROSS PROFIT
PER ITEM"
470 PRINT AT 15.0;"7..NO OF LOANS"
480 PRINT AT 17.0;"8..GROSS PROFIT
PER ITEM"
490 PRINT AT 19.0;"9..GROSS PROFIT
PER ITEM"
500 PRINT AT 21.0;"10..GROSS PROFIT
PER ITEM"
510 PRINT AT 23.0;"11..GROSS PROFIT
PER ITEM"
520 PRINT AT 25.0;"12..GROSS PROFIT
PER ITEM"
530 PRINT AT 27.0;"13..GROSS PROFIT
PER ITEM"
540 PRINT AT 29.0;"14..GROSS PROFIT
PER ITEM"
550 PRINT AT 31.0;"15..GROSS PROFIT
PER ITEM"
560 PRINT AT 33.0;"16..GROSS PROFIT
PER ITEM"
570 PRINT AT 35.0;"17..GROSS PROFIT
PER ITEM"
580 PRINT AT 37.0;"18..GROSS PROFIT
PER ITEM"
590 PRINT AT 39.0;"19..GROSS PROFIT
PER ITEM"
600 PRINT AT 41.0;"20..GROSS PROFIT
PER ITEM"
610 PRINT AT 43.0;"21..GROSS PROFIT
PER ITEM"
620 PRINT AT 45.0;"22..GROSS PROFIT
PER ITEM"
630 PRINT AT 47.0;"23..GROSS PROFIT
PER ITEM"
640 PRINT AT 49.0;"24..GROSS PROFIT
PER ITEM"
650 PRINT AT 51.0;"25..GROSS PROFIT
PER ITEM"
660 PRINT AT 53.0;"26..GROSS PROFIT
PER ITEM"
670 PRINT AT 55.0;"27..GROSS PROFIT
PER ITEM"
680 PRINT AT 57.0;"28..GROSS PROFIT
PER ITEM"
690 PRINT AT 59.0;"29..GROSS PROFIT
PER ITEM"
700 PRINT AT 61.0;"30..GROSS PROFIT
PER ITEM"
710 PRINT AT 63.0;"31..GROSS PROFIT
PER ITEM"
720 PRINT AT 65.0;"32..GROSS PROFIT
PER ITEM"
730 PRINT AT 67.0;"33..GROSS PROFIT
PER ITEM"
740 PRINT AT 69.0;"34..GROSS PROFIT
PER ITEM"
750 PRINT AT 71.0;"35..GROSS PROFIT
PER ITEM"
760 PRINT AT 73.0;"36..GROSS PROFIT
PER ITEM"
770 PRINT AT 75.0;"37..GROSS PROFIT
PER ITEM"
780 PRINT AT 77.0;"38..GROSS PROFIT
PER ITEM"
790 PRINT AT 79.0;"39..GROSS PROFIT
PER ITEM"
800 PRINT AT 81.0;"40..GROSS PROFIT
PER ITEM"
810 PRINT AT 83.0;"41..GROSS PROFIT
PER ITEM"
820 PRINT AT 85.0;"42..GROSS PROFIT
PER ITEM"
830 PRINT AT 87.0;"43..GROSS PROFIT
PER ITEM"
840 PRINT AT 89.0;"44..GROSS PROFIT
PER ITEM"
850 PRINT AT 91.0;"45..GROSS PROFIT
PER ITEM"
860 PRINT AT 93.0;"46..GROSS PROFIT
PER ITEM"
870 PRINT AT 95.0;"47..GROSS PROFIT
PER ITEM"
880 PRINT AT 97.0;"48..GROSS PROFIT
PER ITEM"
890 PRINT AT 99.0;"49..GROSS PROFIT
PER ITEM"
900 PRINT AT 101.0;"50..GROSS PROFIT
PER ITEM"
910 PRINT AT 103.0;"51..GROSS PROFIT
PER ITEM"
920 PRINT AT 105.0;"52..GROSS PROFIT
PER ITEM"
930 PRINT AT 107.0;"53..GROSS PROFIT
PER ITEM"
940 PRINT AT 109.0;"54..GROSS PROFIT
PER ITEM"
950 PRINT AT 111.0;"55..GROSS PROFIT
PER ITEM"
960 PRINT AT 113.0;"56..GROSS PROFIT
PER ITEM"
970 PRINT AT 115.0;"57..GROSS PROFIT
PER ITEM"
980 PRINT AT 117.0;"58..GROSS PROFIT
PER ITEM"
990 PRINT AT 119.0;"59..GROSS PROFIT
PER ITEM"

```


3 from POSTERN for '84



2

DINKY DIGGER

It's super-fast, furious and as mean as they come.
(Spectrum 48K)

1

XANAGRAMS

Over 5,000 permutations in this game of skill for all ages.
(Spectrum 16K/48K 88C or Electron CBM-64)

3

PENGWYN

As the temperature rises, strange happenings begin in Pengwyn's frozen world.
(Spectrum 48K 88C or Electron CBM64 Spectra video)

POSTERN

Available nationally from specialist retailers and all good multiples.

Please enter quantities required in boxes provided and state computer type.

Name
Address

W.R.E.S.M.

POSTERN Postern Ltd, PO Box 1, Ambleside, Manchester, Greater Manchester, M13 9PL. Telephone 061 275 4444. Fax 061 275 4445. Price per single transaction only.



POSTERN

Please Postern People post me

1

2

3

Price £6.95 each

(£7.95 for overseas mail order)

held on mobile phone handset.

There are two basic types: acoustic and direct connect. Acoustic modems have been around so long, it is hard to believe that the direct-connect variety. They are shaped into rubber or plastic sticks that slot into which you jam your telephone handset ear and mouth pieces. A word of warning here — if you have a Triumphs, or a Mickey Mouse phone, or any other weird telephone instrument, then your chances of successfully sticking the modem into an acoustic modem are pretty slight — or none at all, to be precise. So, you have to have a standard British Telecom tone phone, called a series 700, for a start. But other than that, any micro with an RS232 or equivalent serial interface port is on its way. If your micro doesn't have an interface as standard, fear not, the gap has been spotted and plenty of starting can be made by manufacturing and selling interfaces for the likes of the Dragon or

Amiga for acoustic modems is noisy, whether it's on-line or simply in the room you happen to be in, so don't sit in the kitchen with the washing machine on or near anyone who's taken to doing jobs in the plastic-walk! Noise, unfortunately, interfaces with the signal transmitters, and you can end up with considerable amounts of garbage on your screen.



At the lower end, cost-wise of the acoustic market, modems include the Networking Interface from Prime Technology Holdings at £80.10 and the built-in year-self acoustic kit from Maple Electronics, at £90.

Variations in price, however, are not the only difference between modems. Ma-

test down the line, otherwise it could be pretty dangerous!

These regulations, baud rates and duplex modes also apply to direct-connect modems. In their case, they are connected directly to the phone wire, usually via a jack socket which BT has to install for you (cost around £20-£25 — they don't take kindly to people hand-wiring their kit into BT lines). Direct connect modems tend to be more expensive than their acoustic counterparts, though the price of everything connected with the micro market is dropping so fast that you know what will have happened by the time this is published! Direct connectors do, however, have the distinct advantage that they don't suffer from noise interference as they are plugged directly into the line.

Softcom has just popped into the market with its Modems (they probably took months to come up with that name) which for £60.90, gives you direct connect on 280/300



to access with it. So it might be best to read this article in reverse, 'cos here's the 'what's in it for me' section.

There's Primal, for one. A vast database that was looking pretty shaky till the micro boom (most things up a lot). As well as its own information, covering most things from airport flight departures and arrival times to points on the stock exchange — a member of Information Providers, also offer their wares on Primal. These include Microsoft 800 which offers (software) both free and charged) which can be downloaded from the screen into your micro. Its own mailbox for exchange of messages (forums, they are named) and an electronic magazine on the computer industry. For more users, it's

WHISPERING WIRES...

options).

There is a wide variety of acoustic modems on the market which, despite varying considerably in price, don't necessarily vary greatly considerably in quality. Among the more expensive (and some say the best) are the A211 and A2111 from Andronic Electronics. The

There is also worth a thing at a baud rate — the frequency at which messages are transmitted — the higher the frequency, the faster the transmission. There are two most commonly used rates, 1200/75, which means information is sent at 75 baud and received at 1200 baud; and the 300/300 rate (work it out for yourself). The former is the one used by Primal to communicate with its enormous database, while the latter is used commonly used to communicate from one micro to another, or to the ever-growing number of micro bulletin boards around the country. So, to transmit the Networking Interface, which has a baud rate of 1200/75, is great for getting into Primal and its attendant services like Microsoft 800 or Wansee 200 — but so are all if you want access to other micro enthusiasts, via the bulletin boards. Whereas the 300/300 baud kit from Maple presents you with the problem in reverse. On top of that, once you've built your modem from a kit, you have to test it out and it may well be that the code you receive if you don't, think you're breaking the law. (This is to make sure that the correct signals are

used. You'll have to cough up an extra £9.95 for a meter, whether you don't just want to run it off the battery, though.) Prime pops up again in the direct connect market with a range of modems, including the VT0200L, at £39.95 (specifically designed for Spectrums) and the Modem 1000 at £69.95 (not for a number of other reasons). The Prime direct connect modems, like the acoustic, operate at 1200/75 for access to Primal and other points (videotex services). If you're not so keen on a modem which allows you to change from 1200/75 full

actually a pretty good service, though it will cost you £10 a year to subscribe to Microsoft, plus £5 a quarter for Primal. Plus the phone bill. There is also Wansee 200, an open database which offers software, and news and news on the micro scene, and is the home of the infamous MicroGems who is no respecter of anything.

Now for the 300/300 baud kit, which really means bulletin boards. They are all free and provide a forum for messages and notices, often of particular interest, to the entire bulletin board community. For sale, programming manuals, general tips, personal messages and notices of free software. Bulletin boards are not just limited to the UK. As most of Europe into the same telephone frequency standards set down by the International Committee for International Telegraph and Telephone (CCITT — but still had to explain), bulletin boards in Sweden, for instance, are at your disposal.

The USA however, is no good.

Let me re-phrase that. You can't use the US bulletin boards because they use different frequencies.

Clear now?

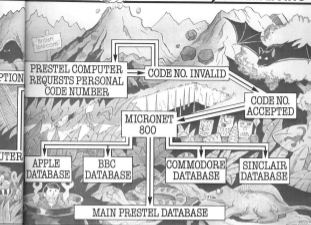


A211, cost £200, has rotating roller caps (1) which are removed into different positions to accommodate different shaped handsets (still in Triumphs though), as well as allowing both full-duplex (which means that two-way communication is possible simultaneously) and half-duplex (where you can only communicate in one direction at a time). The A211 comes with an optional extra feature, second roller caps (2) which allow which 1200/75 direct connect mode on the line. There's always another role. One of the major prob-



blems to 1200/1200 half duplex to communicate direct user to user — but, so far, Prime haven't come up with the software to allow you to do this.

So now you've got your modems and your software and it's all surely approved, but in buying it you'll have had to decide what you want



m. People place

for my wants or provide special services. On my travels I came across amazing sights.

A gathering place for various computer clubs called "Outbase." The start of a month always featured games for up to 1,000 players, main-hosting their movies and Micronet use their computers. A group of natives forming a "Computers for Peace" movement. An interactive game HELP section. The popular mainline service which enables natives to leave messages for each other. A stunning, horror of their own kind for a 16-bit world. Constantly updated newsletters. Amazing much more.

