

**THE HIGHLY COMICAL
APPLE MacINTOSH... 85p**



**STICKS MAY BREAK...
Controller Review p.34**

**SABRE WULF MAP!
All 256 locations laid bare**

**Plus Amstrad Review/
Letterbase/Dorkslayer
Arcade Punch-out**

**No6
SEPT**

**GAMES, UTILITIES
BODGES & DODGES
for COMMODORE 64,
ORIC, SPECTRUM,
VIC, and BBC 'B'!**

AFTER THE CRASH

Atari & Imagine

— The End of an Era?

KOKOTONI WILF



Kokotoni Wilf is an arcade adventure game whose undisputed intention is to steal the title of "best" arcade adventure program bar none! from all set time!

All Kokotoni Wilf you must recover all the pieces of the legendary Dragon Amulet (which has been scattered throughout time) for your master, the great magician, Ulrich.

Throughout the quest Wilf comes up against many dangers from huge lumbering prehistoric dinosaurs, to hostile alien robots, but the reward for recovering all the pieces warrants the risk.

The disk program features a number of major adventures over an 800 level, the career designer, 800+ screens that each of the games 10 play screen settings to genuinely high resolution. As opposed to pseudo hires, and doesn't require a title to explain what you're looking at, furthermore, the game characters are of cartoon quality and exhibit their own personalities. Ingressive claims, all set, Wilf fans will no doubt feel both captivated and intrigued.

WOLF & THE SPIN

48K Spectrum and Commodore 64
available Sat. 15th September.

elite



THE END IS NOT NIGH

You may have noticed that we're a bit late this month. Our apologies. The reason was a reappearance of that perennial Bug in The Great British Operating System — an Industrial Dispute. This caused a wholesale crash within the IPC mag network, and affected hundreds of magazines, not just BIG K. However, by dint of late nights and unbelievable amounts of rapid coffee we got it together — our largest issue yet.

If you have a bug or two... don't call us. We already know about it. We've also cleaned up the popular demand our Reviews Ratings system (see page 18-20). We know you'll approve.

This month's Cover Story takes on the long predicted disaster that's awaiting the two archetypal computer/games companies — one American, one British (see page 53). In America some pessimists are saying it's All Over. We don't think so — though it is clear that we're going through the end of the First (or is it Second?) Age of Personal Computing. On reflection, it was probably necessary to shake out some of the old assumptions, so that the survivors can clean up their acts.

A great example of what lies just around the corner can be found on page 89. In our view, this — and not just more games — holds a clue or two to the computer future. May it arrive sooner rather than later — and, one hopes, without any more tragedies and disasters.

TONY TYLER

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CONTENTS

GAMES PROGRAMS

LASER DEFENCE for BBC	300
COMMANDO: OPEN for COM 64	46
HANG G LIDER for SPECTRUM	57
INFORM for BBC	60
INTELL for ATARI	60
CROSS FIRE for VIC-20	76

UTILITY PROGRAM

ALARM CLOCK for BBC	68
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SOFTWARE REVIEWS

Pick of the Month	19
Review Pages	20-20
Empire	707

HARDWARE

Access and Review	84
Icon Utilities	85

FEATURES

Computer Magic	11
Wipe In Computing!	11
InterPack	12
Hands-on With the Maketags	23
Jayride Roundup	34
Micros and Movies	37
After the Flood	40
A.I. is Coming to Get You	53
Back in the U.S.A.	58

REGULARS

On-Line News	3
Annette Alley	46
Ho Winos Que	52
Charts	71
Darkstar	74
Pic Doodle	84
1000-Word Listings	88
Classic Games of Our Time	92
8000: Assembly Part 3	93
Lornbase	99

BIG K in the land of J.R. and computer comics, p.88.



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SABRE WULF

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Auntie/Acorn Love Affair Smoulders On

THE BBC has renewed its contract with Acorn Computers. This puts an end to speculation that Auntie Beeb might make a new partner of Uncle Clive, or even (long shot) Cousin Commodore. The BBC micro, as we know it, stays for another four years.

The Corporation also has plans for a new TV computer series, as well

as new books and software.

Although Commodore have been selling hardware like hotcakes in schools, of late, they're still a long way to go to catch up with the mighty Beeb, which claimed three-quarters of the total computers bought by schools last year.

Nice to have friends in high places.

Subtitles are on page 94 of your Spectrum

TURNED ON by Teletext No 777p. Because if you were — and if you also happened to be a Spectrum owner — you could be yours mucho pronto since OEL have now produced a Teletext adaptor for the Little Black Box From Cambridge. Priced at a cool £145, the TTX 7000 plus all vital bits is available from OEL Ltd, North Pole, Gloucity Square, Penarth, Cardiff. Call 77 8800.

Credibility Note: OEL are also the designers of the award-winning From VTX 5000 modems.

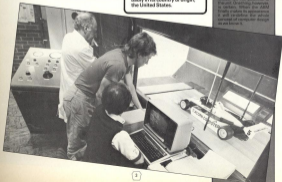
BUG-BYTE SIGN ROBOTHAM

VETERAN SCOUSE software house Bug-Byte have successfully negotiated a deal to produce computer games based on TV's 'Automan' series. Currently being storyboarded, the first game in the series will be in the shape (Spectrum 48, C64) early next month.

NB: Although a successful show in the UK, 'Automan' has reportedly bombed out badly in its country of origin, the United States.

Acorn ABM — First Sighting

WITH RECORDS of the long-awaited Acorn business move growing stronger each day, IFA believe it has become almost photographic proof of the existence of the long-awaited machine. The picture shows the ABM undergoing final evaluation at a Microsoft Acorn safe house somewhere in England. Industry observers will be quick to note the revolutionary look of the ABM with its ultra-miniaturising which will undoubtedly save many square inches of the unit from any sensitive weather. The most striking feature are the four massive air drives, and on each corner of the unit. Compatible computers with no other custom circuits on the market, the capacity of these drives can vary be queried at Spectramart. Outside the ABM's reserved design standard, some have said that the machine had died, as were some, possibly a machine which would have done away with a year's work. The ABM's special has been developed and area built into the core of the unit, because the unit's ROM and RAM packs. Unconfirmed reports indicate that initial production costs may be required to exceed the full potential of the unit. One thing however is certain, when the ABM finally makes its appearance, it will redefine the whole concept of computer design as we know it.





ENTERPRISE BOOST

THE LONG-awaited Enterprise micros, now due for release next month, find their market chances greatly enhanced by the news that the mighty Prim company are to distribute the machines in the UK.

Prim currently distribute 20% of all small computers sold in the UK.



"One looks like a 2 x 4. The other looks like a 2 x 4 inch."

The Count. Or possibly some other dot.



GRANADA'S MICRO MOVE

WHEN NEXT renting a TV or video from Granada check out their range of home computers. Yup, the high street rental giant is moving micros into over 100 of their 450 stores as part of a "... Important and significant step in the company's development strategy."

Initially, the micros (Spectrum, BBC Electron, Commodore 64 and Vc 20) will be offered for sale only, although a company spokesman didn't rule out the possibility of a rental scheme. "... If the situation arises." That sort of move could lead to a massive boom in home com-

puter usage in Britain, already a market valued at around £100m in 1984.

Granada is backing up the micros with a wide range of software (games and educational) and peripherals with more being introduced all the time.

GREAT VIDEO DISEASES OF OUR TIME - No 71

EYES CLOSED? Headache? Feeling generally lousy? Then start worrying — you're suffering from "specular reflection" — in other words, eyestrain from continuously focusing and re-focusing on, or out-of-focus images on your screen. And it can cause permanent eye damage. Luckily for civilization as we know it, a Tyne & Wear company called Nevag have come up with an eye-saving gadget called CEAF, which is a tinted screen filter available made to nullify all those harmful effects. CEAF which have been selling for £21, as the case may be for five times that figure. So if your right eye is looking straight at your left ear (and vice versa), contact them at Paterson St., Blaydon on Tyne, NE21 5SQ, pronto.

Don't try to tell them (or even an software guy) that. But look out for Anarchy: the new name for all 4-1/2 games. The first two (Anarchy) are free from you will be three (Anarchy) a 1/2 (Anarchy) and three (Anarchy) an educational game, both for the QMS.

GARBAGE IN..

BATLINE LIVERPOOL.. and stirring scenes as mobs of enraged creditors fight in the street outside Guss's Who's former offices, colluding with each other and with bailiffs recovering the Bank Buildings. News: There's no street who fell in city centre streets, since Guss's Who had inherited most of the choice villages in the last six months, having said streets with Niles's Rough Red as the top end of their wave ... Also dependent: Miral's Miral's (Anarchy) who wanted Guss's Who to buy them out six months ago.

COUNT ON IT!

HEM UP with continuously being bumped back at the Billings Gate every time you lose a life in a computer game? Then settle in on the way, in the form of Hercules, a new 16 screen epic from a new programmer, a dude who handles himself The Count of Marston. On losing a life in Hercules, a random screen routine is invoked whereby you are plunged into any one of the 50 sheets in the game.

This stuff's hot, new hot comes to you courtesy of a new company located, founded by several Microsofts whose dream was it to go for quality not quantity. Nice to hear of two companies still starting up.



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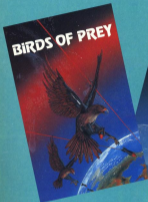
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U.K. UNDER ATTACK

"OVER-RATED, OVER-PRICED AND OVER HERE"?

UNIQUE TWIN-PRONG ATTACK THREATENS BRIT. MICRO INDUSTRY

AMERICAN OPERATED software is headed for British shores in two increasing numbers. U.S. companies are going as quickly as they can to bring over-to-land American games and, in some cases, convert them to British money.

Probably the most well-known of these companies is the U.S. Gold, who've sold a No. 1 start 10 weeks with *Death Race* for the IBM PC. In addition, only one month ago, U.S. Gold told IBM it that they had deals signed with many of the major Outside software houses and planned to release 21 titles before Christmas. These include DataSoft's *The Delta Quest* and Synapse's *Jason* — the latter a 10th Anniversary Presentation edition of the heavy title last year when U.S. software was unavailable — the American used

to selling around £6 for a game or £14.99 per cassette. U.S. Gold believes that foreign won't mind paying such high prices for quality games.

Newcomer DataSoft was, naturally, born on the 16th of July this year and despite the backing of the large Spectrum (see related story) group of retail outlets, it has the rights to the first 50 titles for the first of '84 and the first two, *Auto Chess* and *Pip in Plo*, should be out by now. It also has the rights to *Blade* and *Blade 2* and *Blade 3* and *Blade 4* and *Blade 5* and *Blade 6* and *Blade 7* and *Blade 8* and *Blade 9* and *Blade 10* and *Blade 11* and *Blade 12* and *Blade 13* and *Blade 14* and *Blade 15* and *Blade 16* and *Blade 17* and *Blade 18* and *Blade 19* and *Blade 20* and *Blade 21* and *Blade 22* and *Blade 23* and *Blade 24* and *Blade 25* and *Blade 26* and *Blade 27* and *Blade 28* and *Blade 29* and *Blade 30* and *Blade 31* and *Blade 32* and *Blade 33* and *Blade 34* and *Blade 35* and *Blade 36* and *Blade 37* and *Blade 38* and *Blade 39* and *Blade 40* and *Blade 41* and *Blade 42* and *Blade 43* and *Blade 44* and *Blade 45* and *Blade 46* and *Blade 47* and *Blade 48* and *Blade 49* and *Blade 50* and *Blade 51* and *Blade 52* and *Blade 53* and *Blade 54* and *Blade 55* and *Blade 56* and *Blade 57* and *Blade 58* and *Blade 59* and *Blade 60* and *Blade 61* and *Blade 62* and *Blade 63* and *Blade 64* and *Blade 65* and *Blade 66* 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NICKY XIKLUNA
gets into
Interhack
Technology



INTELSAT 1, together with its back-ups 2 & 3, won't go dull until 1998. When it finally does hang on to them, it'll be carrying 640 ways of British Telecom, and will be used for Down to Earthcasting (DDE). That'll eventually transform the legions of technicians across the land into mutants and absolutely no-ops. And absolutely no-ops will have problems receiving Channel 4 over against the mountains, other regions are ahead, here, at remote sites, and they'll be out in a hot second.

Spanning Stravella to Europe this year along the metropolitan's loudest local-

itude comes SATSTREAM. It'll comprise a massive network, mainly for the multi-nationals, extending big business satellite links across North America. Britain's already set-up to catch the stuff with massive receiving dishes up to 32 metres diameter at Gwentilly Down and Malley.

Even as I write this away, the world's stock of 1,000 or so satellites are twinkling above me. VOB machines in Spain.

More are controlled by INTELSAT, representing 100 countries. INTELSAT dishes out satellites to official signatories — that's British Telecom and Marconi so far in the UK.

In search when and how much? www.dia.com, www.gain

anced? In satellite depends on who leaves out a slot of the sector from BT.

Indeed, software transmission has already been prepared for some countries along the lines of software transmission by cable along the West Coast.

The technology exists. Better software can be enhanced by its own receiver gaming, receiver dish and antenna. Millions of aerial and medium messages would go 21,000 miles in a vertical direction, bounce off the satellite in geostationary orbit, and so back down again to their nearby destinations, in half a second light or take a message to hell.

Shipping to computers — what rat gibberish are there

is all this for the well-meaning hacker to fix his steps over?

Surely it is only right and fitting that alien codes, whenever they should appear, ought to debut in the good offices of some diligent, midnight Internet hacker? Hacker Karl Hinkel: like? Hinkel?

Back to the real world: yet, our business has started ahead of nationalised data-line networks. Meanwhile, BT carries on implementing its mysterious 'Optimum K' — changing over switches from analogue to digital. Today, your calls the States has a 50% chance of going by satellite.

What next? You can buy your own dish system from about £5,000 onwards (included). Or you can buy a cloud of satellites direct for a mere £50k per annum and rent links to your jobs. If all this, you'll just have to wait for Andy Green's upcoming master plan. Would a Receiving Dish from Com-Data Bower.

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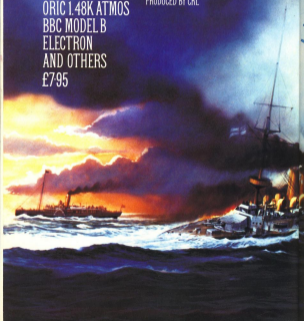
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● Lake ■ Hut 🐉 Mountain Location of Saker's trail 🏠 Petalika's Amulet City 🏰 Tower

S A K E R ' S T R A I L

STAKE



WATCH YOUR STEP

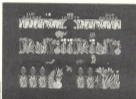
it's a real jungle out there!

Ultimate Play-the-Game's newest and lushest hit to date is **Sabre Wolf**, a mean, fast, brilliantly coloured jungle frenzy with all the puzzles and super-smooth coding now expected from its authors. Or is it nothing more than an over-priced reread of

Atic Atac? RICHARD BURTON plays the game . . .

"In the jungle, the mighty jungle,

The lion sleeps tonight . . ."
Soaring Right From 1984 (and to did I am! Never, for those of us with longer memories). In a strange way the song seems more than appropriate to the UK's newest release of ailing, Sabre Wolf. Because the lion is about the only beast that does sleep — every other creature in this jungle is incessantly active and out to make life hell for you!



of the larger beasts, at least were them off. Also the lion plant life can aid or endanger any of your three lions.

Many items appear in your path which can be picked up simply by crossing them. Unfortunately, Sabre Wolf doesn't feature Atic Atac's on-screen display of what you're carrying. Again, it's up to you to find out what these items are and how they can benefit you.

Sabre Wolf is a safari of dimensions, a Big Game hunt where you are the prey. It's the nearest yet that Ultimate have come to an adventure game (note the Middle-style 'percentage complete' indicator) and is sure to fuel the letters pages of the computer press for some time.

It's another high quality Ultimate product and value for money (just about), even at £29.95, a figure that Ultimate claim reflects "higher development and packaging costs".

Finally it's not the sort of game that will take to copy quickly.



