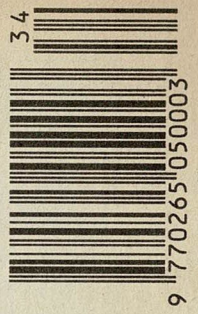
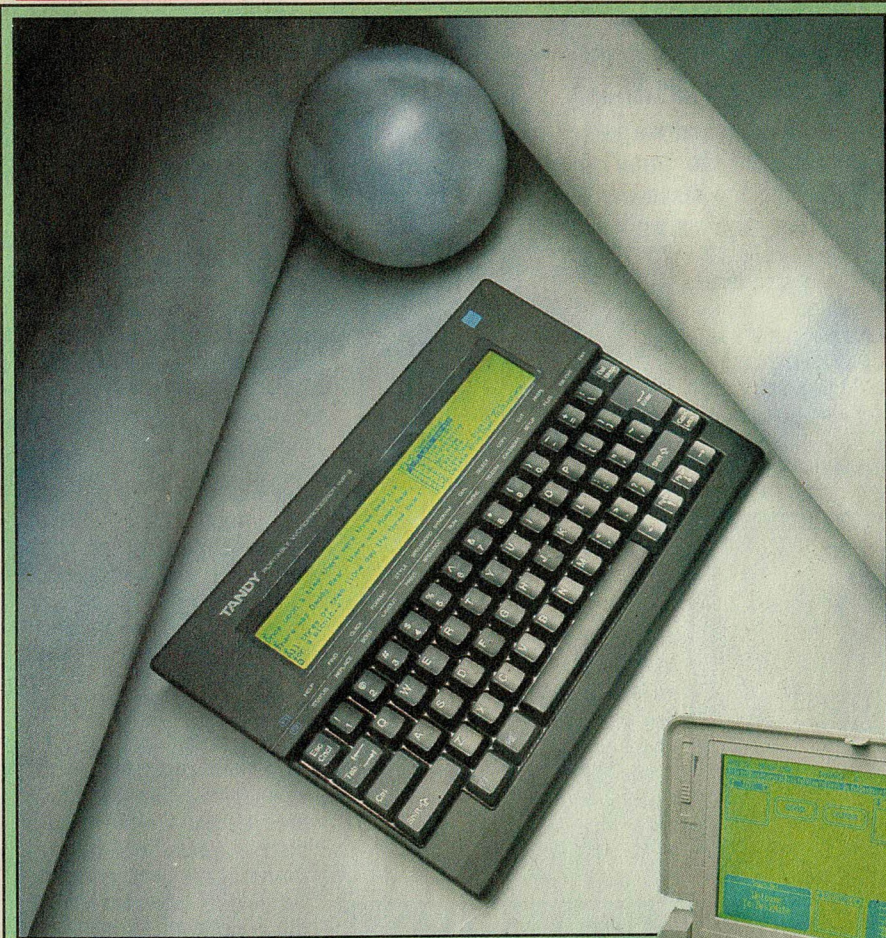


ONLY ISSUE 425
55P AUGUST 23
- AUGUST 29
1990

16-BIT HARD DRIVE GUIDE! — p. 20



POPULAR COMPUTING WEEKLY



INSIDE:
ALL THE NEWS!!
PLUS POWER
PACKED
COLUMNS FOR:
AMIGA,
ATARI ST,
BBC,
SPECTRUM,
CPC
AND SAM

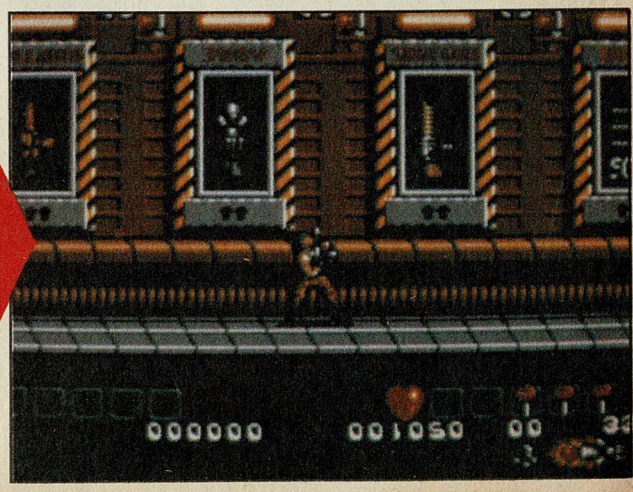
● NEW KIDS ON THE BLOCK: TANDY'S Z-88 ALIKE WP-2 (ABOVE) AND THE 1100FD (RIGHT)



HANDY TANDY'S A Z-88 BASHER

● WILL TANDY'S PRETENDER WITH FULL TRAVEL KEYBOARD STEAL THE Z-88'S CROWN? FULL STORY, ALONG WITH LOWDOWN ON TANDY'S NEW NOTEBOOK PC, p.3

MIDNIGHT RESISTANCE: IS IT SIMPLY IRRESISTIBLE? See P. 16!



MOVES AGAINST GREY SEGA MEGADRIVES BEGIN TO BITE

SEGA'S plans to make its Megadrive games incompatible with the consoles imported on the "grey" market appear to be taking shape, following the discovery that a game recently arrived from Hong Kong will not work with PAL TV sets.