I had had the foresight to bring my printer along and, using the "Print" home option, took good use of a printing unit many of the Press Tel natives didn't have prior to my discovery. My only fear was that my own supply would not hold out.

Later in the day I suggest my first piece of software. I selected an easy target, a free game. Finding the appropriate page I called up the "Database" menu. Next the 16-bit world issued a number and the game came flooding down through various options. The whole operation took a few minutes as the program was transmitted a page at a time. As usual I used the game unit and sat it. Not bad quality at all, it'll make a good backup for the time being.

All the while I was making literature I was aware of the vast territory called Prestel surrounding me on all sides. I knew I would sooner or later have to face it. I decided it would be someone logging off Micronet I returned to camp and sleep habits.

DAY 4

Left camp in an unsteady mood. The security of my mission weighed heavily on me.

Entered Micronet through the by now familiar routine. Coming to the main menu page I struck off onto the system market Prestel had for me to explore.

Seconds later I was inside main:App:Exp:0000000. "Welcome" hardly described it. My experience lay a staggering half a million pages of information and services. Almost every conceivable feature was catalogued for me from finding a plumber to playing the stock market.

Nevertheless I ventured forth, choosing my routes carefully. This was not easy because even the indexes had indexes!

The wealth of data almost fogged my mind several times. Services, travel, entertainment, video, books, games, goods and services for sale — and that hardly scratched the surface.

I found that the natives had formed index coded (PI) or "Information Preservers." Each index had established its own territory with large blocks of pages devoted to different subjects. It was hard to come across.

Following the manufacturer's advice was easy while there were "experts" back to the main Prestel index. But as I wandered into my territory the subjects changed, leading me back to the computer from a main menu or group page. All the indexes I had found vanished. The replication suddenly hit me — I was lost!

"Panic-stricken" I took the emergency escape route — I logged off the system.

Returned to camp. Accepted. Carriers arrived around at the entrance but stopped when the sign of his good leg on the foot.

DAY 5

Back in the land of Prestel. After much consideration I had, in the parlance of the computer-nerds, "checked out." Careful study of the system manual had shown the secret of the business: SYMBOL, SELF and ENTER keys.

Used together with a particular page number they enabled me to get to that page from anywhere in the Prestel system. So "I" from ENTER would immediately get me back to Prestel for more data from adventure 1.

I then have the key to direct exploration of the Prestel and Micronet databases. Incredible wonders for ahead of me. The choice of my life impressed itself on me. I got off full of hope. I stay never return!

Editor's Note:
This was the last heard from Alan Livingstone (the subject). He vanished without trace after promising that early, unaided, unaided assistance (and even of help). His new page finally building but never that one day he made any return from the electronic jungle.

BE A KERRY* FOR FUN, PROFIT- AND A FIVE YEAR STRETCH

NOT EVERYBODY that glances in gold, never more true than when you assume the supposed security of telecommunications systems. If the Bank of England's gold reserves were as well guarded as the details on most on-line databases then we'd all be very poor.

British Telecom's Gold electronic mail system appeared more than a little terrified on evaluating the 17-year-old BBC's "Mystery" special and Sunday morning last autumn. The hackers had struck! They'd apparently located legal access to GOLD in a short while, nearly spent the show.

And, on Monday, in the "Week" programme a few months later, an American "hacker" or female hacker described how she was offering to come to crack databases holding details of someone's spending on a visit to the States — by British passport status to find out what she'd been buying.

Now there are two bits of jargon here that need definition — the first's about talking for a you like in the world using your personal computer... and the second is a kind of electronic eavesdropping.

Radio/Computer from the multi-national chip supplier Motorola also released that getting into those areas is cheap — all of the you'll need to crack the most sophisticated systems are ordinary systems, say three used in banks, "would cost less than \$1,000."

A "few" examples of how easy it



is the net result has been just the opposite: hackers are now a sub-otlet to the Atlantic.

Dr Charles Wood of the Stanford Research Institute, one of the high-powered Universities which produced a majority of the people now working in Silicon Valley, is studying the phenomenon. "We're misjudging the numbers of people who now call themselves hackers by treating them as if they were criminals," he said.

Dr Wood described how what the California papers dubbed "The Hacker Trail" last year concerned "juvenile systems hackers, plain, ordinary middle-class

just followed the most basic common-sense rules — like changing the passwords regularly," ticked American computer security consultant Michael Nys.

One female West Coast hacker, Susan Herley — apparently using a nifty 32-bit rig from the rather aptly named Fortune Systems — said that getting the command was normally "2000 of code." She'd call up the organization whose database she wanted to crack "and just ask for the codes, saying I'm an engineer, work, and I've got a printer... forgotten the password. And most of them give it

"This identity may be long abandoned, but the password you still be valid. And on this file, you are likely to find thousands of old letters, on similar subjects," according to Kersey — who is quoted here not by way of example, but to warn you how easy it can be to have your electronic mail opened and read by one of the many Feds, Dick or Frank.

Hacking's a serious business — as the BBC has emphasized in its documentary through both documentary of how it has been done into other — and a live experience of its own. But a criminal offense? If you get caught trying to enter a bank's telephone system then it'd be considered attempted robbery in America, though the position is less clear through lack of anybody having done it over here... or at least being caught.

At the start of 1983 Lloyd's Bank, Halifax branch was subject of several million dollars, unspecified deposits and some 2000. It started working on the night of the case later found that a GPO branch line between Lloyd's computer centre and the bank had been tampered with. It appeared as if a gang of thieves of above average intelligence had intercepted the command line to the bank's vault.

Without breaking the central "story" about these high-tech thieves had obviously entered the electronic vault where the computer centre transmitted to the branch every morning to open the six-inch thick steel doors at the vault. Working with the wreckage, they had misidentified the vault and — some months — walked straight into the vault. Back at the Lloyd's HQ, and also at the City Police station, which most banks also have links into, nothing stirred the system — the thieves had also mastered the "all-quiet" signal.

PAUL WALTON

TONY BRIDGES



*Kerry of Kerry Parker, i.e. Hacker (s.) of computerized trespasser. Derog.

is to hack open electronic mail — perhaps the final war on TV — came when the high-tech Japanese Bank had Access man John Cox, otherwise known as OWL201, to shut up the BT Gold computer's central database. He topped in in his absolutely Private and Confidential password ("BBC") to be given access to the BT Gold logs — and by a fellow "legal Access" program — and a great deal of details flooding from the BBC database was using at the time.

With Mike-buff Guy Kersey has since revealed how the brown stuff really got the fan: "In the subsequent inquiry, the BBC accused Gold of doing it as a publicity stunt. Gold accused the BBC of doing the same thing, and two suspended programmers were bumped off the system forever, having their identities 'declassified'."

And at this message contributor offered a (joke) The authorship, especially in the States, are apt to get very hairy with hackers in order to discuss the the young and more disaffected element in the personal computer industry from ever trying to break into any system. Of course,

also found guilty of a felony — they, or their parents, ended up paying \$255,000 in damages since the systems entire operating systems had to be reinstalled from the ground up! And they were only just playing around with the system, after leaving grade."

Another businessman there described in vivid detail how he had personally assessed the War Games military scenario network in sort of lay brother to BT Gold, which was the film's basis in fact and had never really "walked straight through all the security controls." Just as in the film, the argument was to understand that positively encouraged him to proceed.

"Eventually I logged on at a guest of the Nonregional Defense Army processor" is half of a long way from the West Coast University where he was sitting, "and on that system we could look at the locations of all the Russian underground missile base sites that the US military had found," said the unrepentant hacker.

"If ten per cent of hackers could never even get started if people

but without even asking who you are, or why you want to know," he said.

Did she hack open the American Express database for British newspapers? "No, they didn't want to offer me enough money to do that," added Herley.

Hacking's a piece of cake according to Guy Kersey. "I think in terms through other people's pages, quite by accident, of course, will show you that contacts are set up, that names exchanged between executives in the same organization but on different sites, and names are kept."

"Other peop's pages? That is not problem either. Most users are not ready for... hackers," Kersey continues. "Typically, somewhere in the file created by each user is a copy of a letter, written from somebody in bank, telling the user of the password they can make available, temporarily, to a client. Tell them to use ID 0001 123, and the password HACK, the message might say."

SOFTWARE INVASION...

an excitement invade your home computer!
travel to Alpha Centauri. Enter the Vortex.
Command the ground missiles, or join the
hoot-out at the O.K. Corral!

be long
personal
CD on this
and thera-
in America
to read by
well just
have your
and read
flow. Disk

business
ly need to
from disc-
tion. Oper-
at a level
n. But a
you get
a ball's
it'll be
bitrary in
entirely in
a, of ship-
have, . . .
it!

I loved to
ask more
million
deposits
factious
consumed
a SMPD
it'll be
to know
with. It
business
policies
and

control
right-hand
by coordi-
nated
limited
being to
to a level
ing and
of secur-
— open
right into
not a P&L
operation
own links
oper com-
manded

?



SYSTEMS

...the moment of the celebration that was of the morning to conduct. At the
ground of light has been spread around the kitchen, why a post-war world from the open
three windows. — 3D BIRD HILL, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS
ON 3D BIRD HILL, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS

3D BIRD HILL

...the continued wonder of the beauty ground missile had long now exhausted him... unless the
had some of those hidden lines. The fact, in the most creative of some was a killing shot.
ON 3D BIRD HILL, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS

3D BIRD HILL

In pursuit for they will the control number filled with the picture of two eyes were watching
from their windows now, suddenly he stood in the left window, then got back to help again.
ON 3D BIRD HILL, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS



- Distributors, Multiple Store and Retailer Group Inquiries Invited
- Available from WH Smith, HMV, all Specialist shops and over 500 retail outlets in the UK.

WARRIOR WOLF

...the moment of the celebration that was of the morning to conduct. At the
ground of light has been spread around the kitchen, why a post-war world from the open
three windows. — 3D BIRD HILL, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS

3D BIRD HILL

In pursuit for they will the control number filled with the picture of two eyes were watching
from their windows now, suddenly he stood in the left window, then got back to help again.
ON 3D BIRD HILL, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS

WARRIOR WOLF

...the moment of the celebration that was of the morning to conduct. At the
ground of light has been spread around the kitchen, why a post-war world from the open
three windows. — 3D BIRD HILL, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS

3D BIRD HILL

In pursuit for they will the control number filled with the picture of two eyes were watching
from their windows now, suddenly he stood in the left window, then got back to help again.
ON 3D BIRD HILL, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS

WARRIOR WOLF

...the moment of the celebration that was of the morning to conduct. At the
ground of light has been spread around the kitchen, why a post-war world from the open
three windows. — 3D BIRD HILL, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS

Go you to the...
program...
software...
...the moment of the celebration that was of the morning to conduct. At the
ground of light has been spread around the kitchen, why a post-war world from the open
three windows. — 3D BIRD HILL, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS, SOUND EFFECTS

SOFTWARE INVASION

10 Bloor's St. Southwark, London SE1 1TF, UK

Send to: SOFTWARE INVASION, 10 BLOOR'S STREET, SOUTHWARK, LONDON SE1 1TF, UK

NAME	BUY	TRIAL	LOW	RETAIL	RETAIL	T
NAME						
ADDRESS						
CITY						
POSTCODE						
PHONE						
TELEFAX						
E-MAIL						
COMPANY						
DEPARTMENT						
POSITION						
DATE						

I enclose my cheque/PO for £.....