You have control of a lion, sword-wielding (?) explorer in search of four parts of an amulet. Obviously the constantly appearing in its path in the form of snakes, lugs, lizards, wolf legs, gophers, hippos, things, etc. There's a list of 34 of the animals in the instructions. A quick stroll with the sword will finish off most of these in, in the near

With just six games Ultimate have carved themselves out a heavy rep with the gaming public in the extent that each new release is so eagerly anticipated on the next Mick and Jack are Afraid. So far they have only once gone back to a previous game theme for a new release, *Colon Britain* was a surprising version of Jet-Set Willy. Sabre Wolf they have returned, justifiably, to many of the arcade-adventure elements that made Atic Atac such a short success.

The word 'enigmatic' almost sums up the game. It comes in a plain black box with simple title screens front and back, inside a simple fold-out leaflet contains cryptic comments in simple prose that are little or no help. Basically, you're on your own in discovering exactly what this game holds.

The scenario, as said, is a vast jungle maze, gloriously rendered in colourful hi-res graphics. (See map opposite for info.)

HOW WE GOT OUR SABRE WOLF MAP

Sabre Wolf had been out a couple of weeks when BIG's office phone rang. "Would you like to see a complete map of Sabre Wolf?" asked a voice. He gaped an amazed "Sure!" and the caller rang off. No more than two minutes later the phone rang again. "Interested in a map of Sabre Wolf?" said another voice. As even more surprised affirmative came out and said, a few days later, two brilliant maps were in our hands. They were both so good that we decided to combine them into one — the one you see here. So take a bow Alice Chalmers of Newcastle and John Clever of Reigate — Sabre Wolf Champions both.

Got any tips about Sabre Wolf? Found out any sneaky tricks to beat the jungle? Send them to Let-Us-Know. We'll use the best and list the rest!



WHACKO

FRENCH/BBG

Breaker goes whacko. You remember Breaker? Not An! Getting that old? Whacko is the game where you have to trap a bouncing ball in a box by moving a line around a screen. French is a variation of this.

The story goes like — clearly ridiculous overblown (English) any hope in a scientific laboratory and you have to trap them before the time runs out. Your tool in this month's task is a robot with behind which is a green fan tool. This you use to shoot the lines which, hopefully, will encase the little devils. Trouble is, if you get hit by a

Leprot while you're in the draw, so in speak, you get obliterated. After a few games things get nasty, you get more Cheaters to deal with plus Chasers (they chase you).

This is a very simple game, easy to play but difficult to master so why play that, unless some simple games it's very addictive. The kind of thing you spend all night thinking just one more game before bed and then realize the sun is rising over the top of the screen. — G.A.

Makes: MEGAL POWER
Format: cassette
Price: \$7.99
Graphics: KK
Playability: KK
Addictiveness: KK
Overall: KK

CUBEPainter

BLOCKBUSTER/BBG

Is there any game, I don't know a much cheaper one. Master of Algebra, he usually no from the of Cheaters.

In this particular variety he leaves his robot away and calls to home (French).

More Power, masters of the never fail to live up to their name in simple games means with this is particularly nice. Using them as they tell us, is so a supplied by your friendly neighborhood (English). Of the other requires a little more than money and Harvey is given a task to complete. Paid a per-

sonal? Well, nearly right, in fact Harvey appears to be a bit of a misanthropic style. The game is in the class of Chess and is a bit of a challenge. The game is in the class of Chess and is a bit of a challenge. The game is in the class of Chess and is a bit of a challenge.

This is a good game, if you like to play it, it's a bit of a challenge.

More Power, masters of the never fail to live up to their name in simple games means with this is particularly nice.

Makes: MEGAL POWER
Format: cassette
Price: \$7.99
Graphics: KK
Playability: KK
Addictiveness: KK
Overall: KK



CROAKER

FROG SHOOTER/SPECTRUM 48K

Fairly dull, made obvious, the looking more like a snail into military than any kind of frog — but let it pass as such in an army drawn with the most primitive and confusing kind of 3D graphics. Along this line is some basic knowledge various kinds of giant spiders and so forth. Naturally, you must shoot them.

It's an amusing task, even though the red ball projects

that pop from your antennae when you press the fire button are one of the few cool things about this game. Another odd thing is the floating effect controlled by the objects in your path. The blue 'systems controller' that come landing along with quite occasional regularly see them to run, and inevitably blow try actioned with to wilderness.

Without a joystick, controls

are the clumsy LHM for WHACKO says that I always find parties fairly frustrating. But even when the maneuvering easier, this would still be nothing more than a tedious, boring game. — D.B.

Makes: KUMA/STURZEN SCOTT
Format: cassette
Price: \$9.99
Graphics: K
Addictiveness: Poor
Overall: K

BINGO!

BONGO/VIC 20 + 16K, CBM 64

Probably one of the best hidden 'n' levels games available for the expanded vic. Set in a riverbank cave it chronicles the attempts of Bongo the mouse to subvert the data streams of the city rivers and win the heart of a lovely princess (English). You of course take the role of the level's robot and with the aid of a well sited 'stick' must guide him past nine sheets of adversaries. To move past those sheets you must collect a total of flashing diamonds, and that entails some pretty hairy maneuvering I can tell you.

The sprite graphics are bright and suitably cute and hidden gems will appreciate the wide variety of adventures available. I kinda suspect that the key to saving success is through the secret teleports hidden about the screen. These points are available to the mouse-hunting monsters on your tail and so become invaluable escape routes. Bonus points can also be raked up quickly by gobbling up the BONGO letters which float around the screen during the early stages. All in all it's a heck

piece of work, I have yet to survive the game of screens and win the heart of the princess, but I'll continue to plug away. I mean, who's a mouse and a princess? Bongo's ravens keep me floating away in the hope that all will soon be revealed. — B.K.

Makes: ASTROG
Format: cassette
Price: \$7.99
Graphics: KK
Playability: KK
Addictiveness: KK
Overall: KK





BLOCK WAR

RENEGADE ROBOTS/BBG

The only good robots is a dead robot and make the most of it because you can be sure as hell that the Commission for Robot Equality is only a spot into the future. Which brings us to *Renegade Robots*. This is a fun like a giant sliding blocks puzzle, added eggs coming by way of the more familiar group of vicious robots.

OK, the planet is under the threat of invasion, but fear not, scientists have everything under control. Or they did have until a series of explosions arrested the production of the secret weapon they were working on. Arranged at the 18 ways the explosion caused the robots marching the production line to go berserk. The only way

to save the line is by signing from key control cubes or destroying the renegade robots. Moving blocks means getting behind them, grilling your teeth and shoving like hell, whereas pin the block carrier's feet on the screen, jacking anything in a straight line between here and over there. You know the Tower block. Once the robots are started out some idiot scientist makes the same mistake and

you have to start all over again. A robot hunter's job is never done. —R.A.

Makes: RENEGADE ROBOTS
Platform: cassette
Price: \$49.95 approx.
Graphs: FX
Playability: FX
Addictiveness: XX
Control: XX

SELLAFIELD SUNSET

ATTACK ON WINDSCALE/COM XBA

Scientists want to do it, although who they're going to do with it leaves only a doubt they can't like people watching it.

So what is *Attack on WindScale*, adventure or arcade? It's both. On the one side it's a puzzle. Part one is a puzzle involving the standard space/asteroids format with a specific background, but with a twist could be a *People Game* for all I know.

There's the problem, who you can't get into the adventure without a password and the password is hidden somewhere in the boxes of screen four of the tablet game. We put our best men on it (I assume none have been spotted) but no one got past the second screen. Result: no continuing adventures, no way to know if what you have to find a quest really what you are to stop the reactor



from going critical. You then have to find out what you who started all the trouble and give them a lesson to

if you're suddenly pissed with an unmovable obstacle with an antidote with Space Invaders-style power that you might save yourself with this warning. —R.A.

Makes: PROBE
Platform: cassette
Price: \$49.95
Graphs: FX
Playability: X
Addictiveness: XX
Control: FX

BILIOUS PARROT

FREEFALL/BBG



A word of warning from one of my more informed sources — hearing about its simplicity makes you ask as "Why, folks, what is it?" *Bilious Parrot* is about as simple as it gets and go for it in the *Adventure* way.

Freefall is as much as the idea of it and I'm going to get to zero gravity, combined space travel will waiting for its *Big Screen* play. The action takes place in the deep space station. *Control* was been attacked by Alphaoids. These boys are all fun. They're equipped the air supply with oxygen and only one crew member has reached the space suit rooms.

It's not only Alphaoids that the *Commission* has to contend with. The price of fuel of *Waxpods*, *Cyberoids*, *Looboids* — all do their bit towards making life very hairy.

The game simulates level conditions very nicely. You can move around either by using the built-in jet or by pushing on blocks against walls. The *Graphics* are improved by looking, shooting or catching and the moving one of the words that float around the stages. It's not easy, though. If you don't have a *Parrot* think seriously about having a few more words printed on. —R.A.

Makes: FREEFALL
Platform: cassette
Price: \$49.95
Graphs: FX
Playability: FX
Addictiveness: XX
Control: FX

TAKE THREE

3D LUMATTACK/DAGON 32

The great *Selbitab* was rages on, this time across the post-matched surface of the moon. In your brilliant new *Howler* fighter you must defeat the three defenses of the ghostly alien: *Selbitab* base and destroy their *Commander* *Bunker*. The first defense mine is protected by some fairly mindless robot tanks and so is relatively easy to pass — once you've mastered the complexities of prolonged *Howler* flight. Zone two is rather more difficult as you must fly across mountains terrain throughout history

of aerial *Selbitab* mines. It eventually get the *demise* base, thundering into the mines with all the flying skill of a shortighted pigeon. I never managed to see the range of self activating mines also beyond, nor the *base* itself.

The screen display is very attractive and includes cockpit cross hairs for pointing in the wrong, automatic radar, fuel monitor and temperature display. This is

particularly useful as direct hits and exploding mines cause the fuel to fluctuate, which means *quinty* points will soon *run*. Scrolling throughout the game is smooth and the *controls* are graphic and design fairly effective. I particularly liked the distant Earth which appears on the horizon as you rocket silently around the lone surface. All in all this is a classy classic in *Howler's* *Selbitab* trilogy and so well

worth checking out. It's certainly as good as these highly-rated 32 offerings from the Tom Mix studio. —R.A.

Makes: DAGON
Platform: cassette
Price: \$7.95
Graphs: FX
Playability: FX
Addictiveness: XXX
Control: XXX

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THE GLORY OF THE RAJ



THE GREEDY DWARF/ Goldstar/BBC 'B'

In this last-year adventure, King Arpanak — the ultimate villain — has had his crown jewels stolen by a dwarf — the dimly and Lethalman. The adventures who rise up to recover the missing jewels will be remembered for a long time.

"The Greedy Dwarf is the most intellectually satisfying of all the games I played. The rest, such as well as a good name — and that makes a change. This is really important because you can actually begin to get a sense of the king's castle in your mind's eye. All the same, for what it's worth, what good is a 'best-of' without a 'best'?" (Review: www.computerscene.com)

RAJ SINGH got the break millions-only dream of — a part in Indiana Jones and the Temple of Doom, the mega-adventure and long-awaited sequel to Steven Spielberg's Raiders of the Lost Ark. In the movie, he plays the sinister Little Maharaja of Pankot.

Indiana Jones (Harrison Ford) is entertained in the Palace of Pankot by said little Maharaja (Raj Singh) — bejewelled, pinched and leoparded in his fabulous costumes. Raj holds court with impeccable hospitality and charm. That's until Lady Luck stumbles across him at work one evening, participating in the revival of an ancient and evil sect, in which the Godless Raj demands human sacrifice...

The satin-clad Satanist is now back at school (in Ealing) and the only beastly thing about him is his Dragon 32, bought with movie earnings.

He prefers adventure games, and drinks Coke, not blood.

"Steven Spielberg, La Mury Guan (Shari Foner) and I played the arcade machines at Etness studios together during the breaks in filming. Steven liked Pole Position and Dig Dug. He was very, very good. He fixed the machines so that we didn't have to pay to play.

"Being an actor is not my real ambition. I'm really interested in computing and want to work on the business side. Acting would be my major hobby.

"Making the film was lots of fun and a real experience. The set for the actual Temple of Doom was so vast and extravagant I could hardly believe it. I was nervous at first when it came to my part, but Steven was so nice that I soon forgot about that."

QUETZALCOATL/Virgin/ 48k SPECTRUM

QUETZALCOATL is a real Indiana Jones-style adventure. It looked a bit weird with the presence of another video game, but once he got started, rapidly became involved. Instead of the usual hero's eye view, our quest found himself inside the sprawling 3D tunnels of the maze. As in the Temple of Doom, directional objectives stand to lead not

only their way but their lives!

"Did I like Raiders of the Lost Ark? You bet! My stage and I got it about seven times! Getting chosen for the sequel was a dream come true, and I certainly like this adventure. The playing is classy and exciting and you get right into the adventure first. The best entertainment too. Especially when you try to pronounce 'Quetzalcoatl'!"



THE PRIZE/Arcade/ 48k SPECTRUM

THE PRIZE is your school math game. The quest here involves solving the three forms of Calculus using happy numbers and collecting the vital 'logic pods' in the ground cubes in order to progress through the levels. Getting to the end of each chapter might give you even more than a prize — credits are offering 10,000 cash money for a snapshot of the final screen. Could this be the final link in a chain of intellectual challenge? Raj-dink I think so.

"I think it's a real choice. For starters it's two much, too slow, and the graphics are poor and give to the point of view. It may have a few more screens, but it's basically a gimmick for anyone who was playing what is basically an unimpressive game. Even money won't make you play it. Well, it's a lesson."

VALHALLA/Legend/CMB 64

VALHALLA has been widely described for its unique and adventurous game play as "one of the art" for the Spectrum. The game is a real and exciting 3D experience that offers some real and exciting and... (Review: www.computerscene.com)

"I'd definitely need a really long time to even start to play this game properly. The graphics have a lot of detail and the locations have a real sense of depth and realism. It's a real challenge to learn about. You'd have to become an expert in their technical nature in order to progress. It doesn't help that you have no time to think about your moves, as the game will go on its own way without you, and you have to make fast decisions. It's a very clever game indeed — in fact I think it's a bit too clever, and I don't really like it."





WHACKATAACK ORLEANS 407/0816

Some time ago Duke and I tried *Music Protractor* and, an unfortunate event, the end result of which was weeks of sleepless nights for some time being.

The success of *Music Protractor* has inspired the Game Lords to produce *Whack 'n' Bats*, which we should still consider an exciting experience in playing itself, but before we can describe it let us in the immediate vicinity.

Upon the side of the screen are the various Game Lords, bats, bats, etc., each of which is designated a row of buttons. The idea is to push buttons represents a bat and you get the bat and returns to turn the buttons on and



off. If a button is on the associated image shows a bat. If a bat is on it doesn't vary much, very straightforward. You can also use the speed-up key to make you lose about 10 seconds and start a 4,000 bat game.

Just as *Music Protractor* was, *Whack 'n' Bats* is very fun and quite effective. I had some reservations about *Music Protractor* but these were really unfounded. *Whack 'n' Bats*'s sound effects are hardly recording standards.

These limitations are less apparent with *Whack 'n' Bats*. While it can be a tedious instrument, the somewhat subtle, as a graphic movement is quite colorful and very attractive.—E.A.

Maker: GIGACORP
Format: Cassette
Price: \$14.95
Graphics: OK
Sound: Good
Accessibility: OK
Overall: OK

SLOW PORKER PAINING/CEM 84

The slow paced *Painin' and Blowin'* is a painting around this somewhat odd, somewhat funny, quite rightly pointed out that you don't have a straight line and what looks like a TV with more than to be a TV.