Virgin Mastertronic, Sega's UK distributor, has always said that the grey imports will not run official Sega UK software, but it has been believed up to now that the modification would be some kind of lug on the cartridge that could be filed off.

But the discovery that the new Megadrive racing game *GP Monaco*



● Yes, but will it run *GP Monaco*? *naco* requires an electronic modification to the console shows that Sega may be taking a different tack.

According to Steve Lowe, boss of importer PC Engine Supplies, *GP Monaco* demands a screen refresh rate of 60Hz, as opposed to the usual 58MHz. "This means that it won't work on PAL televisions. We have to modify the console hardware to get around it, so we're having to ask customers to send their machines back for us to make the modification."



UP THE CREEK WITH YOUR PADDLE?

If you're tired of the paddles that come with your Sega console, give Spectravideo a call for a Sega-dedicated joystick, the SG Fighter. This chunky number comes in at £14.95. Details on 091 900 0024.

AMIGA MINDS ITS LANGUAGE

OOH LA LA! Learning a foreign language may never be the same again – but stereotypes will remain – if Kosmos Software has its way. Soon you too could have private lessons in your room with the *French Mistress* or the *German Master* (Nicholas Ridley would surely approve).

Kosmos Software has launched four language learning programs for the Amiga designed to suit the needs of beginners, GCSE and A level pupils.

● What's French for computer? Find out in *French Mistress* on your Amiga.



Each program includes a 2500-word vocabulary of foreign and English words and pupils can choose from a range of learning and test modes. They can also create special lessons such as homework or revision lists.

Vocabulary is arranged under 32 separate headings, including Food and Drink, Parts of the Body and The Family. All programs cost £19.95.

Kosmos has also released two educational quiz programs, *Answerback Senior Quiz* and *Answerback Junior Quiz*, which combine 750 general knowledge questions spread over 15 subjects with simple games. Supplementary questions are available through Kosmos' Factfile 500 series.

Answerback programs cost £19.95 and Factfile 500 discs cost £9.95. Kosmos is on 05255 3942.

The adjustment involves severing a track on the Megadrive's printed circuit board and installing a jump wire to another component. The process is complicated by the fact that there are four versions of the Megadrive circuit board in circulation on the grey market.

Asked whether the circuit alteration would affect existing games or games yet to be released, Lowe said that his suppliers in Hong Kong had assured him it would cause no problems.

But a spokesperson for Virgin Mastertronic warned: "Anyone who opens up a Megadrive just to run one game is asking for trouble."

There is always the possibility that Sega could change the software refresh rate again so that the modification is rendered useless.

Official versions of the Sega Megadrive bundled with the *Altered Beast* game will cost £189.

PC SLASHER CUTS AGAIN

As predicted by Pop, the bloodbath continues as PC companies continue to slash their prices. Following hard on the heels of Amstrad, Commodore and Olivetti, Schneider Computers has cut the price of its Euro PCII to £399. For more details call 0604 766572



● This Bible is DOS compatible.

HANDHELD TESTAMENTS

Hodder & Stoughton has just released *The Electronic Bible*, a pocket computer which contains the complete NIV Bible text together with a word-search facility, a synonym feature and the ability to locate any passage of scripture.

Measuring 90mm x 155mm x 25mm and employing a QWERTY keyboard to access the text, it has a memory capacity which allows input of notes to a maximum of 8,000 characters. It has a 40 character, eight line screen.

The NIV Bible features a concordance, a thesaurus linking the words of the King James Version to the NIV equivalents, together with a serial port for connection to a PC.

The *Electronic Bible* costs £250. For more details contact Hodder & Stoughton on 071 636 9851.



AT LAST – DPAINT HITS ST!

Electronic Arts has announced the release of its first Deluxe product for the ST, *Deluxepaint ST*. Although the product has been available for the Amiga and PC for many moons, this is the first time Electronic Arts has taken the plunge into the ST market. According to EA, the package boasts more drawing modes, drawing tools and options than any other ST graphic utility and rivals the Amiga's *Deluxe Paint III*.

DeluxePaint ST features real time magnification in every tool mode, fully controllable bezier curves and can read or write all major graphic formats including Amiga IFF, allowing the porting of Amiga *Deluxe Paint* images.

The program will be available in late September at a special introductory price of £49.99, rising to £59.99 after December 1.

TANDY GOES HEAD-TO-HEAD AGAINST CAMBRIDGE Z-88

A new portable word processor was launched by Tandy Computers last week signalling a new assault on the portable market. Bearing more than a passing resemblance to Cambridge Computers' Z-88 machine, the new WP-2 Word Processor will be available "in the autumn" from all Tandy stores at £249 (plus VAT).