Name: _____
Address: _____
City: _____
Postcode: _____
Phone: _____
Telefax: _____
E-mail: _____
Company: _____
Department: _____
Position: _____
Date: _____

© 1995 Software Invasion. All Rights Reserved. Please Contact Us
Where Other Software is Available.

PARAMOUNT SOFTWARE



NEW!

MEGAWARZ
SOFTWARE

MEGAWARZ takes you into space to take your most powerful weapons, weapons and your most powerful allies to fight against the evil alien empire. For the ultimate challenge, play as the evil alien empire. Available separately for Commodore/Amiga and Spectrum. £29.95



NEW!

CHOCABLOC

PARAMOUNT
SOFTWARE

CHOCABLOC is an exciting and addictive puzzle game that will challenge you to think. You'll be given a picture of the scene and the letters of the words that appear in it. You'll have to rearrange the letters to form the words. Available separately for Commodore/Amiga and Spectrum. £14.95



JOGGER

PARAMOUNT
SOFTWARE

JOGGER is a fast-paced, action-packed game that will challenge you to think. You'll be given a picture of the scene and the letters of the words that appear in it. You'll have to rearrange the letters to form the words. Available separately for Commodore/Amiga and Spectrum. £14.95



PARAMOUNT
SOFTWARE

COUNTDOWN is a fast-paced, action-packed game that will challenge you to think. You'll be given a picture of the scene and the letters of the words that appear in it. You'll have to rearrange the letters to form the words. Available separately for Commodore/Amiga and Spectrum. £14.95

PARAMOUNT
SOFTWARE

27 Woodstock Lane,
Stockton,
Cleveland
S11 8 3PQ

Tel: (0642) 604470

A Registered Trading Name of Paramount Ltd

FTV...presents



NEW!

100 min.
Dolby Stereo
\$9.95

OUTBACK - The kangaroos are back! This colorful video features the adventures of a young boy who befriends a kangaroo named Red. Includes a bonus feature: a special message from the author's children.

\$9.95



NEW!

Paramount Video also available on larger formats of Video. **NEW!** Special packaging, bonus and features. See us today!

Saving DAGON - The Dragon's first "killing" Dagon has the deadliest weapon ever used! The way of the warrior begins with a single quality: a dragon's heart. **PARAMOUNT VIDEO**

\$9.95

HOW TO ORDER

Send your check or money order to: **PARAMOUNT VIDEO**, Please make it payable to: **PARAMOUNT VIDEO**, 10000 Sunset Blvd., Suite 100, Beverly Hills, CA 90210. We accept all major credit cards. Please allow 4-6 weeks for delivery. **PARAMOUNT VIDEO**, 10000 Sunset Blvd., Suite 100, Beverly Hills, CA 90210. **PARAMOUNT VIDEO**, 10000 Sunset Blvd., Suite 100, Beverly Hills, CA 90210.

PARAMOUNT VIDEO The most exciting program ever! **PARAMOUNT VIDEO**, 10000 Sunset Blvd., Suite 100, Beverly Hills, CA 90210. **PARAMOUNT VIDEO**, 10000 Sunset Blvd., Suite 100, Beverly Hills, CA 90210. **PARAMOUNT VIDEO**, 10000 Sunset Blvd., Suite 100, Beverly Hills, CA 90210.



CASTLE OF DOOM - The knight who saves the world! Includes a bonus feature: a special message from the author's children.

\$9.95

PRINTED MARKETABLE PROGRAMS... Send the application and forms.



CheetahSoft

ULTIMATE
SOFTWARE

Soft were not

FOR SPECTRUM 48K



CONQUEST

CONQUEST A tactical game which even veteran players will find both challenging and rewarding.

Mediterranean Europe is divided into grid squares. Your aim as Emperor is to gain 100 squares of territory as quickly as possible - at the same time dealing with Barbarian counter-attacks, plagues, civil war and rival Emperors.

5 levels of skill, plus a continuous 'Conquest' game where all the difficulty levels are thrown in together.

3D BAT ATTACK An all action, 3 dimensional maze game where you gather up blocks of gold, at the same time pitting your wits against vicious vampire bats whose only purpose in life is to locate, hunt and kill you.

4 levels of skill. At each level the game gets faster and more complicated, and the vampires more dangerous.

CheetahSoft

ULTIMATE
SOFTWARE

Soft were not

FOR SPECTRUM 128K



**3D BAT
ATTACK**

AFTER THESE, THE REST IS KIDS STUFF.

Are you ready for CheetahSoft?

There's only one way to find out.

But be warned: these vampire bats know a good meal when they see one. And our friend with the scythe has had years of experience...

CheetahSoft

ULTIMATE
SOFTWARE

Soft were not

So don't play unless you're ready to play the game for real. Because you'll find there's one sure thing about CheetahSoft: Soft were not.

£6.95 at all
good stores.



IF SILICON chips could choose their Microprocessor Unit (MPU) they would probably vote for the Motorola MC68000 — as has Sir Clive Sinclair. And Steve Jobs. And his people at Apple in their latest machines. Sinclair's QL has the 68000, a member of the general 68000 family.

Why is there of this sudden interest in the 68000?

Firstly it is not a sudden interest. The 68000 has been around for some time; it is only now that machines are leaving the drawing boards to reach the shelves. If hasn't got my QL yet! which means that it is only a short time (Real Time, not Simulacra Time) before I can get my grubby big hands on those beautiful 'double' eight registers and associate into the corners of possibilities now made available by the MC68000's flexible addressing modes.

You may realize by now that this writer thinks a lot of

separates. Both can be accessed when in the Supervisor Mode — but only the USP can be accessed in the User Mode. The Supervisor Mode is signified by the 'S' bit being set in the PCAR, in User Mode the 'S' bit is clear. The difference is that in Supervisor Mode you are allowed to execute all of the 68000's instructions, whereas in User Mode there

The mighty Motorola 68000 series of multi-bit MPUs has been selected for the QL (by Sinclair) and the Macintosh/Linea (by Apple). It's said to be capable of anything except giving change.

We asked BERNARD TURNER to give this chip the Big Suss.

He likes it.

A Big Hi to the Wonder Chip

the 68000. You've read right — but I also realize that it is not the MPU to end all MPUs.

At this point a brief survey of the wonder chip is in order.

The 68000 is a MPU that contains the following registers:

- 1 Data Registers (all 32 bits wide) Named D0 to D7
- 8 Address Registers (all 32 bits wide) Named A0 to A7
- 1 Program Counter (PC) (32 bits wide)
- 1 Processor Status Word (PSW, 16 bits wide).

You may be wondering what happened to the stack pointer — don't worry, it's Address register 7 (A7). The 68000 has in fact TWO stack pointers; one of them is called the Supervisor Stack Pointer (SSP), the other one is the User Stack Pointer (USP). "Yes give" you say, "but why two?"

Devotes

You'll very often find that all machines that can be truly called Computers run two programs at the same time. One of them is normally your program; the other is the Operating System; it therefore a good idea to keep these programs' stacks separate to minimize error possibilities.

In the 68000 the two stack pointers (USP and SSP) are

are a few instructions that are privileged (mainly those that are possible means of entering Supervisor Mode), so the only method of entry into Supervisor Mode is through what are known as 'exceptions'.

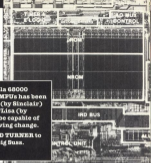
Computers

Exceptions, in the case of the 68000, are those occasions when the processor deviates from its normal processing, eg. interrupts, errors (hardware and software) such as bus errors or a divide-by-zero.

Don't ever try to divide-by-zero.

The 68000 allocates the first kilobyte of memory to 'exception vectors', i.e. memory locations that contain pointers to addresses that are themselves the start of routines to handle the exceptions. What have I just said? (Will you read?) This allows you to program your main program without having to worry too much about problems such as buffer overflow and addresses wildly out of range.

The 68000's instruction set is probably the best this writer has seen in any micro. The object codes (what the micro actually runs on) have



This is it. The Motorola 68000 chip. Shown up big.

been well exceptionally thought out in terms of compactness. Versatility and ease of use are other virtues. Coming from the 6802 side I can appreciate its simple yet convenient and powerful approach to this business of mode addressing, allowing complex data structures to be implemented. From its Program Counter Relative Addressing Mode it is dead easy to construct code that is relocatable (a task that many 8-biters would fancy so that they could test and execute programs anywhere in memory) and there's, possibly, almost too many programs (simulators) resident in memory ready to run.

Attention

Talking of memory... the 68000's address range is 16 Megabytes, which is 16 Megabytes (a word equal-

ling 2 bytes). This range could be increased by future microComputer designers (MCD). MicroProcessor Designer) if the designer has Micro with attention to the processor's state as indicated by the function-control pins (PC0-3). The 68008 has only a 1 Megabyte range — its main difference from the 68000 (apart from being physically smaller and having an 8-bit data bus as opposed to the 68000's 16-bit bus).

So it will not?
Can you say?

Many people these days are arguing about whether one particular 68-bit MPU is 8-bit or 16-bit. For my money the 68000 is a true 16-bit processor mainly because of its linear address range (similar to an 8-bit 8-bit range).

In future articles I will be tackling the 68000 from a programmer's point of view.



WIN A REAL GN FULL-SIZE ARCADE

... be the envy of your friends if you win this brill, free-to-enter Big Kompetition!



We've got a real, free-standing, BATTLEZONE video game unit that we're just itchin' to give away. Every home should have one — but only one lucky Big K reader will get their hands on this particular unit. All you have to do is enter this great competition.

WHAT YOU GET

A full-size BATTLEZONE video game, straight from the arcades. Not a new machine but fully reconditioned and in first class working order. Authentic even down to the coin slots. But don't worry — the unit is set for unlimited free play.

A FANTASTIC GAME

BATTLEZONE is one of the classic arcade games. Superb 3D graphics in sharp, vector-scan resolution make it instantly identifiable. You control a tank battle. Look out through the driver's slit, steering your way through the panorama using the twin joysticks and blasting enemy tanks to match up your skills. But watch out, they shoot back! Your radar warns you of their approach.

HOW TO ENTER

Look at the grid printed here. In our prize arcade game the player sees the terrain through the driver's slit but for this competition you have a bird's-eye view of the battle scene. The shaded areas are buildings and you are in charge of the tank outside the grid. Your mission is to enter the grid from the bottom right-hand corner. Destroy all the enemy tanks in the town and then exit from the top

right-hand corner. You must not go on any shaded square nor must you cross any squares twice. To ensure destruction of an enemy tank you must overrun its position. Each tank has an identification letter and, as you move round the town you should note down the letter of each tank as you destroy it. Next, take a postcard for you can use the back of a sealed down empty

envelope) and put on it the nine identification letters in the order in which you destroy them. As a time-keeper tell us in not more than 20 words what your favourite arcade game is and why. Finally affix the special entry token to your postcard/envelope and don't forget to write your name, age and address. Finally, post your completed entry to **BIG K TANK COMPETITION, 55 EVER STREET, LONDON SW9 5TF** to arrive no later than Friday 26th June, 1984, the closing date.