My first attempt, intended to be a better version of *Guatemala*, could not look like the calling had fallen in it. *Painin' and Blowin'* is the order of the day. After a lot of time with the game, the computer will become easier to play and it will be a lot more interesting than *Com-*

puter aided design (CAD) by its nature should be so fast a general software it's just a computer. *Painin' and Blowin'* is not a real-time video game. There's no doubt you can do it all with it — it has routines for drawing, painting, circles, and so on. It's a lot of fun and it's a lot of fun — but drawing, painting, etc. — and so on. It's a lot of fun.

The help screen are totally unhelpful. It works, but it's a bit of a pain and you enjoy playing it with a bit of a pain. —E.A.



Maker: CEM
Format: Cassette
Price: \$14.95
Graphics: OK
Sound: Good
Accessibility: OK
Overall: OK

LIBRARIAN ACOS+ACBM 84

ACOS doesn't really speed up cassette loading but it certainly makes life easier. It enhances the cassette filing system (*ACOS* stands for Advanced Cassette Operating System), making it operate in a similar fashion to a disc — although a bit slower. It has the same file structure as the real-life equivalent of '84 loading.

Part of the reason for discs being so fast is that they have a catalog of files on the first sector so that they can move quickly to the requested file. *ACOS* does much the same thing. It looks at its catalogue and then lets you fast ahead to the top of the position of the file you're asked for. Of course you still have to press the fast forward button but because the computer has control of the cassette reader it can stop when it reaches the right program.

In addition to this you get a whole load of new commands.

There are some turbo BASIC extensions. They combine the normal keywords and give you a very nice control over sound and audio graphics.

All in all, *ACOS* is a program well worth using. *ACOS* is installed, so forget about any loss of using it to make a killing on the games market.—E.A.

Maker: BELLHOUSE
Price: \$14.95
Graphics: OK
Sound: Good
Accessibility: OK
Overall: OK

VAST SCOPE SCOPE 8/SPECTRUM 48K



Don't be fooled by the "Game Designer" tag plastered across the packaging of *Scope 2*. This is actually a third-party title, and unlike many other systems, it's not as good as *Scope 2*. It's a bit of a pain. *Scope 2* is a far more useful medium-level language developed purely towards the manipulation of high-speed graphics, sound and animation. And the beauty of the system is that all code generated by *Scope 2* will run independently of its mother tongue.

The perfect tool for frustrated game writers! What's more, it's exceptionally powerful. You can store 36 command words to make what, once written into Basic ROM statements, can be instantly compiled into machine code using a simple MSB call. Of course, the experience of the system's limitations but others will find it a genuine treat.

Scope 2 itself appears remarkably clean. The only legal name error was a typo (I believe) to recognize the MSB command. *Scope 2* is equivalent to the 8086 standard.

But that's a small price to pay. The package is completed by a useful game designer routine and some simple *Scope 2* programs. With this and *Scope 2*'s *The Quill* the Spectrum games market has been blown apart. Owners of the original *Scope* should upgrade immediately. Great stuff.—E.A.

Maker: BIF
Format: Cassette
Price: £17.95
Graphics: OK
Sound: Good
Accessibility: OK
Overall: OK

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The Wood design adds the 3-way top of the left.



STICKS MAY BREAK...

... Or do their bearings in, but nothing faces JOHN CONQUEST. He's got plenty more to fall back on

LOOK THROUGH the computer mag ads and you'll see that there are a lot of people trying to sell you custom joysticks, all convinced that theirs is the real McCoy. "Absolute action", "instant response", "high quality", "professional" — writing joystick ads looks like a breeze, but what we're concerned with here is the rather more difficult business of actually buying one.

Obviously the first consideration is compatibility, whether or not the widget will fit your machine. Virtually all the joysticks currently available are designed to fit Atari video & computer systems and Commodors, though

they'll also work on CBS's Colospectrum videos (you'll still need a standard controller in the second port to make the games run). Wood supply adaptor leads for Apple and Radio Shack machines and, like Suncom, for Texas Instruments' T9900s. A rare exception is Suncom's Star Commander (\$18.95), made specifically for the BBC or Sings, though Kempston is also planning a BBC stick.

VEXED

The vexed question of interfaces is one in which you'll need expert, and hopefully disinterested, advice. For Spectrums, the Kempston at £71.95, which will accept any stick, has only one drawback, a single port. For BBC's the Wood at £24.95 is recommended. The basic rules are not to get joysticks with plugs (unrigged to fit machines for they aren't) or a plug that fits (they don't) or a too small one (to avoid anything that needs a program to make it run).

A less obvious but vital

consideration is the size of your hand. Believe me, that's important. Many of the sticks I tried simply weren't comfortable, but might well suit someone with smaller, or indeed larger, hands. Unlike apples (especially in shaped grips).

Unfortunately not all shaped sticks have a very limited range, usually Kingston's or Point Masters, so far and many other reasons it's well worth while going to one of the big computer shops and trying your hand at their range. Lion House in London's Tottenham Court Road, for instance, has 17 models ready to be hooked up for demonstration, and the Silesa shop in Sidco rents to have at least 15 of a possible 28 in stock at any given time. Even if you just try them for fun, you'll notice the differences.

As you'll naturally instinctively know though you're going to use a stick. Price differences are almost entirely down to quality of construction and the cheap ones simply aren't

up to a lot of punishment; if you're heavily into "Destruction", to take an extreme example, a cheap joystick is going to be a waste of money. With joysticks you get what you pay for with a vengeance, and don't forget at least should calculate whether they're really improving on the standard issue sticks.

OBVIOUS

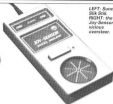
The most obvious differences between cheap and not so cheap sticks are whether or not they have steel shafts, the grade of plastic (high impact or extruded) used and the general quality of construction. What you don't see is the guts, which is what really sorts them out. Very few sticks have micro-switches (though Kempston are rumored to be using them to activate as needed). But the leaf switches found in most very considerably in quality and the cheap ones have very limited lives. Also

holder inside the casing is the shaft mounting, which is another thing that decides whether or not the stick will give doing what you want it to do.

You should also think about the kind of game you usually play. Sticks come in two basic configurations, with the fire button in the handle, where you can fire on the top or trigger from the handle itself, or mounted on the base. We convinced that handle fire is a major contribution to the control. Most of the sticks with handle fire have a base button as well, which can be a nuisance when hand holding, and some base mountings are available in either left or right hand versions or already have both, either as separate buttons or as a bar across the width of the base.

Most of the sticks mentioned were tested with Atari's Atari computer version of *Planet Ark*. It requires precise maneuvering, subtle and responsive speed control and pinpoint fire — in other words it uses everything that a joystick ought to offer.

The cheapest sticks around are Atari's AT13 a pair (space logo) up to CTR, which are so terrible that nobody seems to stock them. The Pioneer AT130 is admired more for its price than for the quality of its 8-way movement and handle and base fire buttons, but if you really want to spend the minimum, this is the one.



LEFT: Suncom Stick 204.
RIGHT: the Joy-Dancer joystick version.

For \$29.95 you can get Spectravision's Quicksilver II with center handle fire and rocker feet, which, for rather more, is a standard Spectrum interface offering. Like its big brother (below) its shaped handle makes hand grip critical. Easy to use, though because of the shaft mounting rocker foot, it's as fidgety as it looks and would last about five minutes in an arcade. Its foot switches have a poor reputation. Alternatively there's Suncom's Stick 204, the cheapest that was reasonable stick, which has a ball grip, a left hand side/center fire button and is a nice hand size. Solidly made, it's the kind of thing Atari ought to be offering as standard.

Real in the way CTR mark is the very basic Kensington 3000 (AT13.999) which has little over the Stick 204 except a base fire bar, workable from

left or right. The handle suggests that it might best be controlled with the thumb. It's followed at \$11.95 by the Quicksilver II which is identical to the junior version already dealt with except that it has 'auto rapid fire' via a trigger in the handle, its main selling point.

LOOSE FEEL

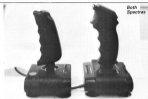
The Projo Command II (\$12.95) has a very similar loose feel, again due to the shaft mounting, and looks very plastic. It has a trigger fire only (and customisable) feet and comes in CTR-88 versions for Spectrum and BBC. The handle design however is excellent with a diamond cross-cut design that is very satisfying. The much older Kensington 2000 with handle centre, trigger and base fire bar buttons is £12.75.

At £12.95 you can choose between the Projo Master very similar to the Command (but slightly less robust, and Suncom's all-British Pro-Joe which replicates the Kensington in its solid high impact plastic construction and fire bar (plus centre fire in the handle), but which I found sluggish and awkwardly shaped. On the other hand, Suncom back up the quality of their foot switches with a two year warranty, so it should be pretty reliable in the long run.

The top of the range Kensington 3000 (AT13.99) is, again, a very solid piece of work with a ball grip on a short, tapered steel shaft and both left and right hand base



ABOVE: the Spectravision 2



Bush Spectras

fire buttons. It feels a bit odd but I've told that it wears in well. The next Spectrum, the £129.99 24-lighter takes available in a rarer version for Apple computers at a very nice £26.99 is a very nice hand size with excellent mechanics and speed control. It has a left hand base like the Bush and a 30.000 unshaped plastic handle that I found far too short, but that's fine.

Woo, like Sunbeam and America firm, make their first entry at £74.99 with The Boss, a multi-core brain that I found very heavy to use, aggravating the advanced case of video wrist, but very sensitive, however as the hand grip is shaped for a much smaller hand than mine, it's virtually unusable in my eyes.

The Arcade at £75.99 is the cheapest stick that one can get really enthusiastic about. Bush made, with very superior materials, it's extremely positive and responsive, great pleasure to use. This is an excellent firm and highly recommended — not just for the fact by Lion House where it's a big favourite.

STEEL SHAFT

Back to Sunbeam at £78.99 with the FAC which has a ball handle, steel shaft, ratchet base and left and right hand side laser fire buttons. A nice size for hand holding but, despite the amazing manoeuvre control, I find the shaft too short, the fire buttons need very fine induction and the game (Star Wars) seemed much speedier than with other sticks.

The legendary Le Stick at £78.99 boasts unique, ratchet switches, but there's a mixed blessing. While it's

ideal for one-handed use and suits games like *Deathball* superbly, firing jags the switches so often it has a tendency to jump ahead when you

take one to cut off the Boss button, extremely useful if, like me, you're holding the stick in one hand and working it with the other. With other clear fire sticks it's very easy to find your fingers reaching both fire buttons, which may not be what you want. For *After Burner* it also fits the Three Axis in the same stick for control, fire accuracy, stability of response and speed control and overall feel and response.

TOUGH BABY

From the same stable as The Arcade comes the Professional Stick II at £26.99, which looks rather like it had been ripped off the front of an arcade machine. This is one tough baby and though I can't help wondering exactly what 'Professional' means in this context, if anything

THE PROFESSIONAL



start shooting. Le Stick is if anything too responsive and so hard to control, making it a real wrist killer.

QUALITY

Jumping to £99.99 we find another alloy, the Red Ball a quality number with a longer steel shaft, a good size ball handle with ball in fire button, plus another on the base, and all the control aspects from Woo games. However at this price I'd spring another £2 to get the £21.99 Woo Three Axis. This is my personal favourite of all the sticks I tried and, for my money, the top of the range. It has a very long steel shaft, which means a far better 'throw', and three different clip-on handles, though in practice I only use one, the slim tapered job. The Three Axis has a ratchet fire button in the handle and another on the base, both offering a urged switching feature which one

deserves the name this time. I imagine some of you must at some time have put your names into a coffee arcade. If so, you'll know exactly what to expect from this one. The price in the joystick

pack is Sunbeam's Joy Sensor which looks rather like an open-market version of an industrial control pad. I can't make it work and though I've heard rumours of people who have mastered it and love it, I've never actually tried one of them. All a guess in serious circumstances. At £29.99 it is seems like a real gem, but maybe I'm missing something.

MOVE BLIP

All joystick sticks pretty much do the same thing, move a little bit round a TV screen. So how come there's a £20 difference between the cheapest and the most expensive? Well, it depends on whether they're being made to order or to a standard. I am not a snob... but, the sticks on the cheap sticks in the 'Made in Taiwan/Hongkong/South Korea' and there's not getting away from the fact that they're not in the same class as the American and Bush made sticks.

The trick is to find one that suits both your hand and your pocket, which is why you need access to a wide range. However even the big things have no compromise rules. Lion House are big Woo fans, buying the job in large with the Pioneer and The Arcade, while since they prefer the Sunbeam Stick 506 and (gun-fighter with the Quadrants as back up. From the ideal stick would be a cross between the Trips handle design, The Arcade (more ratchet) and Woo Three (if everything else). In the real world those sticks seem to be in demand as well for money and they are:

1. Sunbeam Stick 506 — £9.99
2. The Arcade — £75.99
3. Woo Three Axis — £27.99

THE LOT



LASER DEFENSE

For
CRIC
By
GRAEME
WORRIS

It's raining missiles and the city's about to get more than just wet! You're in a bunker controlling the installation. Using the same buttons used the day with your controls, Press SPACE to fire the laser bolts that can stop the incoming warheads. If the city's hit more than seven times, the installation will cease an operation. You have 12 laser bolts or waves. Four more and life on the city are totalled up at the end of each wave. If you manage to attack with no hits you can get a bonus of 5000 points. Each wave's faster than the last. If you make it beyond eight waves we'll be in a lot of trouble!

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03 MISS	LASER DEFENSE	04
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05 MISS	MISS	04
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1000 ABC, 1000 ABC, CITY UNDER ATTACK
1000 ABC, 1000 ABC, CITY UNDER ATTACK

CE TO FIRE!

1000 PLAY, 1000 PLAY, 1000 PLAY, 1000 PLAY

1000 BARRAGE, 1000 BARRAGE

1000 CL3

1000 FORGOTTEN

1000 PLUTS, 1000 PLUTS, 1000 PLUTS

1000 PLOTT, 1000 PLOTT, 1000 PLOTT

1000 REPTILES, 1000 REPTILES, 1000 REPTILES

1000 MATHS, 1000 MATHS

1000 PLAY, 1000 PLAY

1000 PETERA

1000 FORGOTTEN

1000 CARBON, 1000 CARBON, 1000 CARBON

1000 CARBON, 1000 CARBON

1000 MATHS

1000 10-4000

1000 FORGOTTEN

1000 BARRAGE, 1000 BARRAGE

1000 FORGOTTEN, 1000 FORGOTTEN

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ARCADE

ALLEY



ARE YOU



IF YOU, like me, have trouble fighting for air in most arenas, then Nintendo's Punch-Out could be the work-out you're looking for.

Set in the prize and glory of the boxing ring, Punch-Out brings you closer-by-television-cumulator with a series of ugly-mug pugilists—all of whom are intent on stopping you as you K.O. your way to the Heavyweight throne. At each level the going gets harder, as the fights get longer and the fighters get stronger (and bigger and faster and meaner...)

The game's graphics are ruggedly simplistic with little more than the ropes, the ref and the canvas on which to fight; the latter is the last thing you need to read if the atmosphere is heavy and the you-box grim as it should. Let's keep it clean... Move some out! BOOOO!!! You'll usually be represented by the ingenious bare-chested (literally) of a 3-D fighter who reacts with the speed of light in your every whim. Capable of nearly every move in the book, the best jobs of course) you use a combination of buttons and joystick to defend and attack in the finest Marquis of Queensberry tradition.

The joystick enables you to weave your way through the round whilst keeping your guard up or down as the case may be. The buttons offer you the chance of counter-attack with left/right blocks to the head or body. And when the time is right you get the chance to take a decisive K.O. blow with either a thundering uppercut or a murderous hook.

The first opponent is a steady stream of a man called Glass Joe... but if you're good is there will the right combination of blocking and boxing is achieved—a matter of juggling timing and joystick. Every punch thrown is greeted by cheers from the crowd and orders from your

corner—hardy-Block, body-blows, jab, jab, EFFICIENT! It can get pretty heavy when you're being egged on like that... Your success, though, depends on the power meter and the status meter. The latter indicates both stamina (you'll always win the championship) and on the clock. The former shows your punching power on a gauge which rises steadily as you attack and flashes 'K.O.' when you've got your man on the ropes—miss that and you're back down the scale and in danger of a quick rally by your foe. The drawback unfortunately on both of these is their positioning—if you've got your chin down and your guard up then it's hard to check your stamina.