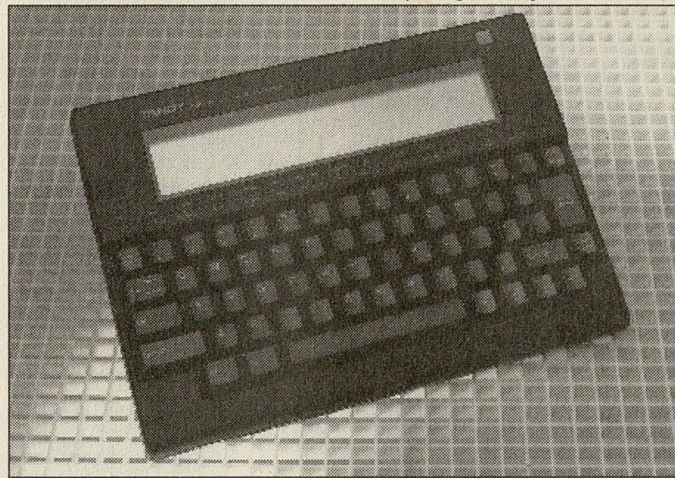
In a significant departure from the Z-88 style, the WP-2 has a full travel keyboard. The built-in word processing software allows users to cut and paste, search and replace, centre and justify text.

On the hardware side, the WP-2 features a Z80 processor with a clockspeed of 5.5MHz, an 80-character by 8-line high definition LCD Display and a 62-key keyboard. It has an internal 32K RAM expansion chip which can be increased to 64K, a parallel printer interface, an RS-232C serial interface and a cassette recorder interface.

The WP-2 will connect to any IBM-compatible printer and allows the option of adding a modem to transfer files to a PC by telephone. A 100,000 word spell checker and 200,000 word thesaurus are included as standard, although initial shipments have carried U.S. versions rather than standard English versions (which are expected soon). Tandy is at pains to point out, however, that users can input their own versions.

The WP-2 will operate for a maximum of 12 hours on four 'AA' batteries or an optional AC Adaptor and has a 3 year battery back-

up. Measuring 25.4mm x 298.4mm x 215.9mm and weighing 1.41 kilograms, the WP-2 can fit easily into a briefcase.



• Tandy's WP-2 costs £56 more than the flat keyboard Z-88

ASPECT	TANDY WP-2	CAMBRIDGE Z-88
RAM EXPANSION	32Kbytes TO 64Kbytes	32Kbytes TO 3Mbytes
PROCESSOR	Z80	Z80
DISPLAY	80 characters x 8 lines	90 characters x 8 lines
SOFTWARE	WORD PROCESSOR	PIPEDREAM
KEYBOARD	FLAT	FULL-TRAVEL
INTERFACES	RS232/PARALLEL PRINTER/CASSETTE	RS232/CASSETTE (PARALLEL OPTION)
STREET PRICE	£286.35	£230

TECH SPEC COMPARISON: Cambridge Z-88 versus Tandy WP-2. The Z-88 has functions other than that of a pure word processor, as its built-in Pipedream software handles databasing, spreadsheets, diaries and alarms.

TANDY TAKES NOTE OF COMPAQ

ON TOP of a head-on clash with the Z-88, Tandy has taken on the Compaq LTE and Zenith MiniSport ranges and entered the notebook portable computer fray with the release of its 1100FD.

It includes MS-DOS, the *Deskmate* Desktop and Text Processor, within ROM, giving instantaneous use on power up.

The 1100FD features an NEC V-20 processor with a clockspeed of 8Mhz, has a full-size 82-key keyboard and a selectable backlit supertwist LCD screen.

It has 640K of RAM with a single 720K 3.5in floppy drive, a parallel interface, a RS232C interface and modem port. An optional 1Mb expanded memory card which can also be used as a 1Mb RAM disc is also available.

The 1100FD will operate for up to 4.5 hours on rechargeable removable batteries or with a mains adaptor. It retails at £918.85 (inc VAT) and will be available from all Tandy stores and dealers.

Tandy has already achieved success with the WP-2 in the education sector, claiming to have sold 200 machines to Macmillan City Technology College in Middlesborough.

The fact that Macmillan bought Z88's for last year's intake has added spice to the sale, an excited Tandy spokesperson told Popular Computing Weekly.

THIS WEEK

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Commodore and Atari results, Avant Garde withdraws PC Ditto II, plus much much more from Steve Gold.

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The latest hot news from the club circuit.

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After a serious bout of home decorating, Duncan Evans is whisked off to a local asylum (best place for him you might say), and unburdens himself to his local shrink.

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Are you the bionic man? A new application on the Acorn 400 could help you find out. Arthur King reports.

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Is the All Formats show just a glorified car boot sale? Brian Gaff checks it out.

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Budget thrills with Fantastic American Football, the almost resistable Ocean shoot em up conversion, Midnight Resistance, and Codename Iceman wilts under the Evans blast.

HARD DRIVES20

Having difficulty choosing a 16 bit hard drive? Never fear, Andrew Banner is here to help you out. Well hard!

YOUR COMPUTER.....

.....23,25,26

News, reviews and all the other stuff for the ST, Amiga, BBC, SAM and Spectrum, plus how to use your CPC peripherals on the new machines.

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Solve the cross number puzzle based on the letters PCW. Plus last week's solution.

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Got a problem? Who you gonna call? That's right, Uncle Kenn Garroch.

POSTBAG38

Irate 16 bit and SAM owners lay into the new CPCs and as for you AMOS users, you never had it so good!

MAC LINK TO PORTFOLIO

Atari Portfolio users can now hook into Apple Macs and MS-DOS computers (and vice versa) using software developed by Stateside firm Computer Friends. Known as Message Mover, the software provides intelligent file transfer between the two systems. Mac users can buy a package made up of the Portfolio with 128K memory and the relevant software and connections for \$599. Existing Portfolio users can buy the connecting software for \$249. Call 0101-503-626-2291.