BIG K TANK
Only available by directly contacting us at the **BIG BATTLEZONE** competition. See **Advertisement Code 2001**



GENUINE, NO FOOLIN', GRADE VIDEO GAME!

COMPETITION •

There is no entry fee but each entry must be on a postcard or back of a sealed clean empty envelope and must bear the entrant's own name, age and address and a special entry ticket cut from this page.

All entries received by the closing date will be examined and the prize awarded to the holder of the correct entry submitting the most apt, original and best-expressed to-be-keen, with age being considered. The prize must be accepted as offered: there can be no alternative awards, cash or otherwise, if the winner is aged under 18 years then parental consent must be obtained before the prize can be awarded.

This competition is open to all readers in England, Scotland and Wales other than employees (and their families) of BPC Magazines Ltd., and the printers of Big K. Any entry received after the closing date will be disqualified as will those received incomplete, mutilated, illegible or not complying with the rules and instructions exactly. The judge's decision is final and legally binding and no correspondence will be entered into. The winner will be notified and the result published later in Big K.

RULES



COMPETITION • COMPETITION •



ZIP CODE



The American angle from Big K's Marketplace man, MICH GOLD

WHERE HAVE ALL THE POWERS GONE?

It should come as no great revelation that America is an unusual place. We keep coming up with all this really neat stuff — television, video games, VCRs, computers — and then we do everything in our considerable power to knock it all up.

Just a couple of years ago, the video game field was going like gangbusters. There were at least four different systems — Atari, Mattel, Bally and Magnavox (Philips) — and all of them had a shot at the brass ring.

Today, Bally and Magnavox are out of the field, and Mattel has sold off its electronics division. Its big-range business potential has been publicly described as "remote."

Today, there is still a variety of formats — Atari has three — and everyone else is competing like mad for its attention. Atari has the bulk of 1983's marketing budget that had their golden eggs. Coleco shifted its attention to its compatible home computer named "Adam," and Atari developed an endless array of new computers while flooding the shops with games for its original VCS system (named the 2600).

What Atari failed to recognize was that they were their own worst enemy. While people were choosing between the 2600, Mattel's Intellivision, and the ColecoVision, Atari came out with a revamped VCS named the 5200. With a chunky joystick and a limited selection of games, initial reception to the 5200 was, at first, quite good.

Atari also was faced with a lot of software competition. By the spring of last year, there were at least three different companies making games for the VCS. Even Mattel and Coleco were making successful games versions of their popular carts. But Atari continued to flood the stores as if they had it all for themselves. They spent a fortune on licensing deals — B.T., Raiders of the Lost Ark — and on heavily promoted original games like the Dungeons & Dragons. Only Atari was surprised when they bombed.

The trouble with Coleco's Adam was, it wasn't worth the wait. Offered as a powerful home computer with built-in word processing and a printer for \$699 (or \$499 if you already owned a ColecoVision), what consumers got was a home computer with almost no software and a truly rotten printer — very, very slow, very, very noisy. The first game cart — *Dark Legend's Planet of Zoom* — paled before the company's own Intellivision carts.

The Adam came out months late, at a much steeper price. All the while, the company spent very little attention to their original game system, releasing few carts and even fewer good games.

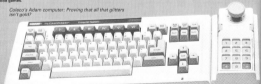
Coleco's Adam computer: Proving that all that glitters isn't gold!



Are 5200's prices, we're afraid! Atari's 5200's super VCS system attracts a rare, U.S.-only product. Will it ever leave home?

But all is not lost in the world of home video games. Many gamers have "graduated" to personal computers whose compatibility is secondary to function. And while this field, too, has seen some dramatic casualties — Texas Instruments, Tandy Computers, and the Mattel Aquarius is gone but there — there is clearly a bright future ahead. A future dominated by some real heavy hitters: IBM, Apple, Radio Shack, maybe Commodore, and, possibly Atari.

Particularly Atari. Wherever Wall Street wouldn't be the least bit surprised to see parent company Warner Communications sell off or even close down its money-losing operation, Atari just might have the best chance of succeeding in this end of the market. How is this possible? We'll tell you next month.



A COMPLETE PACKAGE - ALL THIS FOR £499!

- 80K RAM (Exp to 144K)
- Full Stroke Keyboard
- 256K Data Storage Unit
- Daisywheel Printer
- Built-in Word Processing
- Buck Rogers Arcade Game
- Colecovision Compatible



ADAM™ - £499

QUITE SIMPLY - VALUE FOR MONEY!

If you're looking for the value of a complete system, ADAM offers you a "bang for the buck" that's simply unbeatable. ADAM's complete system includes everything you need to get started with a computer system. ADAM's design is simple, elegant and easy to use. ADAM's design is simple, elegant and easy to use. ADAM's design is simple, elegant and easy to use.



75 KEY FULL STROKE KEYBOARD



MEMORY CONSOLE & DATA DRIVE



DAISYWHEEL PRINTER



COMPREHENSIVE INSTRUCTIONS



COLECOVISION GAMES CONSOLE

MEMORY CONSOLE/DATA DRIVE: The built-in ADAM system (RAM/ROM) and 256K memory console offer complete system functionality. ADAM's design is simple, elegant and easy to use. ADAM's design is simple, elegant and easy to use.

FULL STROKE KEYBOARD: The ADAM keyboard has been designed for professional quality. It features a full stroke keyboard with a numeric keypad. ADAM's design is simple, elegant and easy to use.

LETTER QUALITY PRINTER: The ADAM printer has been designed for professional quality. It features a daisywheel printer with a numeric keypad. ADAM's design is simple, elegant and easy to use.

BUILT-IN WORD PROCESSING: ADAM comes with built-in word processing software. It features a built-in word processor with a numeric keypad. ADAM's design is simple, elegant and easy to use.

COMPATIBILITY WITH COLECOVISION: ADAM is compatible with Colecovision games. It features a built-in Colecovision games console. ADAM's design is simple, elegant and easy to use.

WHAT IS COLECOVISION? Colecovision is one of the world's most popular video game systems. It features a built-in Colecovision games console. ADAM's design is simple, elegant and easy to use.

01-84 0007 (10, 14 The Mews, Batterley Road, Slough, Kent, BA14 4XX) Tel: 01-855 1111 or 01-321 0311
ORDER NOW - OR SEND FOR A FREE COLOUR BROCHURE

To: SILICA SHOP LTD, Dept 0187 (004, 1-4 The Mews, Batterley Road, Slough, Kent, BA14 4XX) Telephone: 01-326 1111 or 01-321 1111

LITERATURE REQUEST:

Please send me your FREE 12 page colour brochure on Colecovision/Adam
 I am a _____ Videogame I am a _____ Computer
 Mr/Ms/Ms: _____ Initials _____ Surname _____
 Address _____

Postcode _____

ORDER REQUEST:

Please send me: Adam (add-on package only) _____ £99 inc VAT
 Adam & Colecovision (3499+100) _____ £99 inc VAT
 I enclose Cheque P.O. payable to Silica Shop Limited
 DEBIT CARD - Please debit my Access/Barclaycard/Visa/Master/Amex/Debit Club
 Card Number _____



Each month BDO & Co. will feature an expert in a particular field to review a collection of products which claim to reproduce his area of work. This month: PEIRRE DELLEPONT

Reporter: RICHARD COOK

AS VOEGELIST, guitarist and leader of Barcocks, Pete Shelley put a little romance into the attack of the New Wave which struck rock music in the mid-70s. His love songs showcased the power of punk into a form which felt revolutionary for much of today's pop. (Squalling music that was as fresh and energetic as any of the system-breaking ambitions of his contemporaries in The Jam and The Clash.)

After the demise of Barcocks back in 1981, Pete embarked on a solo career which has taken quite a different track. His starchy pop songs are now set to music made primarily through synthesizers and sequencers that show one of the most imaginative approaches to instruments otherwise commonplace in today's charts.

And alongside this interest in new sounds Pete — along with a few others on the scene — developed a fascination with computers: the last track on his most recent LP was a program for Spectrum!

Pete started with a ZX81. Now he has two Spectrums, a Commodore 64 and a BBC 'W' as well. Although he's based at work in the studios recording his third LP for Island Records, Big B asks him to take some time off to check out a handful of programs designed to help write, practice or marvel (and fool around with) music. Can a more modern guy be making fortune and glory in the pop world? We set up the machines, Pete flexed his fingers, and here are the verdicts.



Putting notes in in real time is good — but then, you can't hear them simultaneously, which isn't so good.

A rather complex program for writing music, it sets up a four-channel sequencer, can define up to 16 instruments and save and play pieces. It's menu-based, with a detailed editing function that permits notes to have different attack, length, duration and onset qualities. It gives you ten played notes through an interface down into a control structure. The display consists of a numerical layout that details the various facets of the music as it's being composed. There is an additional 'Auto-Composer' programme that generates tunes automatically with a minimum of user guidance.

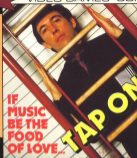
"Well, I've been on it half an hour and not written a note yet. That seems to be lots of numbers on the screen, lots and lots.

It doesn't look much like music. There's no view anywhere that is positive having a graphic capability if you're using using to do anything with it. The BBC has good sound channels which are difficult to program and something like this should make it a lot easier. The instructions are concise — in fact they read like a program themselves, you can't also through them, it's good that they can put the notes in without passing them in real time but then you can't hear them as you're putting them in. It gets to be like a number of numbers, and I'm using back buttons at the end would like time.

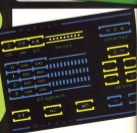
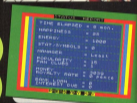
"I think you'd have to know a bit about computers — typing in numbers — and a bit about music as well to get much out of it. I'd say on balance it's the best so far for someone who wanted a semi-professional aid to writing music."

Single BBC MUSIC
SYNTHESIZER
Makers: BUG-BYTE

Machine: BBC MODEL B
Features: cassette
Price: £100



IF MUSIC BE THE FOOD OF LOVE... TAP ON





Prog: STARTRISK
Maker: QUORUS/VA
Machine: COMMODORE-64
Format: cassette
Price: \$14.00

S.I.D. Sound

A music-writing program which lets you write or similar to those featured above. It really laid out a very long and rather complex manual. S.I.D. offers like any professional computer program designed to show off the capabilities of the video's sound writing Device set more than anything, and again there is no stress in the program — tunes are shown in graph forms.

"In the back, it says it does a lot, and there are some interesting features. One feature of the program lets you use the computer like a rhythm box. But it's very hard to get it all to work for me and I haven't seen too good as a tool. It doesn't do anything which I can't get, but wait from the other programs.

"It's difficult to write sound on computers, and in a way these are all filling in something that should be done on the computer anyway. Probably the easiest thing would be to have a program that converts the keyboard into a proper keyboard, playing on its, sending the notes around themselves as you play them and sending it out afterwards and then it's really done like that.

"It's interesting that they've all taken different approaches. The only one that really teaches you about music is the Microcomposer. But from what I do as a player to use, it should be a fun thing, not something you have to plough through hours and hours of material. You should be able to just pull the music out with your fingers."