If in a bad fight it's all against the ball, with the muscle lengthening as the fight gets harder, if you fall to K.O. your man within the ball, then you're out—there's no chance of a points decision in this game! Between rounds your next opponents vital statistics (and we're not talking 20-20-20 here) are flashed up (though for too rapidly for my liking) showing nationality, word rating, weight, etc. and then it's back into the ring.

Far too long two-stone weightings like myself have been knocked senseless by great muscle-bound fighters so it's a relief to find Punch-Out offers a little hope away from the real lifebouts. In just five sessions (at thirty pence a throw) I had personally floored such brutes as Glass Joe (stayed with in the world)—but just a sucker for my glove) Prince Harrison and Bull Bull. And I was hardly sweating, Charles Atlas! Really? Forget it... I was a contender!

ALREADY FOR THE BIG **K.O.?**

'Cos if you're not, stay well clear of Nintendo's *Punch-Out*. DAVID DORRELL sags to the canvas with a streaming nose and a ruptured gut, while a smirking DAVID CORRIER snaps busily away from the comfort of his ringside seat.

PUNCH-OUT: HEAVYWEIGHT HEMLOCK
in ascending order of pugilistic prowess!

GLASS JOE — French, weedy and rated ninth in the world.

PISTON HURRICANE — Cuban, hard and a bit of a heel, rated eighth in the world.

BALD BULL — as mean as Mr. T and twice as fast, rated seventh.

KID KWIK — American and faster than a McDonalds at getting you down.

PETER PASTA — Italian and smarmy with it — a walking Mafia man.

MR. SAND MAN — World champ, American and guaranteed to put you to sleep but fast.



ALLEY

ARCADE of the FUTURE?

In the USA they're saying that Arcades are deadsville, Dad. Yet at the same time the technology has never seemed more promising. Assuming the genre survives, what will a typical arcade look like in ten years time? TREVOR MENDHAM speculates . . .



EVER SINCE the arrival of the first Space Invaders machines (just a few short years ago), the quality and realism of arcade games has been improving at an exponential rate. The games we play now would have been inconceivable in those early days. And yet despite this rapid advance I believe that we have not yet come anywhere near the coin's ultimate potential. The video-games of tomorrow will be as far removed from that of today as Diogenes' Law is from, well, Space Invaders. For this reason I'd like to speculate on the shape that this ultimate game of tomorrow might take.

In the arcade of tomorrow, you are unlikely actually to see anyone playing a game! Rather, there will be groups of half a dozen or so enclosed "booths" clustered together, each just large enough to contain one player. Above each set of booths, a master screen will show a sample of the game, along with instructions, details of price and the names of the high scorers.

On finding a game that takes your fancy, you place your money (probably a five pound coin) in the slot of an

unoccupied booth and step through the door.

The booth is circular, with the controls mounted on a disk set in the floor which can be rotated to suit your height. In the more expensive arcades, there may even be a chair for you to sit on during the game — though I'm sure even this is a distraction. You close the door and press the start button. The booth goes dark, and you enter into another world . . .

Reality

The canvas on which the action takes place is not just a small, flat TV screen, but instead consists of the whole of the wall in front of you which falls 180 degrees opposite you (really, that's just an outside observer). What is more, the pictures are not just computer graphics, but are generated by laser disc technology and are based on real photographic material. When combined with quadraphonic sound, it becomes extremely difficult to remember that it is not real but merely an electronic fantasy.

The screen set — be it a size 1050 6000 space or an enclosed booth — the game begins as your opponents come into

view, strapped into their jackets or wearing their suits of armor (as appropriate). Now the opponents for the duration of the game, less some apparent, for whilst some of the enemy are controlled by the computer, the rest of your opponents are your fellow players! And you have no way of determining which is which! First, that is, you get close enough to make out their faces. For the "men" in this game are not just anonymous graphic blobs, but all have faces and features. These belonging to the computer will have those chosen randomly from a stock of photographs, whilst those controlled by players will use photographs generated by the camera hidden in the wall which is constantly observing you. And of course, just as you can see the faces of the others, so they can see you — and, if you are close enough in game terms, the microphone in your booth will allow you to talk to each other!

Friend or Foe

Of course, if you have recognized one of your opponents as a friend you must then decide whether to work together or whether to kill him for the points. And if you decide on an alliance, and

you sure you can trust him . . . ?

Does that scenario have you dreaming? Well, as any science fiction reader will tell you, that's just the start — there are many more possibilities, leading eventually to direct mental interaction and game control. However, I have deliberately limited my speculations for one very good reason.

It Exists

That is that everything I have mentioned above is possible today. The technology already exists, it is simply a case of bringing it together. We have had the ability to produce the hardware for a long time — it is no more advanced than that of a flight simulator. As for the software, well, there are professional, industrial programmers who specialize in the capability of handling the complex graphics manipulations required, whilst when it comes to the game side there is a vast pool of talent currently putting their teeth on the home computers. The game I've described could be in the arcades within two years. All it would need would be an entrepreneur with a capital of of capital — and even more guts!

Midsummer is never a very good time for computer companies, but this July was disastrous for two state-of-the-art operations — America's Atari and Britain's Imagine Software. Deeply in trouble, short of money and beset by the fruits of several bum decisions, both operations all but closed down in their present form six weeks ago. What went wrong, what are the lessons for others, and can anything be salvaged from the wreckage? TONY TYLER assesses . . .

AFTER THE

REQUIEM AT SUNNYVALE

Six weeks ago an American businessman named Jay's (named just 700 million dollars on the table under the nose of the Warner and his brothers and a few minutes later was mulling one of these with a company called Atari metaphorically under his arm. (Warner had also guaranteed to pick up Atari's debts — raised at three times the cash price tag. At the same time a significant purchase. By selling off the lion's share of Atari, Warners had put a stop to a miserable five years of steady losses and marketplace disappointment. What went wrong?

The answers must lie, in no particular order, terrible management decisions; the existence of CBS-Culdesa and the existence of Commodore International.

Atari is the company who, more than any other — certainly in the United States — began in all, it has fewer technological shined eyes since recently since founder Nolan Bushnell sold off his Sunnyvale operation to Warner and the brothers more than five years ago for a multi-million sum. Despite an excellent early hardware design level, high manufacturing standards, and a record to some reputation as a games concern — not to mention a perfect coin-op division that has always been a pioneer (and indeed which Warners have hung on to) — the com-

pany's CEO-in-charge then became confused over and over again. The way to retake the US market or first shaped up only for the switch from games machines to computers, then changed its mind — then partly changed it back again and got interested in proper computers after all — led Atari's

management to make a series of ghostly wrong decisions, blunders that unfortunately cost the company money and credibility at a time when the head due to the Bushnell years was evaporating rapidly.

In hardware, the company had got off to a good

second by the VCS being its first (with the 48K/600 series, 6502 machines ahead of their time in many ways, with quality, 256 colours, RAM up to 128K and already-installable other drivers and other peripherals). Plus a vast, quality library of software in ROM form (and all of them were VCS approved). This range established a good base line in the USA, and as it was considerably better than anything up to Apple II status, dominated the low-price market. Commodore's older PET and low-RAM VCS-20 (and alongside the Atari models. At the same time the company were committed to produce full-time for the seemingly over-selling VCS.

The ball was first kicked 18 months ago, when Apple upgraded the II to the IIc. Commodore introduced the "IIc-64", and at the same time it was becoming clear that Atari would soon have to choose between the videogame and computer camps. There is little doubt that there were voices in the company retail at the time arguing for an all-out computer strategy. Unfortunately these still were (and are) all those VCS entries-out there. The company decided to continue pursuing both at the same time. It must have seemed a sane enough strategy then, though in retrospect it seems clear that it served only to over-expand the company and spread its resources still more thinly. At a time when research projects were already promising to take Atari further and further into more exciting and expensive areas than lap-

STARBUCK STUFF: a move along the right lines, but it came too late.



grade 16-megabyte computer manufacturer, Atari's — a genuine competing player — was hit hard in all things we did: software like *Star Wars*, and the visual controller additions — trackball, graphics pad, and so on — pronounced more or less in plan. All these had to take up a share of the overall company resources. And Atari's prices made partners grumble.

The next wave of hardware (Spring, 1983) was dis-



THE 1300X VCS. It made Atari...

astrous: the 1300X game system in tandem with the 1300XL computer. The 1300X was a 16-bit word 400-computer with a white-filled joystick (it was never so safe in the UK), distinguished only for near-total incompatibility between it and the 2600VCS, for whose owners' sake the whole project had been laid on in the first place.

The 1300XL was a complete, another machine featuring 128K, incompatibility with any other Atari product, in retrospect it emerges as an early prototype for the XL, later and obviously have been marketed at all. The 1300XL was ditched shortly after launch but the 1300X turkeys on, now, of course, it has been joined by yet another game system, the 4000 1300X, compatible (at least) with the VCS. Its other notable features, or lack, and much too late, late on, right. And Atari finally had a product with which to make one last, disappointing counter-attack against Coleco.

It was when Atari was first reeling away from the initial Coleco thrust into its traditional turf that we began to hear odd stories filtering out of Co. concerning Atari's desperate plight to create VCS ROMs. As legend actually had it, the bulk of these were copies of those very *Ludus* Spelling movies — *Reactor* of the Cost Art and J.P. personality, or it happens, AT — for which Atari had already paid a vast enormous sum. As Parker have also observed, good films as up-offs, are heavy weighed in good arcade rights (though if these should also be based on films that

you have a different story). *Reactor* was actually a thoughtful game which made much use of the VCS's capabilities. Its trouble was it was too difficult, too big, and if it, simply sat on shelves up and down America until stock-pilers refused to take any more Atari cartridges unless the company helped them unload the deadstock. Eventually 400,000 J.P.'s were assembled, driven out to the New Mexico desert in a convoy of transporters, and then burnt — with the old excavators and earth-movers — in a magnificent blaze the ground not far from White Sands nuclear testing site, all under the silver light of a Western moon. It's a nice story, anyway.

Coupled with news of the industry real and considered came the news that the company had founded out on the New Jersey for the second year running. The computer switch seemed to be happening after all, just when Atari had lost its edge, and now Commodore, with its 64 model, was making the running. Legal gripes with Texas Instruments and the software houses Activision and Imagic — the first of a whole series of energy-sapping legal battles — threatened the company. At this time the XL models were only just appearing. Atari's was getting nowhere, other videotapes were more or less on their way — but overall Atari wasn't getting enough of the money to do more than slow down its rate of obvious decline. Staff were cut. Whole departments went, budgets were cut to the bone. Most of the manufacture was shifted to Taiwan and South Korea.



... But the 1300 nearly broke them.

With hindsight it seems that the company was more or less on course and recovering the right lines until the need for a 400000-VCS general upgrade became obvious. Then the company wanted a whole initial year — *Reactor* showed with the 1300XL, and the demand 500, while waiting its dominating strength trying



The 1300X, a good machine and a good reason — but again, it didn't make up for lost ground.

to maintain a presence everywhere and all the computer foot. In fact, they are still a year behind — a year they don't have.

Inevitably this year's *Star Wars* has been so bad as in the past three years, and for some months before. Finally the company had been threatened to be up for sale.

Similarly the company are unlikely to abandon, after all this time, the 26 million VCS owners. (This of course is a partial argument for the 7000 as well.) Therefore they must keep some software development. The answer to most a computer or software division as well, as those jobs are probably safe too. This is fair, supports the idea of continuing the hardware — and so it goes on.

One area that must be taken care of is custom applications software. Atari machines have been relatively ill-served in the past in this area, and the computers have suffered in the marketplace as a result. The XL is no better than the Atari as a games machine, and as a small business more it only shows up well because of its software. Atari has never had the quality of business support, nor thought it, also.

Above all the company has got to think *Reactor* and *Star Wars* is a good model with all its heart — and that means bringing its prices heavily down across the board (it is to compete with Namco's old company, now emerging as the machine for the first-time buyer. Atari have already all but lost the videogame war with Coleco. Now, to survive at all, they must fight back, either then, or against Commodore in the computer market.

SHOWING NO MERSEY

THEY HAD the highest profile of any British software company, games or not, and they had both of the *Ludus* offices in New Jersey; they had a series of high-paying jobs and protected even higher profits for the future. Because this *Ludus* will survive the first, last month of the major struggle with all but its members into ruin, the first and last word in the title of Great British Software Company.

Putting aside for a moment the thought that the man at *Reactor* were not exactly the of the popularity success that they brought it on them, *Reactor* theory, though here the world has yet to see, the *Reactor* company back, the



The *Reactor* team, now merged.

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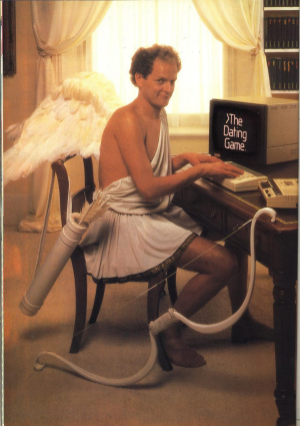


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10 PRINT "GOLF"
20 GOTO 100
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990 GOTO 100

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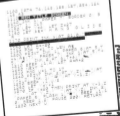
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Can it be those invaders you are thrashing at 3.00am are the same ones you were battling at 7.00pm? You need an alarm clock like this useful time-tracking BBC utility from KM ALDIS...

THE FIRST LARK of computing tells you real world time and key-logging time are not the same thing. Doing a Fred Astaire on the keys for a solo-pive thirty seconds can turn out to be three hours! Three weeks while you look up at the clock on the wall.

The Alarm Clock is one way of combating the alarming way in which time passes when hammering the keys. It's an interrupt driven real time (most of that later) and it works with any BASIC program. Arcade games might cause a bit of a problem as it stands but if you time it down a bit and above it somewhere it won't get in the way you should be in business.

In this listing the code is assembled in three separate assembler areas from MCB9 but this can be changed by altering the value of the variable 'code'. Other possible areas are given later.

Modes

There is a slight problem—it is only displays the time in mode 1. This is because it packs directly into screen memory. For the benefit of the jokers out there who're raising fish syndrome and saying what the hell use is

that, there's good reason. The alternative method of getting the time on the screen is to save the current row cursor position, move it to the top of the screen, print the time and then move it back to its original position. All very nice and handy story except for one small point. If you're editing a BASIC program there are two dangers. One where you're putting text and one where you're moved to with the cursor keys for copying. This makes life complicated when you return from the routine after it's finished printing the time. If you're editing you suddenly find yourself typing in the wrong part of the screen. Oh dear! Oh dear! Whatever made you're in the alarm still goes off to to wake the dead as it's no big deal.

Diversion

So what's an interrupt? While the computer is running your program it's also doing lots of other things in the background: like refreshing memory, scanning the keyboard etc. It looks as though it's doing more than one thing at a time but it isn't all the tasks that need to be carried out in the background

and copying bits of the CPU's spare time for generating interrupts. It's like the keyboard wants some attention it gives the CPU the electronic equivalent of a tap on the shoulder and after the usual words, "Over 'ere John!" the CPU takes up its current task and then diverts its attention to whatever has interrupted it. When it finishes it carries on with what it was doing in the first place.

Eventful

The thing about interrupts on the BBC is that they're a piece of cake to get at. Unlike certain computers so resembling called an event is generated which can be made to cause an interrupt (when events are enabled). A list of events is given for all to see on Page 126 of the Alarm Clock. For an alarm clock it seems sensible to use the 'interval timer crossing zero' event. Set the timer to minus one, it counts up and when it crosses zero it generates an event. All you need is to write a routine which increments a counter in memory, displays the counter in terms of hours and minutes and reset the timer to minus one so the

whole process can then start all over again.

Breakdown

The nice thing about an interrupt driven routine is it carries on even when you turn the power on that caused it and run a routine. Because you know Big Brother Dave and the Quantum Lunch-pail aren't the inventors of multi-tasking.