DATA BURGLARS OFFERED DREAM HOLIDAYS IN SUN!

WITH just one week to go before hacking is outlawed in the UK, LeeMah Data Security of New York is offering hackers a holiday in Tahiti or St. Moritz if they can break into its secure computers within a given two weeks.

Last year, reports Newsbytes, an amazing 7,476 hackers tried unsuccessfully to break into the computers during what was then just a one-week contest.

Maker of the TraqNet data se-

curity system, LeeMah is even offering the password to would-be intruders. But once the password is entered, a user has to penetrate several other layers of security to retrieve a secret message. LeeMah's president, John Tuomy, says the chances of success are "one in 72 quadrillion".

Any would-be hackers should call the machines between the dates of August 22 and September 5, on 0101 415-512-7170 or 212-

307-6243 to compete. The password is 533624.

The protected computers are in the offices of Coopers & Lybrand, which is refereeing the contest. The results of the challenge will be announced on September 6.

• **FACT:** *When the British Computer Misuse Act becomes law next Wednesday, convicted hackers will face prison terms from six months to five years and fines ranging from £2000 and upwards.*

MAC IN THE USSR

Apple Computer is expected to sign a distribution agreement with Moscow's MicroAge Computer Center according to Boris Soshnik, MicroAge chief consultant. Arrangements could be finalized as early as mid-autumn with sales beginning shortly thereafter. Apple products have been subject to COCOM export restrictions for years and sales to the Soviet Union were until recently considered illegal.

KIRK BEAMS UP TO MULTI-MEDIA

CAPTAIN KIRK, aka William Shatner, is to play host and narrator at a futuristic multi-media conference which will intersperse music, slides, video, live speakers and onstage drama. *A Day in the Future* is a day conference which aims to help business people learn management strategies to prepare companies and employees for the future. It will take place in Los Angeles and San Francisco next month and in 20 US cities in 1991.

NEW MAGS FOR COMPUTER PUZZLERS, PORTABLE OWNERS AND HORROR FANS

COMPUTER-BASED puzzling, technical take-aways and horror will soon be hitting the newsstands courtesy of PCW's publishers, whose three new titles *Complex*, *What Portable?* and *The Dark Side* emerge in the Autumn.

Complex, inspired in part by the enormous popularity of Popular Computing Weekly's long-running puzzle page, launches on October 18. *Complex* is aimed at readers who "enjoy a challenge which will test both their mind and their computers" says publishing director Ray Lewis.

But best of all, each issue will offer amazing cash prizes - with a total value of £2000! One major cash prize puzzle will involve an adventure game that the reader keys in. Each month, different data can be fed into the core program, creating a different gameplan for you to solve - and maybe win the cash.

Complex will be edited by Mensa member and long-time PCW contributor, Tony Hetherington, and will cost £1.25.

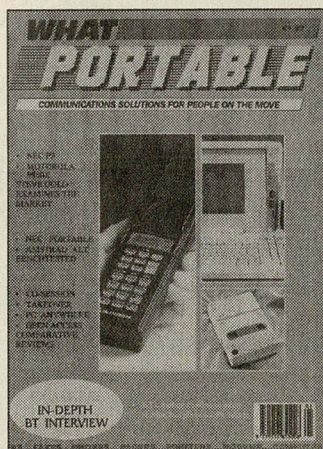
What Portable?, also launching on October 18, is a magazine dedicated to portable computing and telecomms technology, covering all kinds of portable computers, faxes, cellphones, CD-ROMs, modems

and pagers - in fact just about anything that you will find in Steve Gold's pocket or briefcase.

Edited by former *Amstrad Professional Computing* editor John Taylor, *What Portable?* will feature news and regular new product reviews, benchtests and com-

mentary. The cover price will be £1.50.

RPG and horror fans will certainly be entertained by *The Dark Side*, the new monthly magazine covering all things horrific, fantastic and SF-related. To be launched on September 27, *The Dark Side* will cover movies, videos, books, comics, computer games and TV. It will be edited by an expert in the horror genre, Allan Bryce, and will cost £1.75.



Two new magazines - all with something special for the computer fans amongst us: puzzles and portables.

GAMESCAN

ALL FORMATS TOP TWENTY

No.	Title	Last Week
1	Shadow Warriors Ocean	1
2	Turrican Rainbow Arts	3
3	Kick Off 2 Anco	2
4	World Cup Soccer 90 Virgin	5
5	Chase HQ Ocean	6
6	F19 Stealth Fighter Microprose	11
7	Italy 1990 US Gold	10
8	Emlyn Hughes International Soccer Audiogenic	9
9	Manchester United Chrysalis	5
10	Robocop Ocean	8
11	Rainbow Islands Ocean	13
12	Gazza's Super Soccer Empire	19
13	Football Manager World Cup Addictive	7
14	Operation Thunderbolt Ocean	RE
15	Batman - The Movie Ocean	12
16	Heroes of the Lance US Gold	14
17	International 3-D Tennis Palace	15
18	Operation Wolf Sega	NE
19	F29 Retaliator Ocean	RE
20	Bomber Activision	RE

COMPILED BY GALLUP

BOGUS MAIL ORDER POLICE CLAIM FAST ENDORSEMENT

A BOGUS scheme to control the advertising and sales of computer and video mail order companies which is allegedly aimed at stamping out software piracy and mail order rip-offs, has been uncovered by Popular Computing Weekly.