Some light relief. This is a strategy game that allows you to try and work like a manager by leading your own group. Monthly team after your hand to write songs, play gigs, go on expensive tours, pay your manager lots of things special deals and enjoying things in a weekend and eventually — make a record of your own record bankruptcies, copyright management and the quality of the little profits in the music. But it, these skills aren't what's basically a real game though there is a chance of being the group play too!

"I'd want for anybody who's ever picked up a guitar, I'd say it's worth a try of you playing it should be fine — I played that. These games better when there's a few people gathered sound taking out what to do. I like the piece of it — it doesn't seem enough to have you interested. And it's not too long either, even if the last thing is harder."

Prog: IT'S ONLY ROCK'N'ROLL
Maker: E-TEL
Machine: SPECTRUM
Format: cassette
Price: \$6.00

They've designed to make the computer operate as a synthesizer, a sound recorder and editor. It boasts 50 functions that work directly from the keyboard. 10 pre-defined pitch and amplitude envelopes offer a wide range of 100,000 envelopes, and four-channel recording can be controlled by a mixer line of up to 1,000 notes. The built-in "copy" computer facility is used. There's also a range of sound effects, a multi-timer facility and three ready-made files (Basic, Java and Java-C). The basic graphic display is able to create mixing tables.

music it's good in a sort of roundabout way without showing or telling you much about what you're doing. There's a heavy focus on the video.

"Not very useful for the professional musician, and for someone who wants to learn about making music it's not too clear — you don't see any notes or notes receivers. It seems like there's a lot of things and chances to produce complete music quickly and easily — but that can't be done with a keyboard operating in real time — and that seems to be all you can do with it. There's no visual aspect of the notes you've played. Good bit of programming, but I think you have to be able to play to make it work for you. It's harder than a piano keyboard."

Prog: DRG MUSIC PROCESSOR
Maker: QUORUS/VA
Machine: SBC MODEL 3
Format: cassette
Price: \$14.00

The Superior System

A very clear manual explains that this one will write 1, 2 or 3 part tunes which can be played or stored on the SBC. 10 pre-defined envelopes set up the sound characteristics for each note but three envelopes can be externally modified. Inlets and bass notes are shown on the screen, and the carry key can be used to select notes positions. Tunes can be deleted from above and there's a 200 note capacity for each.

"I should point out that I've been asked to write tunes for the program, although I haven't actually written any yet. It's well laid out, it actually gives you a picture of the sound frequency you're hearing, though there's nothing experimental about it or if someone else knows whether it's about, it's a professional. But you can't write it too complex.

"The one approach I found easiest — as a computer user, musician or sound engineer — and I think it's easy to understand. You can play back any part of a tune during the edit mode, any word — the attitudes of the programme is to be helpful at all stages. To let you hear the tune built up. The machine gives you as much control as possible, and it's very good for getting the feel of it. The drawback is that you can only see one line of notes at a time even though you can watch a piece at a time as you want.

"I'm certainly the best music program for the SBC, and the SBC is the best machine for the job of thing. I try to do things you can't write very long tunes at."

Prog: MUSIC EDITOR
Maker: SYSTEM SOFTWARE
Machine: SBC MODEL 3
Format: cassette
Price: \$400 (cash)

KINDLY PAY ATTENTION CLASS!

A much simpler program, the movements of many things are explained onscreen in either a star or keyboard mode using step-by-step instructions. The time, time etc. There are three constructed, played and arranged or stored at one instant. There are no special FX in the program and the maximum length for a tune is 1000 notes.

"It's all there on the screen — you don't need to keep looking at the manual, which is good. Sooner it's for a musician where the sound is in good. I think it's all — it's very good reference stuff on all the things you forget or don't do when you play yourself. It's very helpful notes on other notes and the way it handles you about each part of putting music together is very clear. You can get insight to any part of the

program if it's very user-friendly. Presentation of material and the display is very clear."

Prog: MUSICMASTER
Maker: QUORUS/VA
Machine: SPECTRUM 486
Format: cassette
Price: \$5.00

THE BILLY CHART

1. System Software Music Editor
2. System Software Music Master
3. System Software Music Processor
4. Quorbus SBC Music Processor
5. Quorbus SBC

SPECIAL MENTION

E-Tel, 50 St. Daily News, 10 Flat



Are you getting enough? LYNX SOFTWARE

You'll find Lynx software in more stores than ever before. And now it's available from the end of your street. Because you can order your favourite games by post direct from Camsoft. These are the first of our titles. There are lots more on the way. Fill in the coupon below and have fun by return.

TITLE	RRP	TITLE	RRP	TITLE	RRP	TITLE	RRP
1. Adventure Quest	£9.95	20. Linc Invaders	£9.95	38. Penetration	£7.95	54. Compass	£11.95
2. Colonial Adventure	£9.95	21. Master Map	£7.95	39. Search	£7.95	55. DISASSEMBLE	£4.95
3. Dangerous Adventure	£9.95	22. Macrotalk	£7.95	40. Secretaria	£4.95	56. FORTH+	£24.95
4. Samurai	£9.95	23. Menagerie	£9.95	41. Westminster	£10.95	57. Graphics Animator Pack	-
5. The Valley	£11.95	24. Old Money	£9.95	42. Bedroom	£3.95	58. LOCKO	£24.95
6. Tepee on Island	£7.95	25. Funks	£9.95	43. Lynx Computer	£8.95	59. MOODS-80	£8.95
7. Atom Smasher	£9.95	26. Power Blaster	£9.95	44. Hangman	£3.95	60. MACCAL	£26.95
8. Data Bases	£8.95	27. Space Tank	£4.95	45. Magic Master	£7.95	61. DIS ASSEMBLER	£22.95
9. Deathbit	£3.95	28. Spenser Man	£9.95	Rocky the Robot teaches you	-	62. Data File Handler	£8.95
10. 3D Wizard	£9.95	29. Sparrow	£7.95	46. New ABC	£7.95	63. Home Accounts	£9.95
11. 3D Mountain Cross	£9.95	30. Starship Ocean	£4.95	47. How to Add a Database	£7.95	64. Telephone & Address Database	£5.95
12. Football	£7.95	31. Station, Man	£7.95	48. Multiply & Divide	£7.95	65. Bank Balance	£10.95
13. Freight Basic	£9.95	32. The Worm	£9.95	49. to Sell the Time	£7.95	66. Card Index	£10.95
14. Games Pack I	£7.95	33. Zenith	£4.95	50. New Times Tables	£7.95	67. File Manager	£10.95
15. Games Pack II	£7.95	34. Backgammon	£7.95	51. to Count	£7.95	68. Mail List	£10.95
16. Games Pack IV	£7.95	35. Chessville	£4.95	52. Rockman & Spellboard	£14.95	69. Text Handler	£24.95
17. Outlaw on Speed	£9.95	36. Empire	£9.95	53. Temple Graphics	£7.95	70. Word Processor	£24.95
18. Golf	£7.95	37. Logitech	£14.95				
19. Labyrinth	£4.95						



INDICATE TITLE No(s) REQUIRED:

I enclose my cheque/postal order for £ made payable to
to Computers PLC or debit my Barclaycard No.

PLEASE ALLOW 14 DAYS FOR DELIVERY

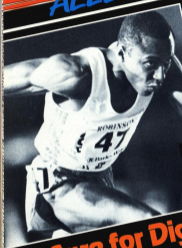
NAME

ADDRESS

Send to:
Camsoft PLC, 25A Bridge St,
Cambridge CB2 1JW.



BIG ARCADE ALLEY



As the L.A. Olympics draw near, Athletomania peaks. Ultimate Arcade Sweat so far is Track and Field.

A Cure for Digit Fidget

STRANGE AS it may seem, a certain Drunken instead of wine can now out-sprint the admirable Duke Blah. We can drink after four or five pints of Foster's, two better than Mr. Forsberg and part the headline better than Ed Moses. Sadly though, you will not find him competing for the British Squid at this summer's L.A. Olympics. How will you find his standing feats recorded in the record books. For he

has achieved all of these mini-victories on Taitel's Kazumi's athletic arcade game, Track and Field. Based loosely on what could be called a beer-sweat, Track and Field is comprised of six sporting events, each requiring in their accuracy and real-time. For twenty games you get the chance to fight it out with up to four players (or the computer) for honors in the 100m sprint, and long-jump, the javelin, the hurdles, the Hammer and the high jump. Qualification for each round depends on your ability to satisfy the stipulated speed/height/distance set by the machine, in all events but the sprint and the hurdles the player has three attempts



to qualify for the next heat. Of course none of this is as easy as it appears.

Points are awarded on merit in competition and bonuses come in the occasional form of a be-fatted figure with a 7,000yft. bill board, or, if your (female) title off-screen, in the shape of a special player (?)

But what puts Track and Field way above most games is the feeling that you are actually competing for something real (this is even more apparent when your opponent knocks your elbow during the 100m sprint). To play successfully you need a degree of dexterity and judgement that would confound the majority of B&B pilots. Your speed must be gauged exactly and your angle of take-off precise as close to the optimum as is humanly possible (and all this with your track). Diving wasn't in your face and making your scratch. It is simply not for the faint of heart. I'd take a jumpjet to the Falklands anyday.

Still, the complexity of the actual game is nothing

when compared to the abundance of adaptation that constitutes Track and Field's software. I could write a whole book on the (un)available city of 'OH YOUR MAMM, GET SET, BANG!' and the hard-reaaser distance, crowd offer standing options to witness and tested absence to team, absolute scratch their heads with bewilderment at disqualification and salute with pride to their victories — and, if you finally reach the championship's pluck, you are awarded a gold medal and a noble blunder to present it (complete with best. All that's missing are the free Antarctic Steamers.

Next time to miss out on the game's obvious success, the International Athletics Club has arranged a national competition with the makers aimed at raising money for our poverty stricken Olympics team — and that is an incentive to play.

Track and Field? It's leading the pack by a mile!
DAVID DOBBELL

System 3 Software...Graphically Amazing!

DEATH STAR INTERCEPTOR

LAUNCH



Screen 1



CONSOLE BARRIERS



Screen 2

APPROACH



Screen 3

INTERCEPT (BUGLES)



Screen 4

ENTRY



Screen 5

...Each is threatened by an Empire Destroyer, can you penetrate its defences and destroy it before it destroys you? 52K of pure machine code to give you 12 screens of 3D graphics, superb smooth 3D animation, unbelievable sound effects music, 4 skill levels and hi-score table...this is the ultimate challenge! This game has to be played to be believed! You have not seen what the Commodore 64 is capable of until you have played Deathstar Interceptor! - Commodore 64.

Available now at **£9.99!**

SCOUTS



Screen 6

CAN YOU REACH IT?

LAZER CYCLE



**+ FIRST 1000 ORDERS
RECEIVE 20% OFF
NEXT PURCHASE! +**

COLONY 7



- Dealer Enquiries call 017 664-0038
- Export enquiries write to: SYSTEM 3 SOFTWARE LTD, 10 MARSHALLS ROAD, LONDON SE11 5PL
- Selected titles available at Buxton and other local stores.



LAZER CYCLE

... The M.C.P. has selected you to rule on the deadly grid, two screens of strategy and action, multiple skill levels, hi-score table, pause facility, demo mode.

BBC Model B - £3.99!