Just by way of added value the routine includes a little-known way of disabling the break key! When break is pressed the operating system looks at location \$2B7 for a JIFF instruction. If it's not there it carries on and does its suicide number as per normal. However if there is a JIFF it does two jumps to the address held in the register located with the break key clear then, after the system has been read with the flag set.

The listing is well structured and explained so it's fairly easy to follow. Line 158 disables events if you don't do this then while the code is being assembled then the interrupt only has half a routine to go in. The computer promptly kicks its knees and refuses to talk to you. The registers have to be saved before and restored after the routine is entered in order that the operating system get what values it goes back to its primary task. To use the clock just enter the time and alarm at the appropriate prompts. Once set it carries on quite happily whether there's a program running or not. Then pressing BREAK has no effect on it. To change the time or the alarm just re-load the program and run it again.

Codes

If you want to use the user defined characters then by altering the value of code to one of the following:
code=\$B000 ... normal and pointer buffers
code=\$B001 ... cassette output buffers
code=\$B002 ... soft key buffer
code=\$B003 ... if you use discs forget it, if not it's probably the best place for it.

Remember putting things into buffers that you don't want to be put there can produce strange results. Of course, you could always take the view that as you've paid the price you might as well do what you like with it.

Full listing begins opposite. Remember, careful typing and checking is the BBC key to smooth running programs.



KEVIN TOMES TALKS while interviewing a boss. Except that no more tea could write a computer game like Football Manager.

Football Manager — for the few non-idiots — is a strategy game which involves you in the raw economics of the sport. You decide on the players, set on the transfer market, shell out wages and balance your accounts. As you make your way through the leagues towards the Cup, you are rewarded with graphical achievements — "highlighter" — from the matches you've played. The outcome, Brian, is not predictable.

Two years ago, in a Milton Keynes basement, the six and a half hour frame of the game behind the (big) footy was lost in two six hour sessions with labels onto the first 20 000 versions of Football Manager.

Big Kevin gave up his job as a Colcol programmer and put off his dates in one (impolite) basket ball. Right on cue, Uncle Colin brought out the Spectator. That night, the 20 000 earned heaven. Big Kevin transferred his prodigy to the Spectator with marshallion tenor.

Football Manager has been transferred to the Boss, and more recently to CRM 64. With expensive graphics — the most 2D one must have met — and a mass line, into said headhunting to a YOPS programmer Peter Gurn. Overall the game has sold some 80000 copies, thanks to connectivity that says Addictive Games' has personal

played. Kevin Tomes has been recognized for this from "Chief Label Appender" to "Chief Series Designer".

Big few were one John Row and that's where he started coding football games. Later he made a calculator's play game! He had several attempts at designing a football based game, but found that the necessary simplification ruled any sense of realism. With the advent of the home video, the scales dropped from his eyes. But even now, 27 year old Kim continues to think of himself as a games man rather than a computer man.

"All games are pure entertainment. They work through the effect they have on emotions, just like music in a novel. Now that's an entirely different approach to programming over basic programming. What's needed is to bring the experience of an

FRANKLY, BRIAN, THE GAME'S NOT WHAT IT WAS.



Says KEVIN TOMES, whose Football Manager prog has gained cult status. NICKY XIKLUNA blows the whistle . . .

old skill to a new industry. For example, all graphics should have a job. They shouldn't just look pretty.

"I don't like making things up. I enjoy working within constraints. The appeal of Football Manager lay in the fact that everyone was familiar with the game."

Surprisingly, Brian, Kevin Tomes is not an avid-out football fanatic. Having been spotted in Payton, Devon, he supports Torquay, a 1st division of Torquay.

"Football? A terrible experience. I used to attend matches, but I got put off, along with many others. The managers just had no idea how to organize an entertainment. They've never advanced and they can't stop the highlights."

That is leave One of this very game that Arsenal mid-field player Claude Nicholas played Football Manager first

in his personal league of computer soccer games, trying "I'm not even sure that it's unique at all... could be useful" — to Football Manager?

Does the author have any ambitions to change all into life, and manage a team some day?

"Wow, I'm happy with what I'm doing. I just want to be the best in the field — that's all!"

Tom's favourite games are Back to Back in the 21st Century and Pole Position. "My all time favourite is Tech Kingdom Valley. I don't play many games."

"Secondary ambitions? I'm very keen on getting hold of a good music producer, like Alpha Centauri or an Apple. It's very arrogant, but I want to compose, and believe I can."

He confesses that his favourite music is — heavy metal (yessah!) Yes, this guitar giant gets his head down and leaves up to the dubbin' of Bob Dylan and Pink Floyd. He admits to having wild day-dreams about rock-stardom.

"I'm being recognized. It's nice to get feedback — when people say they like what you've done."

What is it with these pro gamers? They're all performers! Could the patient detailing of these standard on-screen games hint at a deeper desire for the captivation and control of massive audiences? Or are music and maths inextricably linked in their dark souls? I'll be your knee when I've got some more evidence.



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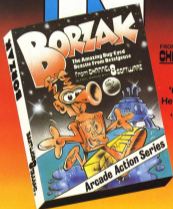
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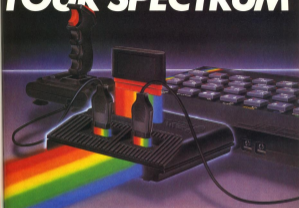
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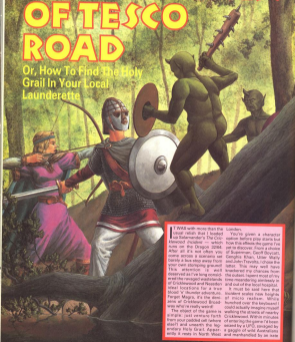
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I WAS with more than the local retail, but I loaded up Salamander's The Cockwood (series) — which runs on the Dragon 2088. After all, it's not often you come across a scenario set simply a few steps away from your own doorstep (read: well, this, attention! It will deliver as if've long considered the ravaged wastelands of Cockwood and Neesden ideal locations for a true blood 'n' blunder adventure. Forget Meggs, it's the domain of Cockwood Broadway who're really weird!

The object of the game is simple: just venture forth from your padded cell (where they're) and unearth the legendary Holy Grail. Apparently it rests in North West

London.

You've given a character option before you start but how this affects the game I've yet to discover. From a whole of Superman, Geoff Boycott, Gargis Khan, Usher Mally and John Travolta, I chose the latter. This may well have influenced my choices from the outset, I spent most of my time wandering aimlessly in and out of the local hospital.

It must be said here that incident states can bring a little more realism. While I bumbled over the blasted I could actually imagine myself walking the streets of nearby Cockwood. While moments of interlarded game I've been faced by a UFO, ravaged by a gaggle of wild Australians and manhandled by an ice

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GOES BANANAS...

ARTIFICIAL INTELLIGENCE IS COMING TO GET YOU

In five (or ten, or maybe twenty) years the significance of Artificial Intelligence (or Fifth Generation) will have become a lot clearer than it is today. In the meantime, it's nice to ditch the bugs, bytes and sprites for a moment and enjoy a good old speculative waffle about what it MIGHT mean. Your cue, 'O'...

If your mind's being rusty to you? Or parking meters food hangry when there's not food? (Remember that's not the minimum.) Perhaps this is one of the reasons that Artificial Intelligence heads such a fascination.

How often do you wonder at your mind? Really, what's the thing? Recently science games have been hooked up with hidden microprocessors. To record the ways in which people "relate" to them. Many folk that would otherwise be considered legally sane often talk to machines, humans become emotionally involved with their own personal technology by going through screens and by taking about logical precision.

We all really know the reason the prog put cerebral apps has time to go with the very very mass facts about you... yet nearly all humans avoid machines to a greater or lesser extent.

This tech-as-being can have very positive effects — many people given the choice of communicating with a machine or a person, will often prefer the machine, least dispense lives/parts of people when banks are empty. Recently psychological "Expert" programs have been their latest form aimed at "listening" to patients' problems. Many of these have found they prefer to talk to humans and a considerable number feel that they responded more favourably to an interactive Expert Program, with an answering personal questions about themselves.

Before positively defining what Artificial Intelligence is we have to define intelligence and in particular human intelligence. If a machine is to mimic human behaviour must be studied in order to interact and then we will have to find ways that machine. For some tasks this is now relatively easy — but for others it

reaches into the realms of perception, psychology and obviously 'cos we don't very much about the way our brains work, and of why. Nevertheless, one part of A.I. research is devoted to finding out.

The definition of A.I. is not constant. Once a business program replaces a payroll clerk the definition of A.I. tends to go up for it if sideways. Machines and their software systems are the result of human ideas and actions, the transference of thought into "physical reality", but often, because they are built by humans, they

represent a combination of ideas and these systems lead in an almost truly evolutionary way to more complex programs just as organisms evolved from amino acids by which that biology works. Tying the evolution of computers is a good case to point. In order to begin to understand human intelligence one has to understand the development of the brain and its neural, pat, or other, the mind.

Some experts maintain that it will never be possible to construct machines to think like humans because they must be able to "relate" to themselves in the real world, i.e. they would have to possess bodies similar to

humans in order to "think" like humans. ("Be" humans?) What now? It's a good technical possibility that the new "intelligent technology" will increase the human brain's effect with machines and that the specific tasks many people will need to maintain and their software systems as though they were humans and that by making this assumption more will be learnt about the man-machine interface.

The practical application of A.I. is in the realm of the next generation of more cost friendly interactive technology and one way that this is progressing is through the use of Expert Programs.

The whole area of Expert Programs is still in infancy. These programs integrate the expert e.g. a training specialist, in a particular field and then (provided that has been done with sufficient programming skill) the resident program and database can be used. Most of these Expert Programs have an update facility (sometimes allowing the "value" of the program to re-program itself) and thus such a system can be used in place of a human expert for certain tasks.

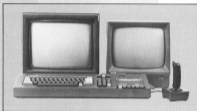
Right now A.I. ideas are being used in interactive video-tex systems which can be used in training of skills and the manufacturing of products which require explanation. However, it's also taking place in human recognition and of course into the whole area of language itself, for words only acquire meaning in a relationship with each other. How the brain extracts "meaning" from words and sentences is still very unclear. This is the area where A.I. research meets paradox in a world that seems known and unreal, the world of philosophy and "quantum reality" where arguments rage about what is "real" and what is not.



TONY BENYON

NICE... BUT WILL IT AMSTRADDE THE WORLD LIKE A COLOSSUS?

JOHN CONQUEST
has a paw-on-
session with
the Amstrad
GPC 464...



BY NOW you must have heard tell of the Amstrad CPC 464 — well, that's the official name but I've not heard it called anything but "The Amstrad". The budget full-size PC's entry into the home computer field has been much heralded by the press and now that it's in the shops we're getting the break into, with the computer being going into various degrees of ecstasy. The message, which you may have heard before, is that this is the greatest thing since sliced bread.

The Amstrad is a great machine, no question. But a great one? Not really. It is, however, a great piece of marketing. Designer Richard Ferry hit the nail on the head when he said, with admirable candour and enthusiasm, that his package was designed to compete directly with the Commodore 64. Is better value than the Spectrum and cheaper than the BBC B.

INTEGRAL

As a cost accounting exercise it achieves all these targets. For £229 you can get a 640, 640K model computer with a built-in cassette player/recorder and loud-speaker, plus a high-res monochrome monitor. For another £180 you can have a colour monitor instead. Clearly Amstrad, learning other companies' expensive

lessons, are applying the same minimum component principle that made them such a power in hi-fi. The integral program recorder, which, incidentally has two loading speeds, 1K baud and the rather slow 2K baud Speedload, has such obvious advantages that it seems destined to become an industry standard.

Though the manual is average (a better than Commodore's but not as good as Acorn's), the Handy Executive Basic leaves Commodore's for dead and is very fast. Other features are exceptionally sharp colours through the standard 37 and actually it with light and pencil modes, 16-bit stereo sound via the hi-fi hook-up (extra), real-time interrupts and windows. Amstrad's £14.95 joystick is a bonus, but although the single port will take any 3-pin joystick, only Amstrad's will let you use two, the second plugged into the first.

The keyboard isn't as good as the Commodore's, let alone Atari's, but the built-in cramped keyboard must probably trade with price, a rather feeble space bar has the Control key right next to it, which seems odd, but there's a whopping great

Enter key and a separate numeric keypad.

For a new machine there's already a fair amount of software, with more coming. However, some independent software houses are expressing open concern over Amstrad's distribution policy. According to leading software company Virgin Games, Amstrad quote that all commercial programs are regulated through Amstrad, its own software house. Independent can't get ideas but risk incurring the "disapproval" of Amstrad. Whereas that this is in complete contrast to the MSX companies who are extremely forthcoming with help and assistance in creating a better atmosphere for software production.

CO-OP

Level 9, the adventure games, however, have reported good co-operation from Amstrad so it appears that reaction to the new machine amongst software houses can be best described as "mixed". But, on the practical side, with the Amstrad's very similar 288 engine room, Spectrum software should be very easy to convert. The present trials would become a flood.

TV vs. MONITOR

My general wish with Amstrad is the monitors, which are modified and stripped down Amstrad telcos, and not the best in the world. An occasion they're adequate, but with at least one company, Norwoods, making TVs that are just as good as most monitors and will let you watch 600 Lines Blue as well, I can't see the point of spending money, and cluttering up my life, with yet another gadget. I'd rather do the £20 modulator and power supply unit that lets you run the Amstrad through an ordinary TV.

The Amstrad has definitely jumped into the starts with a bullet and the price and specs make it undeniably attractive. Right now I wouldn't care to be Sales Manager at Atari, Spectrum, Panasonic or Amstrad, let alone any of the several clone machine makers. But I can't help feeling that it's the flower of the month. With the like Enterprise, not to mention the MSX machines on the horizon, the bubble will soon be down and instead of trying to look like a world leader, the Amstrad will set out to appealing to people who want a neat package. Which should assure it of a future.

NEAT...BUT CAN IT DENT THE DISC MARKET?

... While KIM ALDIS gets to grips with the Ikon Ultradrive, a hi-speed minicassette storage system for BBC and Dragon

CASSETTES ARE a pain in the butt, disc drives are expensive everybody knows. But probably not so many know that there is a solution which makes a debatable compromise—a fast tape drive.

Ikon's Ultradrive for BBC and Dragon is such a whizbang that its cassette load faster than cassette but slower and less expensive than discs. In fact it's more than just a fast cassette because its operating system has total control over the forward and reverse movement of the tape, enabling it to do a fast search for the file or program it's looking for.

First impressions: it looks great. Small, casing in colour to match the BBC, a black front bezel and extremely small cassettes, about two inches by one. (The young lady who goes to it to share the file referred to them as 'links'.)

SHORT SIDE

Flitting peered to be something of a pain. The EPROM went into the sideways socket easily enough but I was definitely not happy about the cable connectors. A ribbon cable runs to the user port and another to the auxiliary power sockets, both on the left's underside—both on the short side. Short I said and short I meant. The same thing went so short that the only place to put Ultradrive was on top of the computer,

right over the main transformer and right in front of the monitor. Awareness to get used to people pointing things on top of their belly and the own feelings about keeping data storage media near transformers move in much the same direction. I've had trouble with disc drives when they get too close to the monitor for much the same reason.

FAST LOAD

Well, the manufacturers, had thoughtfully provided a tape of games to demonstrate the speed at which Ultradrive operates, fast good—loaded in the middle of the few minutes it took to set up and I was off to work myself at Asteroid's (Smag, Mariner and Program Power's Chess).