Two related organisations have contacted mail order companies and the computer press in the last week to launch a campaign to bring the mail order industry to heel, but investigations by PCW have revealed that:

- Neither the "Association of Mail Order Companies" (AMO) nor the "Prevention of Software Piracy" (PSP) exist at the Lewisham, South London, address given on their literature;

- The company which supposedly supplied the "research" for PSP and AMO is not listed in the telephone directory and does not trade from the Lewisham address either.

Indeed, the whole affair seems to be a poorly executed ruse for obtaining either cash or software free of charge.

Reaction from mail order companies has been highly dismissive of the AMO. Ray Burt-Frost, managing director of an Amiga dealership in Southampton, said that he had received a letter from the AMO two or three weeks ago.

"I ripped it up and threw it away. I get a lot of letters of this kind and as far as I am concerned, if a person can't give their name, address and telephone number, then they're not trustworthy."

A threat by the PSP to report any magazine which failed to carry its advertisement to FAST drew a sharp response from FAST's director, Bob Hay: "The PSP has no right of any

PCW INVESTIGATION BY BILLY MacINNES

NOTICE: OCTOBER 1ST 1990 WILL BE A BLACK DAY FOR SOFTWARE* PIRATES; BECAUSE THE PREVENTION OF SOFTWARE* PIRACY WILL MARSHAL THE SALE OF SOFTWARE* THROUGH THE POST! SO IF YOU SELL SOFTWARE* BY MAIL ORDER THEN SEND A STAMPED ADDRESSED ENVELOPE TO: PSP 262 HIGH STREET, LEWISHAM, LONDON, SE13 6JX. * = COMPUTER, MUSIC, & VIDEO. With Acknowledgment to E. Research, & the Association of Mail Order Co's.

- A joke or something more sinister: PSP's proposed advert

kind to quote FAST in the advert. We are not at all happy with it."

The AMO is supposedly a newly formed organisation which serves to protect AMO members and the customer from "the GPO & bogus mail order companies (sic)." Its ultimate goal is for magazines "to only accept mail order adverts from AMO members."

Compared to PSP, however, AMO's goals are extremely modest. PSP insists that all sellers of new, second-hand and unwanted software, must contact it to ensure that their software is not pirated. It goes on to demand that advertisers agree that "the only customer contact will be through our address and only

the address of the PSP will be printed in the advert."

Suspicious were aroused at Popular by the sheer audacity of the scheme and the glaring grammatical errors in the "promotional literature". Spelling mistakes were also scattered throughout the text, including gems such as "privelege", "regestration" and "faithfulty".

A sly attempt by PSP to acquire adult video tapes also suggest a less than scrupulous operation. The leaflet suggested that "if a legitimate video seller wants to register their video's (sic) with us, and thereby obtain our seal of approval, they are welcome to!"

The manager of a printing and photocopying shop which trades at the Lewisham address given by PSP and AMO told PCW he had never heard of either operation. Although the shop does offer an accommodation address service, neither the PSP nor AMO were clients, he said.

Further investigation by PCW has revealed that AMO has an accommodation address at PAS Law Agents in Old Street, London EC1 which opened in February this year, but confidentiality restrictions prevented us from uncovering the identity of the person behind it.

PCW believes the person behind the madcap scheme may have been ripped off by a mail order company, because the literature includes a confused complaint about the effectiveness of the Advertising Standards Authority when faced with a complaint.

The case involves someone sending away for a catalogue which

WHO ARE THE MAIL ORDER REGULATORS?

There are five legitimate organisations which cover the mail order, or as it now likes to call itself, the direct marketing industry. A list of what they are and which areas they cover follows:

- 1) The Mail Order Traders Association - mainly covers mail order catalogues.
- 2) The Direct Mail Producers Association - mailing houses.
- 3) The Association of Mail Order Publishers - publishers of books and music products.
- 4) The British List Brokers Association - companies which sell mailing lists.
- 5) The British Direct Marketing Association - wide spectrum of members including agencies, list brokers and financial institutions. The director of the Association of Mail Order Publishers told Popular that despite the number of organisations devoted to direct marketing, there was no comprehensive list and a lot of mail order companies were not registered. "Somebody could set up any form of operation and as long as a magazine or paper accepted the advert, that would be that."

advertised "pictures printed in full colour" and receiving a set of black and white photocopies of prints instead.

"You would come to expect that the ASA would object to the advert, wouldn't you?" the literature asks. "Well surprise - surprise, they didn't! . . . the ASA do not protect the Consumer from being ripped-off/robbed."

PCW strongly recommends all dealers and readers to ignore any mailshots from PSP or the AMO.

CHALLENGE SCORES RUNS

This summer has seen a resurgence in the England cricketing team with the batsmen slogging visiting bowlers with savage relish. One name stands out head and shoulders above the pack of destroyers - Graham Gooch.

Challenge Software took great pleasure, therefore, in announcing the signing of Robin Smith for a cricket computer game last week. Robin, while not as prolific as his captain, has played a leading role in England's batting.