COLONY 7

... Colony 7 has furious 3D action... as you defend your colony's food plants from the space pirates! The only game to use graphics 3. Unbelievable 3D landscape! **ATARI 400/500/XL - £9.99**



HOW TO ORDER

To purchase any of the items above, simply fill in the coupon below with your requirements. Make cheques/P.O. payable to: SYSTEM 3 SOFTWARE LTD and post to the address below. Please allow 7 to 14 days for delivery. All prices inclusive of P.M.P. and 10% V.M.

OVERSEAS ORDERS

Please add £1.00 per game ordered.

Post to: **SYSTEM 3 SOFTWARE, 10 MARSHALLS ROAD, LONDON SE11 5PL.**

Please tick/initial the following items:

(No. Req.) _____ COLONY 7 (No. Req.) _____ LAZER CYCLE
 (ATARI 80 - FOR AMIB) (At £9.95 - BBC Model B)

(No. Req.) _____ DEATHSTAR INTERCEPTOR
 (At £9.95 - COMMODORE 64)

Name _____

Address _____

By (Date) _____

By (Date) _____

System 3 Software

10 MARSHALLS ROAD, LONDON, SE11 5PL



HI-TECH

GOAD YOUR CODE...

... the 6502 Way. In the third part of **ANDY GREEN'S** series, he shows you how to get great shapes on your TV screens.

PART THREE

BOTH THE BBC 'B' and the Gnu, as common with most other home computers, use a display system known as Memory Mapped Graphics. This means that the video hardware uses information that the processor puts in a shaped chunk of memory to form the display.

If the screen memory is located by 240 000 000 pixels, and on the Gnu's 16-bit mode, and each pixel can be white or black, then the status of each pixel can be represented by the contents of a single bit. You'd need 16 000 000 bits to define the status of all the pixels, or 8K bytes (8 bits to a byte).

So if each pixel can be any of a number of colours, then more bits are needed to define its colour. (You may mean that your electron display 2, 4, 16 or even 256 colours per pixel because numbers of bits needed that are factors of 8 are easier to design.)

For example, on the BBC mode 2 screen level, 16 colours colour to reach pixel a quick glance at table 1 shows that each pixel needs 4 bits. With 160 738 resolution, that's a total of 65842 pixels, and an 8 bit per pixel, you're going to need 526736 (65842 pixels x 8) bytes (512 000 bytes is 500 000) to store 256 colours.

So... more pixels per pixel is nice, but it does stretch up the memory. Note also that because you need to push a large chunk of memory about to create large shapes on the screen, memory mapped graphics are inherently slow. Systems, as used in the Commodore 64, MSX and MTX series go not in this mode by having a special chip which, when you set up a shape, it decides a shape in the appropriate place with further orders from the processor.

Moving dot

Here's a little background on how this works.

The TV controls a single moving dot that moves at a regular rate. An processor, changing colour as it moves to form the picture. The dot moves so fast that we see a fixed dot when a constant shape. Figure 1 shows the scan pattern used to move the dot over one complete screen in 16 lines, and Figure 2 shows how each individual line is scanned. After 312 000 lines, the scan is pulled back up to the top left ready for the next field. Black lines in the field indicate that a scan line is

As you can see, all this is

happening pretty quickly — a field is completed 50 times a second, so you can imagine how fast that dot must be moving!

Let's return to the vital statistics of the BBC's mode 2 display. It's 160 by 256 pixels, each pixel's colour being defined in four bits. There being 8 bits to a byte, we can store 256 colours in each byte. Since at two pixels a byte 160 256 pixels will take up 256 x 160 000, if the screen starts at 84000 it must start at 84000 + 84000 = 168000.

Figure 3 shows the placement of the screen memory around the top-left pixel at 84000 for a BBC in mode 2. Note that each pixel is one scan line high.

Shape secrets

You may realise from some graphics, that you really can't get graphics which always seem to jerk and shuffle about.

That's here's how they get the smoothness... Move each machine either just once every field (i.e. once every 1/50th of a second) or once every other field. The more pixels you only be seen once during a field, so it's pointless waiting time moving it more than once. With on the BBC will tend only to start the next field, so if you move all the stuff that needs moving, do so every 1/100 to wait until the next field, and lookback to move the stuff again, your graphics will be very, very slow and smooth.

The Midge generator in Listings 1 and 2 for the BBC will do this automatically (although both run on the BBC) enable you to create shapes of up to 16 by 16 pixels, and store these on disc in the file SHAP. These manage definitions can then be used in your programs, as shown below.

Type in the appropriate listing, then the following:
M20000:0 "SHAPE SHAPE 3000 3001

It will set up an empty shapefile.
Now RUN the program, and you'll see the main menu. Option 0 is used to add up a new shape, and it will ask you two questions about the shape's size. When it asks "Number of bits per pixel", remember that on the BBC that's 2 pixels to the byte, on the Gnu 6.

When you've responded, the screen clears and presents you with a grid and a cursor, which you control with joystick. Draw with the BBC's video memory that cursor down to the row of colours

COLORS/PIXEL	NO. OF BITS NEEDED
2	1
4	2
8	3
16	4
32	5
64	6
128	7
256	8

Note that shaded entries are hard for the hardware people to implement because the number of bits needed isn't a factor of 8.

and once free to select a new colour, then move in the grid, pressing fire to "draw a colour" in the right place.

On the Gnu version, pushing fire when in the grid simply changes black white and white black. Put your cursor over where it says "red" and hit fire when you're finished.

Option 0 enables you to edit a complete shape. This simply takes you back to the editing grid as in 4. Note that the shapes are renumbered from zero upwards.

Option 1 is used to delete shapes. Note that if you've got two shapes, and you delete shape 1 then shape 2 remains the same, shape 2 becomes shape 1, and shape 3 becomes shape 2, etc. Option 2 simply saves the current shape configuration to disk.

Option 3 enables you to copy a certain shape into another. Note you must first create the "replaced" shape. The first shape number requested is the source shape, and the horizontal and vertical offsets represent a displacement that will be added while copying. For example, if a horizontal offset of 1 and a vertical offset of 0 is used, then the copy will be made one pixel to the right of the original. The second request for a shape number refers to the "replace" shape's number. Make sure that the request is big enough to contain the new shape if you use an offset.

The reason for option 4 is a

little complex, to say the least... there are two main methods of updating shapes on the screen — simply telling the machine bits out of a table and moving it straight, and the alternative process of screen memory or doing an expensive OR with thorough contents.

With the first method (used in Shapper) of two shapes that overlap, the first to be printed will cover the displaced second, rubbing out its contribution hereafter as if it had never existed. 8 lines less calls to the shape printer to get such a shape to move a pixel... rub out the old shape by moving it left to its place, and spray up the new one in the next position along.

Spray those pixels

With normal 6502-style OR (the BBC's OR-ing, it bit takes two bits to make something a zero), but it's not quite the same way. If you spray a shape up in the same position twice, using OR-ing, then the first spray the shape will appear and after the second spray the shape will disappear! More accurately, after the second spray the pixels that were created during the shape's first appearance will remain to the extent that they were contained there — OR-ing a shape in once, it appears, OR-ing the same shape in the same place again and it disappears.

If two shapes overlap, using OR-ing, then in the overlap area the colours go wrong. But OR-ing out one of the shapes, and the

GRAFPAD

for Sinclair Spectrum ... Drawing into the future!

Now you can have the benefits of drawing your best applications by the simple use of our NEW ZX Spectrum version of Outland!



Outland
Drawing
Application
Image 1.25 screen

THE GRAFPAD comes complete with Contents Programme, Revised Keyboard, Overlay Plug, Light Pen and of course a comprehensive manual full of tips and instructions ... all you need to get you a masterpiece!

WHAT YOU RECEIVE

STARTING UP is simple. Connect the Light Pen to the Light Pen socket on your Spectrum and connect the cassette player. Type "LOAD" and press **ENTER**. Then set the cassette player, place the keyboard overlay and by the time you are ready the "MENU" will flash on to your screen. User? Well there is ...

AS MANY USES AS YOU CAN IMAGINE! By first following our easy manual, then, in no time, you will be able to afford to say "Thank you!"

A UNIQUE PRODUCT that will improve your skills and give you endless hours of excitement!



- ◆ Dealer inquiries welcomed
- ◆ Special discounts to educational authorities & government departments
- ◆ Export inquiries invited

WHAT YOU RECEIVE
OFF THE SHELF - **JUST HERE!**
 1 year warranty - American Express
 Minimum Order £10 - All other UK orders shipped free (excluding postage)
 Cables, wires, stickers and notes
 Reproduce your order on a separate sheet of paper

BY POST
 1 year warranty - American Express
 Minimum Order £10 - All other UK orders shipped free (excluding postage)
 Cables, wires, stickers and notes
 Reproduce your order on a separate sheet of paper



BRITISH MICRO
 A HEGOTRON GROUP COMPANY

Unit 20, Perford Works,
 Imperial Way, WATFORD, HERTS, WD18 7TY
 TEL: (0452) 45221, TELEX: 548624



Post to: **BRITISH MICRO, UNIT 20, PERFORD WORKS, IMPERIAL WAY, WATFORD, HERTS, WD18 7TY**

Representative: **BRITISH MICRO, BRITISH MICRO, UNIT 20, PERFORD WORKS, IMPERIAL WAY, WATFORD, HERTS, WD18 7TY**

City	Name	City	Post Code	Year
	Outland/Complex	Post Code	(2, 3, 4, 5)	
Please Postage/Insurance				(2, 3)
				101% C

I enclose my cheque for £10.00

I prefer to pay with my American Express, Barclaycard, Direct Card, Access Card.
 (Please delete whichever is not applicable)

Card No.
 Signature
 Name
 Address

Address above must be the same as Card holder

AQUANAUT

AN UNDERWATER EXPERIENCE
YOU WON'T BELIEVE

FROM
INTERCEPTOR
SOFTWARE


WRITTEN BY IAN GRAY

PRODUCED BY RICHARD PAUL JONES

MUSIC BY CHRIS COX

ONLY
£1.00
ON CASSETTE
£9.00
ON DISK

SUITABLE FOR THE

COMMODORE 

INTERCEPTOR
MICRO'S

LINDON HOUSE, THE GREEN, TADLEY, HAMPSHIRE

TEL (07358) 71140

AVAILABLE NOW
FROM
ALL GOOD COMPUTER
RETAILERS

Wheelin' Wallie

FROM
**INTERCEPTOR
SOFTWARE**

WRITTEN BY ANDREW CHALLIS

PRODUCED BY RICHARD PAUL JONES

MUSIC BY GRHAM HANFORD

GRAPHIC BY CLARE

ONLY
£1.99
ON CASSETTE
£9.99
ON DISK

SUITABLE FOR THE
commodore 64

**INTERCEPTOR
SOFTWARE**

LONDON HOUSE, THE GREEN, TADLEY, HAMPSHIRE

TEL (07356) 71145

AVAILABLE NOW
FROM
ALL GOOD COMPUTER
RETAILERS

MOGUL

THE HOTWARE PEOPLE

FIRE ANT

Written by Mike Wacker

AVAILABLE FOR COMMODORE 64

"It's great" — VIC 6671 — Home Games
"Really nice looking" — Personal Computer
Games — Vera Anderson

"Excellent" — Action Game: Mike Swanson
— Ray K. Long 1/84

"Highly enjoyable" — Games with a new age (ET)
— Bruce Langston

"One of the best action releases for the Commodore 64 (Computer
Games and Systems Review) — Tony Lawson

"Brilliant" — Video etc. (ET) — a top combination
editorial — Computer International — Gary Wood

"Highly original and thoroughly enjoyable"
— World Review — Simon Brown



As the last remaining soldier of an army of ants crushed by a group of scorpions, your sole purpose in life is to rescue the Queen Ant taken hostage only moments ago. Fast action machine code game that calls for a winning combination of sharp wits plus extra fast reflexes.