So just how fast is it? To a large extent this depends on where the file is on the tape. The easiest way to demonstrate this is with a few listings. Cataloguing the first side of a tape took five seconds. Fast. Turning gear to see what was on the other side proved to be a different story—nearly three minutes. This illustrates one of Ultradrive's main problems. Loading is very fast, only 15 seconds for Ultradrive's main program's load—after it had taken over a minute to load. This, in itself is still not fast when compared to cassettes but it is possible for Ultradrive



drive some much longer. The problem lies in the fact that it has to look at the catalogue before it knows where to look on the tape. Consider a worst possible case where the tape is wound fully forward and the program you want to load is also at the end of the tape. Three minutes are spent rattling thumbs until the catalogue is found, followed by a further three minutes while it goes back to the end of the tape to load. Admittedly this is a worst case but if you think about it it's not that onerous. Supposing you're working on a piece of software. Being a naturally methodical person you save your programs at regular intervals in case it decides to do a random number. Every time you save, it Ultradrive goes to the catalogue, writes the filename and any other garbage it needs then goes to whatever your program is to save it. This process repeats itself every time a load or save is made. Unless you make a point of using a tape load so your program is right next to the catalogue the file saving is very little when compared to cassettes.

I definitely didn't like the interface. One or two of these

REWIND, CAT, SWAP—for wrapping (cables are on Ultradrive's PC-Bus, it isn't usually like the Acorn DPE, the more often used commands, REWIND, DELETE, ACCESS and INFO, are on the utilities tape—slow and inconvenient to get at. No bit of any real use they should be accessible from ROM where they can't interfere with anything.

CHEAPER

By way of summary, Ultradrive is reasonably good but it could be better. The main flaw is in the design of the operating system without resident utilities. These on tape aren't so convenient as they should be either via BACKUP, COPY or COMFACT. But then I already use discs so maybe I'm being over-enthusiastic. It's easy to see that Ultradrive is better than cassette (better left) and at £795 is up to £750 cheaper than discs, once you've factored out the DPE. It also depends on how much of cash and how long an time you are. In spite of its shortcomings it still works well.

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BACK IN THE

For a whole mess of reasons America remains the hub of the computer galaxy. What happens there today may well happen here tomorrow. For this reason we've devoted a few pages to an in-depth look at the U.S. scene: products you haven't seen of products you may never see; American computer-games magazines under the microscope; and what most surely be the state of SOME art or other, a comic designed and printed entirely on Apple's amazing Modetosh micro. So get some on Apple's amazing Modetosh micro. So get some on pumpkin pie outta the icebox, suck on a Dr Pepper, and get your head down. 'Cos this month BFG K is...

THE VIEW FROM McCORMICK WEST
Last month we reported in haste from the Consumer Electronics Show in Chicago. This month we give you... some of the shots and stories we didn't have room (or time) for LAST month.
PICTURES AND CAPTIONS:
RICHARD BURTON



Over the mountains and through the valleys you can see McCormick West's golden building to the left. Right, the most impressive dome of McCormick Public Central Bank.



The gate to McCormick's Golden Arch, just the entrance to the CES main exhibition hall. The whole show takes three separate buildings.



The CES is not just about computers and the stuff of the main floor should give you some idea of the size of the show. Somewhere amongst this is Linn's A&R.



Alan has a lot of games, and a lot of non-games it... most of them on the show stand. Imagine this table set-up in your bedroom!



Don't you? 'niger Games? A book? Can this really be Chicago? Yes, it is, and, and this here's where those Brits try to teach us about video games. Long-nosed!

U.S.A.



You get used to seeing things bigger and bigger across America, including a giant *Play* joystick. All suggestions for games that can be played with this joystick to BUX.



MXC was all the C64, but you really had to look for it. This Sony kit ate last with its *Commodore* keyboard and signed acrylic floor mats.



A genuine IBM-based MXC game — *Comet's Challenge*, a typically aerial game using more than a little *Activision's Pitfall* in places.



The MXC includes a "National 64000" — the standard for the Activision stand running a pro-protective version of *Pitfall*.



Same for the first time, now add-ons for *Comet's Challenge* and more. *Comet* has heavily loading their much-praised computer system. Will it work?



BACK IN THE U.S.A....

CAN 20 MILLION VCS OWNERS BE WRONG ?

A QUICK glance at the American computer press tells you a lot about the origins of our own nation. Like microprocessor technology itself, microcomputer magazines originated over There and subsequently appeared over Here, already having acquired a form of recognized identity.

That the model has been US-derived becomes apparent by a quick glance at, say, *Byte*. *Byte's* obvious editorial aim is to rub the world behind their all but too already, in judging the industrial of their issues. Their chosen slant is the authoritative editor. Circular, clearly laid-out and devoid of vulgarity, *Byte* sells itself along on a sort of immense knowledgeability, prestige, and considerable advertising revenue. It is the very model of a modern micro-magazine.

Also with a good reputation among magazine buyers in the UK are *Computer* and *Creative Computing*, both of which take a more relaxed editorial line, aiming generally to the "left" of *Byte*; in their typically calculated construction, cleverful layouts, and all of titles, knowing, expert, but rounded, fringe self-confidence.

Although with a few minor exceptions those three are the US computer magazines most highly cited in the UK in fact there are a very great number of other, still too different magazines, many of which never get distributed here. But to say many of them are unlike anything you've seen before would be to overstate matters. There are business machine magazines; general computing magazines; hand-held personal computer magazines; software magazines; dedicated-machine magazines; educational titles; and game magazines.

There are a lot of game magazines, actually. As we all have our definition of game magazines let me say I mean magazines that deal with "recreational

and/or your life, history, to judge by the evolution of U.S. computer-game magazines—most of them really video-game magazines at heart... TOMMY TYLER presents a sample of IBM UK's best-selling opposition.



computing") any use of a computer or computer-like object to do anything spectacular and involving, not already defined as either business or educational. Lending it at the time now in the UK, what do we find in the US? Proportionally more than three times as many game magazines. And for this you can blame the Atari VCS and other videogame machines.

The fact is that for Americans the Age of the Computer began with the Atari VCS—later on with the Intellivision, the Odyssey, the Sega and of course the Coleco as well. As a result they

underwent an entirely separate stage—the great VCS Discussion. By examining millions of potential one-time buyers to games machines, the software industry did the last computer revolution in America much earlier, for the average American family, at least a year later as a result.

Videogame culture—as it genuine and recognized precursor to full-blown computer culture—began with Atari, by no means—still—with *Coleco/Video*, and in its two years of unchallenged monopoly has spawned several videogame magazines. Examples are *Electronic Games*, *Electronic Fun*, *Joybird* (before *Byte*), and *Video World* to name just a few better-known.

The latter really-early of the US computer revolution has had to consider becoming licensed companies, in mid-stream as it were. *Electronic Games* has for some time now printed short utility programs for the US-focused computers. But chiefly because they aren't allowed the huge US videogame press clippings, even "Junior Computer" magazine had to review and support videogame stuff wholeheartedly. Apart from that a lot of those concepts would sound familiar enough to British ears; general features; software reviews; even hardware discussions (big business in the US), and so on. To this add occasional very short utility programs for the ball clean, most popular computers; equally short game listings; and movie-TV reviews where appropriate. In all respects range fairly enough still. On paper.

But there are differences. American game magazines for less advertising than their British cousins, in general have less pages and cost a good deal more. One thing you get for your money is a full colour through-out; and I guess they need the money since they've had to staff about three times the size of British magazines. However, in these magazines it is often through too general superb. Above all the flavour is American.

ELECTRONIC GAMES
Monthly; \$2.95

The boys, better than ever now since the demise of its chief rival, *Original Fun* (and *Video Games*, another, standards) is still predominant, though computer features have been increased over the last year or so. Specializes in imaginative reviewing—every feature is



EO is almost certain to be a review of some sort, although difficult to remember the limitations of the writing in *1988: The Year After Next* in places, for example, 103 pages per issue, of which 60 are scripted 44 were advertisements.

Verdict: The addictive videogame's magazine, *1988* takes the Pro 2800 seriously. **COMPUTER GAMES Monthly: \$3.00**

Like EO, CG aims to be a US country, "We're talking about those ten-year-olds," a company reportedly told our man in Chicago. Half the number of pages of its first and correspondingly less advertisements. Nevertheless, the paper quality is excellent and of course full colour photographs. Layout is elegant and economical by British standards. Like EO, uses The Review as all-purpose feature device. No computer programs whatever — wholly a software buyer's

magazine. Good writing, especially good letters.

Verdict: smart, a bit pedantic, good point job, may find life tough if videogames still continue to go down the tube as predicted.

K POWER Monthly: \$1.95

Our American newsletter, one of the shortest of our sample at 64 pages, nonetheless takes the same definite step up the revolutionary ladder (to its credit) as EO by featuring type-in programs for major US computers and also "support" features ... all of this, albeit, on a very modest scale. Otherwise ... the entrance to hell.

Verdict: half-hearted, bland, lifeless.

VIDEO GAMES Monthly: \$2.00

The mixture pretty much as before — EO (can you think of any spaced 'G's?) majors by publisher emphasis, with B&M- and classified game

reviews (in the usual variety on least — predictable). Nothing for tappers at all — nothing remotely technical, in fact. Average issue 80-odd pages, the usual full colour and air layouts. Contents, interestingly, features a respectful interview with Nolan Bushnell and a tough, gritty, knowledgeable and utterly ruthless demolition job on the Texas-Incubator (60 on the US-published Super-Spaceman). Service shops and nice artwork round out.

Verdict: As Computer Games.

The above list represents the bottom rung (as it were) of our sample (in 'betweenness' terms). Next line up there are, as it does in the UK, among the dedicated user magazines. These naturally exist, in great profusion, for all major machines, and many of them reach our shores to compete already for sales with the home-grown product.

However not all efforts do go unavailing. For example, Atari have magazine support in Britain, only not from American magazines. Two more Atarings in our overall sample are Amig which subscriptions itself as *The Amig Resource* (entirely of itself), and Atari Connection (perhaps the most unimpressive name of the whole bunch). Both are pricey at three bucks, actually well-presented and balanced, and stand clearly at the notice for relative status, computer user. You expect, and get, quite long and deep pro-

grams, both games and utilities, in Atari Bazaar — four articles on, say, 8000, Assembler or Adventure Parking would be wildly over the top of their mission profile. Both magazines also feature general articles, often of a "speculative" and "thoughtful" nature (ie, padding).

As always it is all in four colours and on good, thin paper with a decent bit of a glow to it. Amig is 100 pages, Atari Connection is little smaller at 80.

The single most irritating thing about all of these magazines (and there are many others we haven't even mentioned) is that as far as they and their huge readerships are concerned the words Spectrum or Amig, Ultimate, Master and Soft, don't mean a thing. In Britain the videogame machine was relatively slow to arrive — Sinclair's Z8000 was hard on its heels. As a result dedicated videogames never took massive readerships, so they did in the States — they never had time to. Would-be computer types slipped that stage altogether and went straight into small, cheap, home, transient and started programming right away. It is doubtful if a purely videogame magazine could ever have survived in Britain.

American computer game magazines are all intensely respectable, and for an American market, well-designed. And yet in Britain no equivalent readership is said to exist. There must be something significant in this, if it could only mean our what is it.

ALAS, NO LONGER WITH US...

Not all of the vast range of US computer game mags have stayed the course. One of the first, *Electronic Fun* (incorporating *Computer and Micro Games*) transformed itself into *Computer Fun* a few months ago... but lasted a mere two issues. Meanwhile (and more or less the US equivalent) in tandem if not rival of our own best-departed *Lead Runner*, merged recently with *K Power* (see main text). It suffered, as Lead Runner self-confessed, from a general, patronising, educational tone and was — in a word — just too puny for words, too-down-there-but-not-in. Then there was *Joytest* — in



this writer's mind, probably the base of the magazine in both in looks and style (even if it was as nice as some dedicated one). It is speculated, the two mags gave EO and EA a run-and-half for their money, but in circulation wars there are seldom winners, only losers, joytest lost.

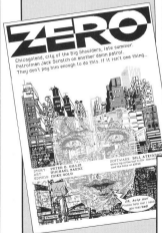




BACK IN THE USA

What You See

There's only one contender — and no contest — for the USA's Computer of the Year: it's the Apple Macintosh. And although it's only been on sale for less than six months, owners are already using it to stretch a frontier or two. **BIG K's MIKE GOLD**, for example, also a comics editor and originator (his day job), has discovered Project Zero, the world's first comic produced entirely on a computer, artwork and all. Here's how it was done: ...



The artwork and lettering on this page was done entirely on an Apple Macintosh computer and an Apple Imagewriter dot-

COMPUTER GRAPHICS. They've nothing new — people have been creating this sort of stuff for years. But in order to do so, they had to have constant access to a lot of expensive equipment.

Until now. In January of this year, Apple released the Macintosh — a truly revolutionary machine. For a grown-up computer, it is relatively inexpensive. And unlike the other so-called personal computers, the Mac is totally graphics-oriented.

When the Mac came out, Apple introduced two programs: a decent word-processing package, and an extraordinary graphics package. Most people thought MacPaint was going to be fun, but of little use. After they got their

ZIP CODE

HARD QUESTIONS

MIKE GOLD sums up the State of the Nations



SO WITH THE CONSUMER ELECTRONICS SHOW approaching...

By now, you've probably been Consumer Electronics Showed to death. But when reporter has a 15-year-track record, you can't predict — and even upon old news papers.

The summer show, held in early June in Chicago, is particularly important. Whereas the winter show in Las Vegas is often better attended, the summer show allows manufacturers to unveil their goods in time for Christmas sales. A majority of home electronics items — particularly games and low-end computers — are sold during the last three months of each year.

Now that the show is behind us, what was worthwhile as large as important as the retailers' reports, and they don't? Will they push it? What are they stuck with from last year?

Of these items in the gaming and computer areas, CIB's readers' hard four questions:

1) Does anybody care about the so-called "dedicated machines" — those that only play games?

2) Does anybody who is not an Atari specialist actually believe they're still in the game business?

3) Does anybody believe the Coleco Adam is worth investment space?

4) And if Atari and Coleco are both on the ropes, where's the action?

The answers were "no," "that's no, not really, no," and "Commodore."

Nobody had anticipated it, but those that could enjoy old games. Imagine stopped making game plans for all Atari, Intellivision and Coleco formats, concentrating on the C64 and the VIC-20. The Coleco people must have been misled at that one — while passing over Coleco, Intellivision was making software for a machine six months dead.

Indeed, only Parker Brothers and Activision were showing any real support for Atari and Coleco — and neither company put a lot of effort into the Adam. It should be noted Parker and Activision — both with name-brand marketing soundings games — were producing their wares in and about every conceivable format, even Sinclair. The dedicated machine is an item of the past.

Atari made strategic mistakes. The shows

were up among four of Robert's buildings, with most "big boys" in the same facility. The companies and game folks had their own building, but Atari, in a typical fit of corporate irrationality, had its own place with most. Many retailers, for more opportunities, took game computers buyers' more attention to the big room, leaving their show neither to their own building. If Atari was playing Microsoft, many buyers just weren't interested in coming to Microsoft.

Perhaps it was just as well. Atari's big announcement was its super new 7800 computer, with its ability to produce almost state-of-the-art graphics. Retailers who would own in their minds generally told me that the thing they wanted to see from Atari was another dedicated machine. "Just what I need" — did another format for the Atari, "one major buyer told me before.

"I don't see advertising it, I suppose I'll have to stick it," another buyer stated. "But believe me, I'm not going to get stuck with a lot of those things in my warehouse."

No other software game manufacturers, as of this date, had announced any support for the 7800. As far as I know, it was still at the huge Adam exhibit, you could have a third-hand's third premium bargain. There were some reports it would be sold as software, but the Atari's an invaluably job.

Coleco just might hold on. But with their basic game set selling for \$29.99, I wouldn't bet the farm on it.

So who's the winner? Commodore, hands down, but they probably don't believe it.

Everybody loves the C64. Every software retailer had it in his games available for the C64. All the educational stuff was being written for the C64. Other formats had very little support, but eventually — even Atari — was leaving the 64.