Robin Smith's *International Cricket* is scheduled for release in November and will be available on all formats.

- Challenge Software has moved. The new telephone number is 0992 640600.

KUMA PULLS FIGURES OUT OF THIN AIR

KUMA Software has released a special Teletext version of its K-Spread spreadsheet for the Atari ST. It enables share price information to be downloaded directly from Ceefax and Oracle using a Microtext teletext adaptor.

A Teletext adaptor allows users to receive teletext signals on computers using an ordinary television aerial - the ST version is available from Microtext for £129.50 (plus VAT).

A timer function enables data to be downloaded automatically at

preset times without further input from the user, allowing them to access information while, say, away on holiday. K-Spread 4T is available from either Kuma or Microtext at a cost of £149.95 (VAT inclusive). Upgrades for existing users cost £25.

For more details contact Kuma on 0734 844335.

- Microtext has released a Teletext adaptor for the PC, which retails at £169.50 (+ VAT). Contact Microtext on 0705 595694.

\$ STATESIDE

BY STEVE GOLD



NEW VERSION OF AMIGA'S MAC MASK

★ Readysoft of Ontario in Canada has announced it is about to ship *Amax II*, the second-generation Apple Macintosh emulator for the Commodore Amiga.

Amax II is available in two configurations – *Amax II* and *Amax II Plus*. *Amax II* is a cartridge that plugs into the Amiga's external disc drive port and has a connector for an 800K external drive.

The Plus version is designed for the Amiga 2000 (or greater) series and gives access to Appletalk and Mac MIDI program facilities, as well as allowing Mac format discs to be used in the Amiga's 3.5 in disc drives.

Pricing on either system has yet to be decided. *Amax II* will ship during September, while *Amax II Plus* will ship during October.

Contact: Readysoft Inc., 38 Wertheim Court, Unit 2, Richmond Hill, Ontario, L4B 1B9, Canada. Tel: 0101-416-731-4175.



● Give your Amiga the power of a Mac with *Amax* from Readysoft.

ATARI PULLS BACK WHILE COMMODORE FLOUNDERS



● Commodore's Gould: Amiga's up, 64 and PCs down.

★ I'm going to let you into a little secret. Several computer journalists of my acquaintance were casting shadows of gloom over both Atari and Commodore earlier this year, forecasting that both companies would go bust before the end of the year.

While taking such comments with a very large pinch of salt, there can be no doubt that both companies are going through a financial rocky patch. Three months ago, I would have said that Atari's position was worse than Commodore's. Judging from the latest figures however, the reverse appears to be the case.

Atari's second quarter results to June 30, 1990, show the company as earning \$1.5 mil-

lion on sales of \$82.7 million, compared to profits of just \$300,000 on sales of \$82.7 million a year ago.

Commodore's full year position – to the same date as Atari – shows the company as making \$1.5 million profit on annual sales of \$887.3 million, compared to \$51.3 million on sales of \$939.7 million a year earlier.

Atari's Sam Tramiel is reported to be pleased with the figures. "The company continues to make progress in the roll-out of its new products including the Lynx colour hand-held portable and the Portfolio. The Atari TT030 computer is being shipped in quarter three. We are pleased..." he said.

Commodore's chairman Irving Gould was pragmatic about his company's results. "Operating profit for the last quarter was adversely affected by an increase in operating expenses as Commodore continued to make substantial sales and marketing investments in certain markets," he said.

What Gould means is that CBM is investing for the future. These criticisms were levied against Atari this time last year, since when it has got the Lynx and Portfolio series into the shops.

And what about Commodore? The company continues to rely on its Amiga range and – incredibly – has just released a games console version of its eight-bit C64 computer. Is this really the way forward? Gould said that while Amiga sales have increased, PC and C64 sales have declined.

AVANTE GARD TO DROP PC DITTO II SYSTEM

There can be few readers of this column unaware of the serious problems that Avante Gard's *PC Ditto II* PC emulation card has caused owners of the Atari ST.

Aside from the physical problems of the card not even fitting inside a 520 or 1040 ST's casing, chip inconsistencies and problematic bus driver cables have meant that only one in ten users are actually satisfied with their cards (ac-

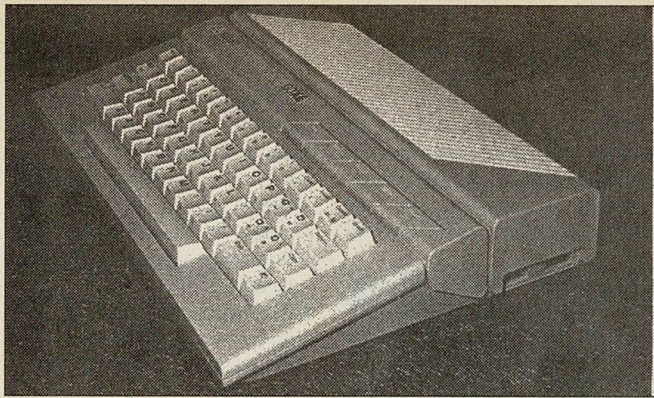
cording to the ST Report newsletter).

The situation reached a head online earlier this month when Avante Gard – without warning – went 'off-line' as far as an online technical support goes, causing consternation amongst the online communities of Compuserve and Genie.