Mogul Communications
PO Box 487, 796, 437 0
25-27 MARSDEN STREET
LONDON W1

OVER THE next few months I hope to take you through some of the various aspects of the graphics capabilities of the Atari. Things of you who are fortunate enough to own one of the new XL computer systems to do just two month retention to do just for you and Andy makes as they are really available on your machines. Most of these articles are listed at the bottom of the next month, the Atari 400 and 800.

THE GRAPHICS MACHINE

Because of its games playing background the Atari machine has been geared to taking care of commercial graphics effects with multidimensional planes, movies, high resolution graphics and scrolling in many directions. Although this is not really done

by machine code for speed, even the beginner can create some very good visual effects on the screen from Basic. The first lesson to make is about GRAPHICS mode and are going to use.

If you are going to have text on the screen then you should probably be using one of the three text screens, or GRAPHICS 0, 1, or 2. If not then you will be using one of the graphics modes from 3 to 14 (15 if you have an XL). Each of these modes has different number of colors and a different number of brightness levels that are normally available to you.

Figure 1 is a table which gives the different resolutions, etc. for each of the Graphics modes. I have also included the amount of RAM used in bytes for each mode as this may be important when designing a program to fit into, say, 128K.

In the fourth column you will

see that there are two possible configurations for columns a rows. The upper figure, if there is one, is for the graphics screen with a text window and the keyboard but no text window.

In the graphics mode you will have a text window you can get rid of if by adding +B to the graphics mode when entering the command. For instance, should you require an entire screen of GRAPHICS 8 without the text window at the bottom you would enter:

GRAPHICS 8+0

or more simply

GRAPHICS 24

which has exactly the same effect.

PLOT and DRAWTO

In order to get something to appear on the graphics screen you are going to have to use the

terms PLOT and DRAWTO. These terms are self explanatory. The PLOT statement will plot a point on the screen at the given coordinates. DRAWTO will draw from a given point to another. These commands take the form:

PLOT X,Y

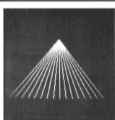
and

DRAWTO X1,Y1

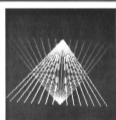
X and Y are the coordinates on the screen. Be careful that the computer does not try to PLOT or DRAWTO outside of its normal limits otherwise your program will stop and an error message will appear.

DRAWTO will draw to points B1 and Y1 from the previously PLOT- ted point or the last point that was drawn to. This command actually draws a physical line on the screen. In the following table programs and bytes are shown each command taking.

Art for A(r)tari's Sake...



The result of lines 10-60...



... add 60-118 to achieve this. Clear, huh!

You don't have to amputate an armicle to get next to some of the best graphics around. NIGEL FARRIER lays down the lowdown...



```

10 GRAPHICS 7-10
15 COLOR 1
30 FOR X=0 TO 100 STEP 10
35 PLOT BOLD
40 DRAWTO 0,100
50 NEXT X
60 GOTO 10

```

SETCOLOR and COLOR

In the above example the colour that appears on the screen and what is known as the default colour. You can choose between 256 possible colours that is, 16 colours at 16 different luminosities. The colours are selected using the SETCOLOR statement. The COLOR (sorry about that!) statement allows you to choose which one you are going to PLOT or DRAWTO with.

Line 15 above then appears COLOR statement. Before going any further what happens if you change the number in line 3 to 2? If you change it to 0 (COLOR 0) then you are now choosing the background colour (black) and you will not see anything. There are a three colour that you can draw with in GRAPHICS 7 without any SETCOLOR statement — orange, green and blue. But what if you do not want these particular colours?

Let us suppose that you want to draw with a fairly bright red colour. You would then have to change the colour register with the SETCOLOR statement which takes the form:

```
SETCOLOR reg, val, len
```

where reg is the number of the colour register, val is the colour number and len is brightness number. This latter number is usually an even number from 0 to 16, 0 being dark and 16 being light. The colour number is a number from 0 to 15 and this chooses the colour as in figure 2.

FIGURE 2

0—Blue	8—Red
1—Sea	9—Light Blue
2—Green	10—Orange
3—Mint Green	11—Dark Sea
4—Red	12—Dark Green
5—Light Purple	13—Light Sea
6—Light Blue	14—Orange
7—Sea	15—Light Red

The colour register number is usually a number from 0 to 4. Unfortunately these numbers do not correspond exactly with the numbers used in the COLOR statement! Just to be confusing you normally have to add 1 to the colour register number to get the number you would use for the COLOR statement.

Now let's change the colour from that awful orange to an equally awful bright pink in our

test program above by adding the following line:

```
12 SETCOLOR 0,3,10
```

Try out different values for the SETCOLOR and the COLOR statements to see what effects they have on the screen. (If you want what does SETCOLOR 1,4 do to the background?) You might also like to write the following to create patterns on the screen:

```

60 SETCOLOR 1,1,4
65 COLOR 2
70 FOR X=0 TO 100 STEP 10
75 PLOT 80,85
80 DRAWTO 0,0
100 NEXT X
110 GOTO 110

```

TEXT ON ANY SCREEN

If you normally want to have text on one of the graphics screens you would put it into the test window at the bottom. Sometimes this does not create the desired effect. My thanks go to Alan Wood for the following program which will print onto the screen in any of the graphics modes 0 to 8. I have adapted it slightly so that it covers a substantial (but you can use in your program).

All the program does is to use the PLOT command to create the letters on the screen. As it stands it will only cope with capital letters. You can adapt it by altering the 30 in line 20000. Line 20000 onwards is theoretical and the program before that is just to demonstrate what you do. Error checking I am afraid is left up to the programmer.

You have to give over to the routine the text in A\$, XPOS and YPOS as the starting coordinates for plotting, and the colour COLOR in variable C.

```

10 REM TEXT IN ANY GRAPHICS MODE
20 REM ***** BY ALAN WOOD
30 GRAPHICS 0:0:1
40 DIM A$(200):A$="ANY TEXT"
50 XPOS=0:YPOS=0
60 GOSUB 20000
30 GOTO 70
20000 END
20005 COLOR C
20010 FOR I=1 TO LEN(A$)
20015 CHAR=UPPER MID$(A$(I),1,1)
20020 FOR J=0 TO 7
20025 PLOT J+0 TO J
20030 LINE #PER-(CHAR-J)
20035 XPOS=XPOS+1:YPOS=YPOS+1
20040 IF LINE=(12) THEN PLOT XPOS,YPOS:LINE=LINE-1
20045 IF LINE=0 THEN PLOT XPOS,YPOS:LINE=0

```

DISPLAY TYPE	GRAPHICS MODE	COLORS	COLOURS & BARS	SCREEN SIZE
TEXT	0	1 COL.		
		2 COL.	40 X 24	600
WRIT TEXT	1	3 COL.	20 X 20	814
			20 X 24	872
RELAXED TEXT	2	3 COL.	20 X 10	404
			20 X 12	400
FINE	3	4 COL.	40 X 20	804
			40 X 24	882
COARSE	4	4 COL.	80 X 40	1614
			80 X 48	1710
GRAPHICS	7	4 COL.	160 X 80	4700
			160 X 96	4900
GRAPHICS	6	2 COL.	80 X 40	804
			80 X 48	880
GRAPHICS	8	2 COL.	160 X 80	1714
			160 X 96	1810
HIGH RES GRAPHICS	8	1 COL.	320 X 160	8132
		2 COL.	320 X 190	8730
B&W	8	1 COL.	80 X 160	8102
		1 COL.	80 X 180	8702
GRAPHICS	10	8 COL.	80 X 160	8102
		1 COL.	80 X 160	8102
MODES	11	16 COL.	80 X 160	8102
		1 COL.	80 X 160	8102

```

20050 IF LINE=0 THEN PLOT XPOS,YPOS:LINE=0
20060 IF LINE=10 THEN PLOT XPOS,YPOS:LINE=10
20070 IF LINE=8 THEN PLOT XPOS,YPOS:LINE=8
20080 IF LINE=4 THEN PLOT XPOS,YPOS:LINE=4
20090 IF LINE=2 THEN PLOT XPOS,YPOS:LINE=2
20100 IF LINE=1 THEN PLOT XPOS,YPOS
20140 NEXT J:NEXT I
20150 RETURN

```

Line 20050 actually causes the text to be printed out horizontally. If you wish you can adapt this slightly so that the text appears vertically. Although the program is not very fast it is written in BASIC. The more experienced programmers amongst you will be able to adapt and improve on it.

NEXT MONTH

In order to cover Artic Mode 4, a multi-screen GRAPHICS 8 screen on the Atari, you will need to know a little bit about refreshing character sets. Next month I will be covering this topic in order to do some amazing things in Artic mode 4 the following month. For those of you with the XL machines Artic 4 is the opposite of your GRAPHICS 10 command in order to see to its greater effect you will still need to know about character sets.

International Software House

seeks

HACKERS

with original programs and ideas

We offer development assistance, loan equipment, and high international royalties.

Send sample or details to:

Keith Dean,
Box 100,
33 Church Street,
Rickmansworth, Herts, WD3 1DH.

MAIL ORDER ADVERTISING

British Code of Advertising Practice

Advertisements in this publication are required to conform to the British Code of Advertising Practice. In respect of mail order advertisements where money is paid in advance, the code requires advertisers to fulfil orders within 28 days, unless a longer delivery period is stated. Where goods are returned undamaged within seven days, the purchaser's money must be refunded. (Please retain proof of postage/ despatch, as this may be needed.)

Mail Order Protection Scheme

If you order goods from Mail Order advertisements in this magazine and pay by post in advance of delivery, MGK will consider you for compensation if the Advertiser should become insolvent or bankrupt, provided:

- (1) You have not received the goods or had your money returned; and
- (2) You've waited the Publisher of MGK summarising legislation not more than 28 days from the day you sent your order and not later than two months from that day.

Please do not wait until the last moment to inform us. When you write, we will tell you how to make your claims and what evidence of payment is required.

We guarantee to meet claims from readers' mailbox accordance with the above procedure as soon as possible after the Advertiser has been declared bankrupt or insolvent.

This guarantee covers only advance payment sent in direct response to an advertisement in this magazine, for example, payment made in response to catalogues etc., received as a result of answering such advertisements. Classified advertisements are excluded.

THE FABULOUS CASSETTE

50

FROM **CASCADE**

ONLY £9.95
(incl. P&H)

NOW AVAILABLE FOR
Commodore

50 GAMES ON ONE CASSETTE

DANON DYNAS Spectrum Apple ATAS ORIC J & K WIP

EXPRESS DELIVERY ORDER NOW

Please send me by return of post, Cassette 50 at £9.95 per tape. I enclose a cheque/postal order for £

Name

Address

Post Code

Country

Spectrum Apple ATAS Oric J & K WIP

DANON DYNAS Spectrum Apple ATAS Oric J & K WIP

Commodore
Box 6, 1-3 Heron's Quay, Margate, South Devon, PL31 5AB, England
Telephone: 04228 329412.