I don't Commodore was all that enthusiastic. They had announced the "Puzzler" (the revised E-200) and a lot of excellent news. The new line and a lot of improved version of the 64 — and the graphics and sound are better. What it is, is an inexpensive computer with built-in spreadsheet, spreadsheet, database management, and business graphics. But the Puzzler is to those functions with your fingers and is a calculator. Anybody who needs a computer with these capabilities surely will realize that for a couple

hundred bucks more, they could have a low-end Apple or other similar "true computer."

But the market was the true picture of capitalism, perhaps. Commodore on all fronts will indeed be the victor. The Commodore 64, the machine that is up to its eyes in the line of the Consumer Electronics Show executives.

Does Atari Care? Atari's C500 game player, its 8004 computer, and the big 8000-word Atari Telereporter terminal, Atari is making some big bets they're all above, but they haven't established a 200 paper since February, and the 8004 is selling like hot air balloons. And nobody is actually talking about the Telereporter.

Atari's Super Action Game — Atari's P100, and with the Super PC 2001. Nobody's buying the former, and the latter is fighting competition from every conceivable source. IBM and the rest of the PC world, only 20%, and the PC's built-in memory that been divided. IBM's own PC is likely to dominate the PC market in favor of the 80. Some hard shell discussion in Apple's Macintosh.

As for the Atari's software, IBM was hardly a good idea to do so. Apple's made half-price Macintoshes become the fastest selling personal computer in history.

OF THAT BUSINESS CHANGING

Electronic Games? So what else I like of the games? CIB? Well, you have to take game announcements with a grain of salt — the games are rarely as good as they are presented — but I found the information more than adequate. There's a book, *Microcomputer Games*, by Douglas Adams, Isaac Asimov's Robots of Doom, Roy Blount's *Admitted 401*, and adaptations of novels by Arthur C. Clarke, Robert Heinlein, and Larry Niven.

The game I'm having the most fun playing is *Phengo* (Software by Transylvania) — it's what I'd call a brain-teaser. Now, that's not the one machine that is considered to be one for the gamers. Well, it's good for education, and the Atari's enhanced blank and write-up graphics allows Transylvania for the Mac to do a huge step up all other versions.

Need more? ... Anything from the Consumer Electronics Show.



OG THE CAVEMAN

£7.95 BBC 32K, ELECTRON 09.95 DISC



OG is in a calamity. His territory has been taken over by dinosaurs that lay eggs at a really fast rate. Og must crush the eggs before they hatch. By jumping on to each and every egg, Og's proceeds are compressed by a pack of chewing dinosaurs hungry for his blood... and on higher levels by giant old Ma dinosaur mammoths! Og can use his magic staff to set a trap, but this is useless as Og knows all too well. By contrast can be saved for jumping on fruit and on each bigger bonus for catching a less than his eating animals.

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LISTING 1

```

10 REM      Extension to Hi-res
20 REM      Printing Routine
30 REM      By Richard Taylor
40 REM
50 CLNR:G4710
60 LET a=64717
70 FOR l=1 TO 7
80 LET t=0:REDO V,8
90 IF LEN a=2<>INT (LEN a)/2)
THEN GO TO 200
100 FOR c=1 TO LEN a:STEP 2
110 LET w=CODE a(c)-48-78:AND
(255-w)
120 LET w=CODE a(c+1)-48-78:AND
(255-w)
130 FOR e,1 TO 8*W
140 LET t=t+100*W
150 LET a=a+1
160 NEXT c
170 IF W<5 THEN GO TO 200
180 NEXT l
190 PRINT "Data OK - Now load P
-printing Routine & Save":STO
P
200 PRINT "ERROR in line ",999+
L*10
210 STOP
3000 DATA 6967,"30000011620515C
11000013025002000CF1220515C11F0
FC7302720100002250FC0F0E20300FE
002050FE10003111FD0CF0200021950
2350000004F0025FD"
1030 DATA 8782,"90FD04F002FC02FD
20FD00FF020FD20FD000F000F000FE00FE
00F000FD1FF0LFF0000FF00007462000
02F0000004000031000FE0000000FE5000
0230200000062000"
1020 DATA 0941,"FE2200FC000FF020
00FE70C0000F30007CC00007FE000000
CF042200F0C00F02E00000FE00000FE022
0CF00F70C000FE0000FE220000F13200
FE000000000000"
1030 DATA 6920,"1000000000000000
C7200000000000000000000000000000
00000000000000000000000000000000
70C00000000000000000000000000000
70C70000000000000000000000000000
1040 DATA 0446,"00F0C00000000000
2000C70C000000000000000000000000
7F200000000000000000000000000000
C0000000000000000000000000000000
2200F0C0000000000000000000000000
1050 DATA 6218,"0000000000000000
C0000000000000000000000000000000
C0000000000000000000000000000000
00000000000000000000000000000000
0004F100000000000000000000000000
1060 DATA 1546,"FE00000000000000
00F0C000000000000000000000000000

```



MORE HI-RES PRINTING

... In which RICHARD TAYLOR continues his arcane and fearfully knowledgeable series on Hi-res programming tools for Sinclair Spectrum

LAST MONTH I presented a high-resolution printing program. This time I'm going to continue (but only by falling in) in addition to the old routine which improves it so that it can be used directly with Hi-RES printers — in stark contrast to having to use awkwardly coded and machine mode Hi-RES routines.

The augmentation to the original program will also give it some extra new features, such as actually being able to define the colour the output is printed in, a routine to help make the flicker problem in the first version a thing of the past and to allow easy to Hi-Res print while doing lots of characters in one fell swoop.

As with the last program, this one is written in machine code if, like the majority of the computered population, you've got an infectious fear of MC, then don't worry: the program comes nicely packaged in a BASIC box — taking 1 line Hi-Res headers or the second listing for relatively inexperienced headers of the Hi-Res variety. The loader program also incorporates a checksum routine, which should prevent

any cheating machine code or file headers.

Before starting, I feel I should warn you that you'll need to master a copy of last month's prog from somewhere. If you didn't type it in, or the version you did possess was mis-handled or misarranged by a mad dog then you'll need to either nick or code it up. Failing that, you'll need last month's floppy and some finger power. Once you're sorted that out, you're ready to type in this month's listing. After you have RUN the program (and wasted a couple of minutes), you'll get one of two messages, either one instructing you to load the Hi-res printing program from last month and then save it, or for the less fortunate, a message informing you that there is an error in a certain DATA statement. If you do get the latter message then I'm afraid that you'll have to find the error in the offending line and correct it before trying your luck at re-running. Once you're successful you can load the code from last month's program with "LOAD "CODE" and then make a couple of copies of the new program


```

LISTING 2
10 REM Extension to Hi-res
20 REM Printing Routine
30 REM By Richard Taylor
40 REM
50 CLEAR 31940
60 LET a=31940
70 FOR i=1 TO 7
80 LET b=0: REPR v, a
90 IF LCH a#(2)INT (LCH a#(2))
THEN GO TO 200
100 FOR c=1 TO LCH a# STEP 2
110 LET x=CODE a#(c)-40-70: a#(c)
:=CHR (x)
120 LET y=CODE a#(c+1)-40-70: a#(c+1):=CHR (y)
130 FOR e=1 TO 100: y#
140 LET t=e+150: y#
150 LET a#(t)
160 NEXT c
170 IF v<0 THEN GO TO 200
180 NEXT i
190 PRINT "Data OK - Now load P
printing routine & save": STO
P
200 PRINT "Error in line ":300#
1410
210 STOP
1800 DATA 5427, "300000116205100
1104001930598020002012005150110
70732372210004225070095203000PE
06300305E103003111070702000091950E
235050000000000000000000000000
1010 DATA 6400, "0670047002700270
20700070007000700070007000700070
007000701070E1070000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
1800 DATA 7177, "70250700007020
00707000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
1000 DATA 5315, "1005000070200010
07000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
1000 DATA 7420, "0070000000000000
20000000000000000000000000000000
70700000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
1000 DATA 5570, "0050000001100070
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000
1000 DATA 1410, "0000000000000000
0000000000000000"

```

side of the screen, 800,000, and any other programs, 100,000, will have to change the occurrence of 000 04717 to 000 7000.

10 RANDOMIZE USR 04717
20 FOR a=0 TO 240
30 PRINT a: AT 100, "0"
40 NEXT a

Now for a description of your new program. First of all, you'll need to start any program you wish utilizing the routine with a RANDOMIZE USR 04717 to 400 command or RANDOMIZE USR 31940 for 100,000. You'll no doubt be pleased to know that this is the only machine code call you'll need as the rest can be controlled with the more friendly PRINT statement. After using this call you won't be able to use a CR printer, if you're lucky (not enough to have one, since any colour that is usually divided by the printer, using PRINT or LIST, is divided to the first print routine). After that, you can output to the Hi-res routine with a PRINT #2 command followed by . . . what you want.

The syntax of the new style PRINT statement is much the same as a normal one except, of course, everything is done in Hi-res. As usual, you can use the normal colour directives to change colours, but, although the program will accept it, the OVER directive has no effect. You can use OVER, but its function is somewhat different to normal. AT and TAB will work but they need to be supplied with Hi-res coordinates to work on. In the single-line routine it's 0 to 170 and 0 to 250 for column numbers. What you print is defined in the usual way, either as strings or as numbers. There's no restriction on doing maths or doing a bit of string slicing in the statements, you can even do something like 10000/500 (0.2000) if you're mathematics minded.

A simple example. The program below will show an "O" from the left to the right hand

side of the screen, 800,000, and any other programs, 100,000, will have to change the occurrence of 000 04717 to 000 7000.

10 RANDOMIZE USR 04717
20 FOR a=0 TO 240
30 PRINT a: AT 100, "0"
40 NEXT a

Listing 3 is in a high-res version of the bouncing ball program.

When you print strings of characters, each successive character is printed 8 pixels to the right of the previous one, taking a newline if necessary, as in normal PRINT statements.

Utilise normal print statements, however, don't go over what you can do if you want to control when printing reaches the bottom of the screen, then just stop with a "0 00 of lines" or "0 00 of pages". The use of printing strings of characters is illustrated below, using a Hi-res example which shows the word SPECTRUM across the screen. RANDOMIZE USR 04717
20 FOR a=0 TO 100
30 PRINT a; 00; 00000; AT 100, "SPECTRUM"
40 NEXT a

The operation of OVER in Hi-res is somewhat different to its normal operation. OVER is used to implement the anti-flake device the program possesses. What the anti-flake routine does is simply allow you to prevent a redundant character with a space and then it is a new position a redundant character with a space and there is a new position in the command. However, it is assumed that you'll never use the character after intermediary stage of being overprinted but not re-printed (the cause of flake). What you do is, in the PRINT #3 statement, put AT (where the space is to be printed) - i.e. the character's old position; OVER #; AT (the new position); (the character you want to print). An example would be PRINT #3; AT 00, 00; OVER #; AT 00, "0". This technique is used in listing 3 at line 30.

```

LISTING 3
10 RANDOMIZE USR 04717
20 LET x=120; LET y=0; LET
oldx=x; LET oldy=y
30 LET a=0; LET b=0
40 PRINT #3; AT oldx,oldy; OVER
1; AT y, "0"
50 LET oldx=x; LET oldy=y
60 LET x=x+a; LET y=y-b
THEN LET a=-a; IF x<0 OR y<0
70 LET y=y+b; IF y>167 OR y<0
THEN LET b=-b; GO TO 70
80 GO TO 40

```



No. 5: EASTERN FRONT, 1941 (Atari)

EASTWARD HO!

Operation Barbarossa, 1941, was the code name for the German invasion of Soviet Russia. The invasion itself came badly unexpect, millions of lives were lost and untold damage caused. The only good result was one of the best ROM computer games ever made. JOHN CONQUEST approves.

HOW THIS is what I call a real computer game, one that takes the Atari as a thinking machine not just a big fast storage bin for jumped-up video games. You play the Germans, the Atari itself plays the Russians. As your team wins the war (June 1944), a 1944 multichip strain is sparse (as a result of the generalization of Russia). Even if there are a lumpy at head office, the Nazis had some way to get boys on the job — you have to do better than they do.

Open the CD-ROM box and you get a ROM cartridge, a very useful operational map and a game area — Poland to the U.S.S.R., Finland to the Caucasus — and possibly the Soviet instructions over.

MAP

Plug in the cartridge and a joy stick, switch on and you see a small portion (about 1/3) of the map on screen which you will eventually get the whole installation. There are 1944 "squares" on the map and most of the action will be in the western half. Take a long hard look at that patch of dark green in the left margin. That's the dreaded "Woy" Machine and they are very bad news.

Below offers you Leningrad, Minsk, Smolensk, Ispolomsk, Advanced, Rzhev 1941 and Rzhev 1942. With Leningrad you get a single Panzer corps while Uncle Joe had a whole army standing up on Moscow. The "object" is to take Moscow but the real idea is to get the units through the various kinds of terrain to see what happens. It shows through a circular window in his machine, forests and rivers, that's what happens. So the "mission" you learn is to keep 'em in the open.

Place the cursor on any unit, fire, and its name and current status will appear at the bottom of the screen. There is a few parts, number



and number strengths. The latter is the business and but at advanced levels you have to keep a sharp eye on the balance in your panzer units. While firing, a Malaxev Machine (used against German units, move forward) in the direction you enter the squares to go and the movement accordingly. You can enter up to eight orders at a time, changing direction as often as you like, and little green arrows flash along the route with the cross at the terminus.

Panzer moving and half-lengthed across open country can, in practice, only manage about a third a turn and that kind of forward staff games result later, after you cross the Dnieper, so what with terrain effect and the computer the chances of all your orders being carried out are pretty small.

When you've run out of ideas, get the vital sector on screen, press Start and the computer will execute as much and as many of your

orders as it thinks reasonable. At the same time it'll move the Russians, usually to the same places, worse if. Anything to mess you about. All this happens to the sound of muted brass guns.

Beginner gives you 13 Germans while the computer, no fuel, gives itself 22 Russians. The sole object of this limited southern sector only exercise is to take Moscow. At all levels a turn is a week and Leningrad, Minsk and Ispolomsk run from June 22 to September 28 1941. Beginner is best used to practice on and advance. It's a small but not to create with tanks, leaving units in behind each other, especially Panzers which need plenty of refuel time.

This is where you learn about the Woy Machine, by sending units through them and see where it gets you. Even at this level there are invisible, small and crucial battles round Minsk, Rzhev and Smolensk.

On a intermediate and you

now have to take Moscow, Leningrad and Smolensk with 20 units, the games ends taking 66 units. The front stretches from top to bottom of the map and it's a lot more work. Even so it's not really difficult and solid methodical shuffling should see you right.

Advanced is something else again. You have 22 Corps, with reinforcements trickling in through Poland, Rumania and Hungary, a flashing aerial indicating available, plus two Panzer divisions for you to take Leningrad. But the Russians have 86 units and their 100 best generals. Arthur and Woy, the guy who saw off Napoleon when he tried this game. (Mad was in an October 5 and everything freezes over, the screen going a ghastly white, on November 3, only ending up slightly just before the end of the game, March 28 1942.) To add to the fun you also have to get to Gorky, Kuznetsov, Kazan and Krasnodar, way out east.

INTERACTIVE BREAKTHROUGH- OR LOGISTIC PAIN?

RICHARD BURTON checks out *Empires*.

LET ME tell you, this Galactic Dominion link is not bad graft. There are fleets to build and dispatch, mining operations to set up, battles to be fought and alliances to be formed. If that wasn't enough there's the constant threat of that invisible pan-galactic entity known as the Post Office to contend with. Heavy stuff.

You're confused? I can dig it. But what you have here is one of the more successful offerings in the field of computer games — Imperial Software's *Empires*. More than a game really, since Imperial refer to it as a "... Fully interactive strategy game". Interactive literally is with room for up to six players (plus one empire) to play — none of whom need ever meet any of the others. Such a unique, original game situation comes about by each player only having his or her own part of the game to contend with and communicating with the others through the empire.