Now Z-Net newsletter has hinted at the latest twist in the saga – rumours are circulating that Avante Gard is dropping

the PC Ditto II range, for reasons unknown. While this may be bad news for existing purchasers of the card who are still experiencing problems with their system, it may be the best thing to do for potential future buyers of this product.

See next week's issue for the definitive benchtest of the other two PC emulators for the Atari ST, *PC Speed* and *AtOnce!*



● Atari XE: getting serious with business in Basic.

BUDGET BUSINESS FOR 8-BIT

How about a \$14-95 suite of business packages programmed in Basic for the Atari XE? Don't laugh – I remember paying more than \$1,000 for a similar suite of software, also programmed in Basic, for the Commodore Pet series ten years ago.

My Fingertip Business was programmed by Scott Liddick for his own business use. The package is billed as every bit as good as some of the more complex business software – compiled of course – but has been designed for the average user of the 8-bit Atari series.

Amongst the many modules of the software are an invoicing and payments system, as well as a word processor and spreadsheet facility.

The package is available in three different formats: Non-Ramdisk, 64K Ramdisk, or extended Ramdisk. All versions are compatible with the Atari 400, 600XL, 800XL, 65XE, 130XE and even the XE games machines with at least 64K of Ram. The program comes on "1050" density floppy discs.

Future upgrades planned for the package include a set of Borland *Sidekick*-like features, as well as program updates. All this for \$14-95 – not bad!

Contact: Chameleon Software, 1013 Marven Drive East, Chambersburg, PA 17201, United States. Tel: 0101-717-267-0904.

LEARN C ON THE ATARI ST

Taylor Ridge Books of Manchester in Connecticut has released *C-Manship Complete*, a bound version of the popular C and Gem programming course seen in ST-Log magazine in the US.

The 400 page book sells for a fairly hefty \$19-95, although, judging from the rave reviews I've seen on the Atari online areas of Compuserve and Genie in the US, it seems to be well worth the outlay.

If you're considering buying the book, a better deal of the book plus two single-sided ST discs – packed with programs – is a good bet at \$29-95.

"Everything you really need to know to program your ST in C is covered in this book," said one online reviewer. Worth in-

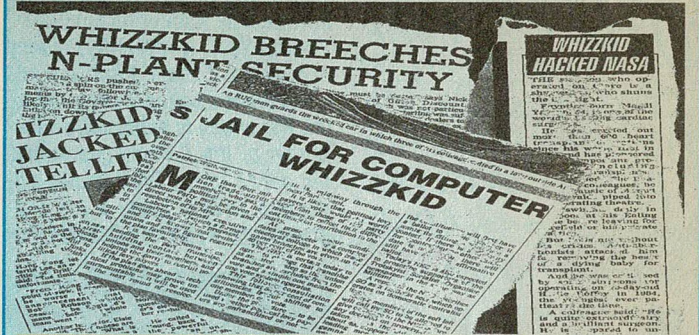
vestigating I think. Contact: Taylor Ridge Books, PO Box 48, Manchester CT 06040, United States. Tel: 0101-203-643-9673.

JRI UNLEASHES ST GENLOCK SYSTEM

★ JRI of Pittsburg in California has begun shipping its genlock system for the Atari ST series. Pricing is dependent on what facilities customers required from the 'build to order' unit. Other new goodies in the company's latest batch of hardware add-ons for the ST are the Jato 68020/30 accelerator and a 4,096 colour card for the ST.

Also in the pipeline is a \$200 maths co-processor card for the Atari ST. The card fits into any microprocessor slot on any model of the ST – including the Mega series – the company claims.

Contact: JRI Incorporated, Box 5277, Pittsburg, California, CA 94565, United States. Tel: 0101-415-458-9577.



COMPUTER

CLUBSPOT

BY THE WHIZZKID

Many clubs are non-profit making organisations run by individuals who have a common interest; others are run as companies. The only difference is that the latter are here to make money as well as providing a service. One of the best known professionally run clubs is the Adventurers Club, a limited company for everyone out there who plays adventure, strategy or role playing games. Subscription fees are £24 per year or £14 for six months. In addition to this you will need to spend £7.95 on a binder and a further £2.00 on the starter pack, bringing the total to £33.95 per annum.

So, what do you get for this huge sum? You get copies of amendment and update sheets every six weeks. These all fit into the ring binder and provide a very comprehensive reference guide to adventure games. The book is divided into no less than 26 sections covering news, columns, reviews, multi-user games, mini-solutions, hints, letters and a wealth of other useful information.

The Adventurers Club could be the end of your gaming nightmares and become your dream, but whichever way you look at it, nigh on £34 is a lot for the first year. Still if it's as good as it's made out to be get in touch on 071 794 1261.

The ST Club's newsletter dropped onto my doormat last week along with a huge telephone bill.

Well, this lot from Nottingham certainly know a few things. It's rare that you see the words exclusive on a newsletter, but there it is . . . "Atari has finally made an official statement that there is a fault in the DMA interface in the STE that may result in hard disc data becoming corrupted." Where, I ask, was everybody else when this statement was made? Apparently, Atari will no longer ship STs with TOS versions below 1.4. Good news there, for all buyers!