CASCADE
50

It is impossible to list every one of the 50 games on CASSETTE 50 but they include many of the most popular, already known, and highly praised, to suit every taste in computer game playing. CASSETTE 50 will appeal to owners of all major home computers and provide many hours of entertainment for all the family at a fraction of the cost of other computer games.

SABRE WOLF



48K SINCLAIR ZA SPECTRUM
£9.95

AGF

PROGRAMMABLE JOYSTICK INTERFACE for Spectrum

MICRODRIVE
COMPATIBLE

Works with QUICKSHOT II & TRACKBALL

Recognised as the only true Hardware Programmable Interface this product offers all the features associated with such a design.

You can use any Atari-compatible joystick controller with any software for your Spectrum or ZX81, and just attach with a joystick option.

Movement of the joystick is recognised by the computer directly. In some circumstances the appropriate control keys, and can therefore give the most immediate response to the movement. The hardware programmed design works with all possible keymapping methods, both BASIC and Machine Code.

Eight directional movements, with or without the Fire Button being pressed, can be achieved by only programming the left, right, up, down and fire keys required by the game.

Programming is achieved by a multiple code, which is looked up in the Programming Card supplied. The four directions and firing button. These key numbers are then set out on a pair of leads which are clipped onto appropriately numbered strips on the joystick.

Once configured this can be worked onto a Quick Reference Programming Card for storing with the game. As the programming is not done by software the interface can be immediately used when next switched on.

The joystick remains fully functional and can be used independently with the joystick.

An integral rear expansion connector means that it is easy to remove the interface to connect other programs.

MS. A recent design improvement now means that the AGF Programmable Interface works with the new Quickshot II rapid "Start Fire" device.



KEY FEATURES

- Programmable design gives 100% software support.
- Accepts Atari, Commodore Pro, Wars, Starfighter, Quick Shot, Le Straker.
- Data extension connector for all other software.
- Free demo program and instructions.

PACK CONTENTS SUPPLIED

- Programmable Interface Module as described, complete with edge program strip leads.
- Full software programming chart detailing how to achieve any 25 key in combination by LS, LS/RS, L/RS, RS/LS, and RS/RS.



- One pack of ten Quick Reference Programming Cards for on-the-spot setting to your games requirements.



- 11 months guarantee and full written instructions.

ONLY
11.95
+ £1 P&P



Quickshot II, JOYSTICK

NEW IMPROVED GIMP - BUILT IN STABILISING SLACTION CLIPS

TRIGGER FIRE BUTTON - RAPID AUTO FIRE SWITCH - TOP FIRE - BUTTON

AGF Hardware, Bagshot Ridge, West Sussex PO12 9EY, Telephone: 01243 810317.

FROM: MR/MRS/MS/SS

Please allow up to 28 days for delivery

ADDRESS

SEND C.N.O. (NO STAMP NEEDED) TO: A.G.F. HARDWARE, DEPT. 28.

FREEPOST, BAGSHOT RIDGE, WEST SUSSEX, PO12 9ER.

QTY	ITEM	ITEM PRICE	TOTAL
	PROGRAMMABLE INTERFACE	27.95	
	JOYSTICK(S)	12.95	
	PACK(S) QUICK REFERENCE CARDS	1.00	
Z81 <input type="checkbox"/>	ZX SPECTRUM <input type="checkbox"/>	Please tick	
DOLLAR ENQUIRY? PLEASE		EXPLAIN PRICES OF APPLICATION	
		FINAL TOTAL	

NEW
VIC 20
GAMES DESIGNER
NOW AVAILABLE

MAKE GREAT GAMES....

Create your own amazing games with Galactic's unique **GAMES DESIGNER** cassette for the unexpanded VIC 20, only **£9.99** including post and packing

ONLY
£9.99
INC. P.T.

No Programming experience Needed

With the **GAMES DESIGNER** you make your own machine code games. You can design all the Graphics, Screen layouts, Theme tunes, Explosions, Sound effects, Player speed, Alien speed, Skull level, Personalized game credits, Scoring values, Keys used, Number of lives, Intelligence of aliens, — whilst more no programming experience needed.

Also includes 3 simple games - **KANGA, ZYON and KRAZY MAZE.**

PLEASE SEND ME A GAMES DESIGNER CASSETTE FOR THE UNEXPANDED VIC 20 AT £9.99 INC. P.P. **MONEY BACK GUARANTEE**

NAME _____

ADDRESS _____

My Access No. is: _____

I enclose a cheque/P.O. for £9.99

Send to **GALACTIC SOFTWARE**
Unit 7, Larchfield Estate,
Dowlish Ford, Elmstree
Somerset TA18 0PF

Galactic Software

UNIT 7, LARCHFIELD ESTATE,
DOWLISH FORD, ELMSTREE

SOMERSET TA18 0PF
TEL: (04805) 5161



NEW
VIC 20
MAKE GREAT GAMES
NO PROGRAMMING
EXPERIENCE NEEDED

GAMES DESIGNER

INCLUDES 3 GAMES
KANGA, ZYON AND
KRAZY MAZE

GALACTIC
SOFTWARE

MAKE GREAT GAMES

- + No programming experience needed
- + Full colour Hi-Res Graphics
- + Make your own sound effects
- + Joystick or Keyboard control

ALL IN MACHINE CODE

- + Variable degree of difficulty
- + Make your own Monsters, Messages, Space Ships, Aliens, Kingresses or Asteroids
- + Create your very own Games

ADVERTISEMENT INDEX

Abnex Electronics	10	Microdeal	2
Activision	7, 8 & 9	Micromania	39
Addictive Games	43	Mogul	82
AGF Hardware	90	Nat West	30
Anirog	95	Ocean	Cover 4
Atari	32/33	Paramount	56/57
Audiogenic	Cover 2	Postern	47
Brent	86	RAM Electronic	31
British Micro	79	R&R Software	4
Computers	74	Silica Shop	63 & 67
Cascade	88	Simon Software	43
Cheetah	58	Software Invasion	55
CRL	96	Supersoft	5
Duckworth	43	System 3	71
Galactic	91	Tandy	16/17
Gamer	70	Taskset	88
Incentive	54	Ultimate	89
Interceptor Micro's	80/81		
ISP Marketing	23		
Llamosoft	Cover 3		

NEW SPECTRUM 48K
COMING SOON IN 16:9

SPLAT!



AN INTERACTIVE CHALLENGE
FROM BENTLEY & BENTLEY LTD

NEW SPECTRUM 48K



NEW SPECTRUM 48K
BBC MODEL B 16:9

1984



NEW SPECTRUM 48K



NEW SPECTRUM 48K



AVAILABLE FROM LEADING DEALERS EVERYWHERE

OR DIRECT FROM
Intercept Software Ltd, 54 London St,
Reading RG1 4LQ 0708 98423

ANIROG

The Name
For Quality
And
Innovation

Dare you enter?

House
Of
Usher

COMMODORE



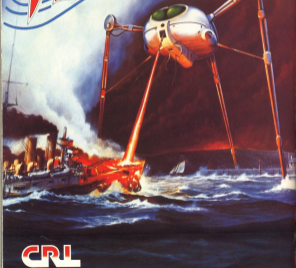
£7.95

TRADE ENQUIRIES: ANIROG SOFTWARE LTD, 29 WEST HILL, DARTFORD, KENT (SS22) 92613-9
MAIL ORDER: 8 HIGH STREET, HORLEY, SURREY. 24 HOUR CREDIT CARD SALES: HORLEY (00504) 6093
PAYMENT BY CHEQUE: P.O. ACCESS-VISA. 50p POSTAGE & PACKAGING

JEFF WAYNE'S
VIDEO GAME

VERSION OF

THE WAR OF THE WORLDS



CRI

THE DREAM MAKERS

CRI House, 9 Kings Yard, Carpenter Road, London E15 2RD. Tel: 01-533 2918

THE HOTTEST GAMES IN TOWN FROM LLAMASOFT



HELL GATE

It's a game in which you control a robot which is sent to investigate the strange and terrible things that are happening in the desert. You'll have to investigate and then combat the creatures that are causing the trouble. Available for Commodore £19.95 and £24.95.

LASER ZONE

Control your own laser gun from the safety of your computer screen. You'll have to shoot down a variety of flying and crawling creatures. You'll also have to shoot down a variety of flying and crawling creatures. You'll also have to shoot down a variety of flying and crawling creatures. Available for Commodore £19.95 and £24.95.

METALACTIC LLAMAS BATTLE AT THE EDGE OF TIME

A new adventure game for the Commodore 64. You'll have to explore a variety of strange and wonderful worlds. Available for Commodore £19.95 and £24.95.

MATRIX

A new action game for the Commodore 64. You'll have to control a robot which is sent to investigate the strange and terrible things that are happening in the desert. You'll have to investigate and then combat the creatures that are causing the trouble. Available for Commodore £19.95 and £24.95.



ATTACK OF THE MUTANT CAMELS

A new action game for the Commodore 64. You'll have to control a robot which is sent to investigate the strange and terrible things that are happening in the desert. You'll have to investigate and then combat the creatures that are causing the trouble. Available for Commodore £19.95 and £24.95.



GRICKRUMER

A new action game for the Commodore 64. You'll have to control a robot which is sent to investigate the strange and terrible things that are happening in the desert. You'll have to investigate and then combat the creatures that are causing the trouble. Available for Commodore £19.95 and £24.95.

HOVER DOVER

A new action game for the Commodore 64. You'll have to control a robot which is sent to investigate the strange and terrible things that are happening in the desert. You'll have to investigate and then combat the creatures that are causing the trouble. Available for Commodore £19.95 and £24.95.



REFUGE OF THE MUTANT CAMELS

A new action game for the Commodore 64. You'll have to control a robot which is sent to investigate the strange and terrible things that are happening in the desert. You'll have to investigate and then combat the creatures that are causing the trouble. Available for Commodore £19.95 and £24.95.



Llamasoft
Awesome Games Software

300 MOUNT PLEASANT
TADLEY HANTS, RG26 6BN
TELEPHONE: TADLEY (07038) 6478

All orders add 30p postage and packing

LLAMASOFT GAMES NOW IN LASKY'S AND MERRY GAMES



The sky's the limit!!
 for fun and excitement with these
 cracking new stunners from
 Ocean.



Here's more top games from Ocean to test the best of your top games investors.
 Outstanding classics and incredible originals all available for the **Spectrum 48K**.
 For the **Commodore 64**: Chinese Juggler, Cavalon, Gilligan's Gold, Mr. Wimpy and Hunchback.
 For the **Dragon**: Hunchback.

Games prices:
 SPECTRUM 48K

5.90

COMMODORE 64
 DRAGON

6.90

Ocean Software Ltd.
 4 Central Street
 Manchester M2 3JG
 Telephone: 061 832 4433



Ocean Software is available from selected branches of **Woolworths**, **M. Sainsbury**, **John Lewis**, **ASDA**, **Flourishers**,
 Spectrum Shops and all good software dealers. Trade enquiries please: 061 832 3948