Let me explain. The basic *Empires* kit comes in a card-based box looking not unlike a traditional board game. Only a flesh containing the words "Ter 888 Spectrum" gives away the true nature of the game. Inside a styrofoam tray contains four program cassettes, 2 for the players and one for the empire, individual player rulebooks plus a larger Empire's manual, four cardboard Galactic Maps and a large wedge of small round cards to keep track of individual movements over the game world.

Each player's kit includes a card, a large Empire's manual, four cardboard Galactic Maps and a large wedge of small round cards to keep track of individual movements over the game world. Each player's kit includes a card, a large Empire's manual, four cardboard Galactic Maps and a large wedge of small round cards to keep track of individual movements over the game world. Each player's kit includes a card, a large Empire's manual, four cardboard Galactic Maps and a large wedge of small round cards to keep track of individual movements over the game world.

Fresh supplies of Galactic Maps, rulebooks, etc.

When you're a long way from home you can order here too many Galactic Maps.

Oneiric heads kit has been acquired three mining, power-generating systems, each with access to a 888 Spectrum, are chosen at random and supplied with one of the player cassettes plus rulebook and all the winnings. A fourth individual, who knows where the real power lies, takes the empire's cassette and rulebook and all four depart to their respective (home?) to prepare to intergalactic conflict.

NUMBERS

Depending on numbers players feel themselves as either a hussar of the Napoleonic Wars, a capitalist Woodrow Taylor or a mechanical Robinson of Tin. Each has a home-stay system, a population to protect and a budget. However, regardless of race, creed or date of installation, the value-point operation is the same.

First the program is loaded and a name and security code chosen which will stay with the player throughout the game. The Main File gives three main options: Military, Strategic and Mining.

Military is to do with building ships, bombardiers and scout ships and assigning officers to them from a roster supplied.

Strategic Command handles all military and civilian movement. Sector systems can be accessed for industry gain before committing forces to them. The consumer may modify the card Galactic Maps supplied with the game so that constant

checks on deployment of forces can be kept.

Once all the data has been fed in the player's first move to complete. The data is built into a data cassette and given (sent?) to the empire (depending on how widely scattered the players are, this is where the software sends power of the Post Office could come in. By sending important data into the nearest black hole. A serious flaw in the system, we think.

Assuming that all the player's moves arrive safely and before interest Rags the empire, using his own special program, evaluates the total situation. He has the power to resolve the outcome of battles, communications with (player's individuality, even (maybe) devil and later data or garbled messages).

Once battles have been decided, claims staked, etc., the updated blanks are returned to the players ready to begin the second move.

As the game progresses alliances can be formed between players, secret messages exchanged, etc. Be warned that *Empires* could go on for a very long time — games of months in duration are not unheard of by coincidence.

The objective is simply to reach zero other than the universe and become the Supreme Ruler. There are only three ways to lose: if a player's population drops below a danger point (not very likely), total bankruptcy, or an enemy race destroying a home planet's defense (most likely).

Without doubt Imperial Software have an extremely impressive product in *Empires*. It's state of the art in computer strategy games. Their approach is thoroughly professional. Secret players are a very good idea, even more so if you're in a position to keep a player's attention for a long time (it will need to) and has the potential for expansion (already worked). But — it has to be said — who will they be?

Expert 1981 also runs from June 1981 to March 1982, with 47 Politics 1981 also runs from June 1981 to March 1982, with 47 Politics 1982 also runs from June 1982 to March 1983, with 47 Politics 1983 also runs from June 1983 to March 1984, with 47 Politics 1984 also runs from June 1984 to March 1985, with 47 Politics 1985 also runs from June 1985 to March 1986, with 47 Politics 1986 also runs from June 1986 to March 1987, with 47 Politics 1987 also runs from June 1987 to March 1988, with 47 Politics 1988 also runs from June 1988 to March 1989, with 47 Politics 1989 also runs from June 1989 to March 1990, with 47 Politics 1990 also runs from June 1990 to March 1991, with 47 Politics 1991 also runs from June 1991 to March 1992, with 47 Politics 1992 also runs from June 1992 to March 1993, with 47 Politics 1993 also runs from June 1993 to March 1994, with 47 Politics 1994 also runs from June 1994 to March 1995, with 47 Politics 1995 also runs from June 1995 to March 1996, with 47 Politics 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from June 2366 to March 2367, with 47 Politics 2367 also



How Hardware Influences programming

THE MOTOROLA 68000 chip on its own isn't attached to anything, would be as much use as a dog's dinner. To make it useful you have to attach memory (usually in the form of RAM, ROM and EPROMs) and IO devices (often known as "I/O's").

The chip is connected to these by what is commonly known as a "Bus", in actual fact by three distinct buses, "Control", "Data" and "Address".

The function of Address Bus is to select the correct "line" or location. The function of the Data Bus is to carry data from/to the selected by the address line location. Finally the Control Bus governs and monitors the state of the micro hardware, especially the interaction between memory and the 68000.

Each Bus is a collection of electrical lines. Generally speaking these lines can be on or off (i.e., set or clear), thus conveying binary information. In the case of the Data Bus there are 32 lines and are numbered from 1 to 31. The Address Bus has 23 lines and they are numbered 1 to 23.

sending "what has happened to Address line zero?" — where the hardware starts to affect the software. When there isn't a bus address line then a processor cannot select odd numbered addresses (in many versions) but because it cannot switch on or off a non-existent line. This therefore induces the processor to think of the memory as consisting of even boundaries. Because of this, if you try and access odd memory via an Address Register or the Program Counter then an error will occur. This error is called an Address Exception.

There are only 23 Address lines remaining from the 68000 and 68010; the top eight bits of the Program Counter and Address Registers are thus non-functional, and presumably are there only for special compatibility with future Motorola 68000 based products. Just to confuse matters the 68000 chip (as used in the Simula 68) only has 20 Address lines, numbered 0 to 19, available from the chip itself. This means that only one(1) megabyte of memory is directly addressable if you access the 68000 directly. When you readers among you may notice that there is an A0 address line; this is because the 68000 needs its data in chip-to-chip mode (there are only 8 Data



lines the Data Registers D0-D7 (8), Address Registers A0 to A7, a program counter and a status register.

Data Registers

Data Registers are general purpose registers. They can operate on bits, word and long word sized data. They can be used as follows in PC and Address Register indirect addressing modes. Unfortunately they cannot directly point to memory locations.

Program Counter

In the 68000 the Program Counter is a 32-bit wide Register. It functions as a pointer to a memory address where the next instruction to

Supervisor Mode

The 68000 can be either Set or Clear. The Status Register can be modified. What can be modified depends on the register itself — in the top 8 bits, it depends on the Supervisor Flag. If it is set then the 68000 is in Supervisor Mode of processing, otherwise User mode.

The difference between these two modes is mainly one of privilege. In Supervisor Mode you are allowed to execute any legal instruction. In User Mode there are a few instructions you cannot execute, these being mainly instructions that would allow you to enter Supervisor Mode if not in Supervisor

ALL PRESENT AND CORRECT

The Control Bus has many different functions to perform in its role and each are individually named such as "DTACK" and "UDACK".

Those of you who know about address lines may be

too timid. It still maintains compatibility with the 68000 by forcing you to use even address boundaries.

68000 Architecture

THE MOTOROLA 68000 con-

tinued is controlled. Each time the 68000 wants to start a new instruction it consults the Program Counter (PC) as to from where its memory it should fetch the new instruction.

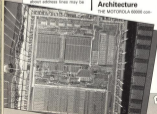
Status Register

The Status Register reflects and influences the MPU as it is processing. It is only 16 bits in size and is divided into separate because its top and bottom 8 bits. The top four is known as the System Status Register (SSR) and the bottom four is known as the User Bits or Condition Code Register.

Mode (then it should only be possible to enter it by an Exception or by a "break" mode available to you by the person who programmed the Supervisor Mode code).

Trace Mode

The most valuable bonus of Supervisor Mode is its ability to single-step through each instruction. "Single-stepping" is the execution of a single instruction, then normally a jump to a monitor routine, which allows you to examine and modify processor registers. You can then execute the next instruction and so on. Single-stepping is initiated by setting the Trace Bit (T) to one.





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- MS 04 BENTWORLD

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- COM 643 COONAL CRUISER
- COM 644 B.C. BILL

IBASIC

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- IB 0112 LEGAT
- IB 0114 COONAL CRUISER
- IB 0115 B.C. BILL

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The name of the Game...



..IS COMING!

BURN BABY BURN!

I want to know if any BBC books out there have managed to find the drop in Peter's Twin Kingdom. Faintly, whatever I do, I get flooded by his fiery breath. I want to kill him because of the mass-kill he possesses.

ALAN PHILLIPS, *Worcester*
 ■ **Beamed-up Darklayers**, please assist, *Worcester*, how are we, did that *Wily* algorithm want to split a base or two...

JSW Tip 1

TO GET the objects from the Commentary root, MERGE the first part of the program, then CLEAR SCREEN, LOAD "" 0000. When this is loaded type in F0R6 M0000; F0R6 0100,11; F0R6 M0000. The new version can be written SAVE (press) up to Save (press) down to Move Menu, then is also up to 40. Its three sets of words in Move Menu, those is also up to 40. In Set Menu, Go to the first heading and enter WRITETYPOR and some combinations of numbers to send between scores.

DAVID MARSHALL, *SWINTON, S. YORKS.*

JSW Tip 2

F0R M000000 lives, follow closely
 Type MERGE. Type the tape whose B OR, it's Type it like as its clear this load. Type in this line: 35 F0R6 000000. Now start the tape again.
 To double the ATTC and BANYAN ATTC, type (This enables you to get to the right hand side of the Banyan Tree) follow these instructions:

Merge the program as above. Now type C,PAR SCREEN, Type LOAD "" 0000. Start the tape again and let the program load. Once loaded enter: F0R6 000000; F0R6 0100,11; F0R6 000000; F0R6 000004. To play, enter "00 To 40"

BILLY SMITH-FRODO, *Sligo, N. Ireland*

■ And now some Football Manager hints...

ZIT DANDRUFF — J'ACCUSE

So Zit Dandruff breaks the Spectrum, and I guess you, he really has a right to call himself a Computer Geek, unless the word Geek has changed its meaning from "One who looks down on those he considers his inferior" to "One who is a wally". Gosh and wow! The BBC can only handle up eight columns, and as far as I'm grumpy of a computer! Three scores and one more allowed, with a little sign that would fit just not good enough.

But there's just one to look at the best to know that let's leaving the Centre of the computing world. What a

classic!
 Zit Dandruff immediately purchases an Atari, he may write able to hold his food at the golf club. Dear Yeh!

Incidentally, the Atari book you should have recommended to A.C. Looze (author) is "Your Atari Computer" by Ian Poole (published by McGraw-Hill). This book is neither boring nor G.T.O. it really does demonstrate and explain your Atari, as well as most of the pro's hardware.

CARD ROSE, *Walsley*

■ ... and which machine do you like, Sir?

Slug Slams Pirate Myth



Come off it! The software houses aren't starving yet. And don't give us the statistics about piracy taking the industry a million quid last year. You know as well as I do that these figures are totally spurious, based on the 1988/89-90. But even more with a pirated copy label does the "taxen pirate label for every one legit" come here? would have brought a coo of the real program. What nonsense — apart from the fact that the discs, and most of the punters (i.e. the label) are an illegal income,

either pocket money, week-end earnings (or like myself — the debt) and could not possibly afford anymore than they buy already.

This letter will probably be treated with a wide smile and warmth the message — but don't forget, we're scared you.

THE WERRELLIAC, *Stonypoolville*

■ Forget all that — tell us how you came to be called "Werrellig".

■ And now some Football Manager hints...

SCORE . . .

If YOU press a key during the match highlights at the end of a particular game, the screen will change immediately and you'll get another chance to score.
MATTHEW WADE, *Newark, Norfolk*

THEN SELL YOUR TEAM!

If you want to test your chops in Football Manager and all months, it's possible to play on and make more money. There you can buy back your players and play on — not
CHRISTOPHER LUPIN, *Kinglington, Cambridge*





AND NOW HERE ARE THE WINNERS OF OUR COMPETITIONS

The results are in! BIG K's first two Big Competitions have been judged to be a great success, especially by a lucky few who have topped some nice prizes. Read on, Masloff...

BIG K Coleco competition

April issue: Eight features of the Coleco Module 1 computer (Adams, to your vote listed) and printers asked to place them in order of appeal to the average home user. The judges checked out the computers and decided that the best order submitted came from Gary Adams of Penworth, who put:

1-B, 2-C, 3-L, 4-A, 5-J, 6-G, 7-K, 8-D.

Gary wins the Module 1 plus a Coleco Vision video game system to plug him. The same goes for Geoffrey Loveman of Southampton, who submitted the next best attempt.

Michael Pignone of Reading carried off the second prize of a Coleco/Vision video game system plus Module 1. And

BIG K Atari competition

May issue: An Atari 800XL plus 1000 disc drive was the prize awaiting a winner in this competition. Ten questions with multiple choice answers were given. The best set of answers, in the judge's opinion, came from Don Murray of London. He put:

1-B, 2-C, 3-B, 4-A, 5-A, 6-A, 7-A, 8-B, 9-B, 10-A.

Don wins the 800XL and disc drive while 10 runners-up each receive prizes of Atari/Biff games to mark them of the popular votes. All should by now have been notified of their winnings.

Big Congratulations to one and all. More results coming soon (those just love all these "B" jokes!).



NEXT MONTH IN BIG K...

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is it any more than a set of initials?

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GULP!

Back by demand, no demand (except daily from the BIG K staff) the Department of Unpleasantness from the million pages.

Feature (Big B Book) 6029, in the review of Amiga's CyberVision it was stated that the player was only able to fly in the direction of travel. This is not strictly true as two joystick can be used in this game, the second giving fire in eight different directions. Rooms exist. Amazing.

Next the prog (Big K No. 2) Apollo which is said to be for owners who looked in vain for the prog (we would see our Jane's issue's cover). You have found yourself being looking in that program and had to pull it out (the prog, not the sheet) at the some last minute. Problem was the cover's cover had already gone in press some time before its most covers did (waiting at helpdesk and red-faced). Well, it shows that we care about the things we put in.

Commodore owners, the first feature from you, really. Big K will do its best for you. We'll be in touch with those great Commodore magazines and their sets. It's finally decided on as the what we all need is a really nice one. Some things from you, some from the magazine of Commodore, some, Commodore, Graphics.



EVERYTHING YOU NEVER WANTED TO KNOW ABOUT ADVENTURE GAMES

Ever bought a game that's not as good as its box?

Everybody has seen the home computer game packs that sparkle with imaginative colour and graphics, and lure buyers into the store.

Sadly, some who have bought have found that the game sparkled less than the box. For, as more and more companies jump on the home computer bandwagon, it becomes even more likely that most of the imagination and excitement is concentrated in the pack. Instead of playing a fast game, you lose a fast buck. Or, more likely, several.

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dramatically improved sound effects. The trick is to know which games are as good on screen as they are on the pack.

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ADVERTISEMENT INDEX

Access	90, 91	Infoco Deal	76
Activities	109	Infocomania	78
Addictive	106	Infoco Repair Club	12, 97
A.D.P.	37	Infoco Workshop	108
Allgate	81	Int'l	8
Amigo	16	Mr. Misco	Cover 4
Amigan Hill Games	85	NetWest	97
Bankaya Bank	25	PG 8L	106
Beau-Jolly	104	Power Software	106
Best-Clip	103	Ram	55
Cascade	112	R & R	79
Channel 8	84	Ramtek	7
Consumer Electronics	8	Salamanca	70
CPL	16, 17	Slice Shop	33, 95
Cusart	55	Simon Soft	87
Database	94	Software Invasion	86
Elite	Cover 2	Software Projects	96, 97
File 08	13	Solo	105
It's Dimension	87	Supernova	14
Hutchinson (Arrow Publications)	47	Talent	54
Icon	82	Tanaka	71
Int'ncaptor	Cover 3	Tasked	95
Invation	58	Thor	73
Logic 3	111	Ultimate	2
Magazine	75	Vic Orders	107
		Video Palace	83

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