A review of the award winning Citizen Swift 24 complements the issue (even though it's a bit late!), and whilst not accusing the ST Club of blowing its own trumpet, a three page article on using *Fontkit Plus* and another on the *Astronomy Lab* also grace the pages (you see, both these products are published by the ST Club). According to another article, Canada is the "land of the ST" – there are, apparently, hundreds of ST stockists in Ontario!

The ST Club Newsletter is a reader's paradise. It is one of the few amateur (I use the term loosely) publications that actually devotes a lot of space to users letters. In the August issue there are no less than six pages brimming with correspondence. If it's help you're after, I think that you'll almost certainly find it through this magazine. The ST Club produces one newsletter per month at a cost of £8 per annum for UK and European residents (air mail) and for 12 newsletters plus six disc magazines you can expect to pay £22.50 per year. All good value. The ST Club is on 0602 410241.

If you live in Worcestershire, you may be interested in joining the Evesham Computer Club, which meets on the fourth Thursday of each month. Members come from a wide variety of ages and backgrounds, and have a very wide assortment of machines. The meetings have a particular emphasis on programming skills and computer awareness: some members are learning assembly language this way. The last meeting was a nostalgic look at the Commodore Pet, the world's first personal computer, with some of the first games ever written for it. The September meeting is on Apple Macs with practical demonstrations of DTP and laser printer handling. The October meeting will discuss the Domesday Project on the Acorn Archimedes. Contact Ian Gray on Evesham (0386) 47352 for details of when and where!

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**HOME
DECORATION
HAS PUSHED OUR
STRAIGHT JACKETED
DUNCAN OVER THE
EDGE.**

I don't know how you are my dear friends, but I can tell you I'm done for. Painting, stripping, plastering, cleaning and sanding, night after day. Gawd, it's like being forced to play a Sierra game continuously, while listening to Jason Donovan. I can't take it any more. Let me ooooouuutt!!!
Ed: The rest of Hotlines is a transcript of a conversation that took place at Friern Barnet Hospital; a psychiatric hospital.

DR. M: So tell me Mr Evans, you think you're a computer journalist?

EVANS: Yes, but I'm a painter and decorator during the day.

DR. M: And you have deadlines I presume?

EVANS: Oh yes indeed, Dr. Mendoza. Why until I was interrupted I was working on my regular weekly column, Hot Air Stripper Lines. I was just about to tell my faithful public that Battlechess 2 would be arriving from Electronic Arts in September when I was carted off here.

DR. M: Do go on.

EVANS: Well, as I was saying, Battlechess 2 features totally new animation sequences for all the pieces, as well as Chinese Chess.

DR. M: Chinese Chess?

EVANS: Yes, I asked EA's removal van lady, Sara Shrapnell about it and she said: "It's chess the Chinese way." Then there's a new Lord of the Rings game, called, ah, it's on the tip of my tongue.

DR. M: Is it Lord of the Rings by any chance?

EVANS: That's the one! Anyway, it's by Interplay and features 256 matt and silk gloss finish colours on the PC, with digitised sounds and four directional scrolling. There are seven map areas of Middle Earth, with a sub quest in each one. Oh, and Sara refused to say that it was the definitive Lord of the Rings game.

DR. M: Why was that?

EVANS: She hadn't played all the other games so she couldn't compare them. But she did say that The Immortal would also be coming out in October on all 16-bit formats and that it had the passion and excitement of an adventure film.

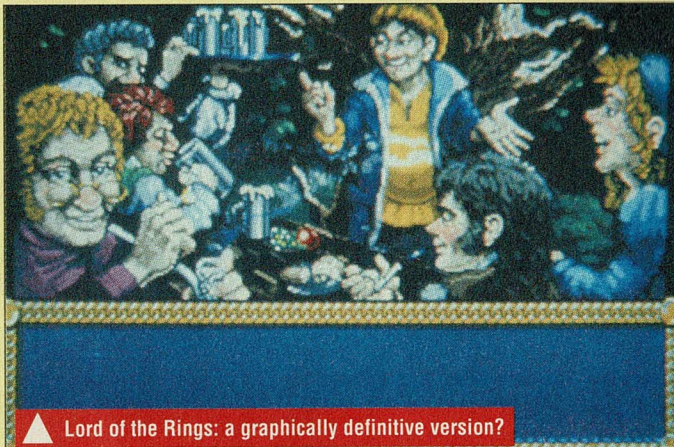
DR. M: I see. Have you spoken to anyone else about this column?

EVANS: Yes, I was talking to Cathy at Mirrorsoft about it and she advised that I mention Champions of the Raj which is apparently a Defender of the Crown-style game, but set in India. Well known adventure writers Level 9 are programming it for an October re-

wouldn't have found out about Strider 2.

DR. M: Is that the sequel to the well-received, scrolling run-and-shoot game?

EVANS: Yes it is, I can see you are a dabbler yourself doctor. Danielle at US Gold assured me that Strider 2 would be one of their top Christmas games and would be



▲ Lord of the Rings: a graphically definitive version?

BUILDING A CUCKOO'S NEST



● Battlechess 2: chess the Chinese way.

lease.

DR. M: You do appear to be well informed Mr. Evans, for one who claims to be so busy.

EVANS: Er, I was only having a cuppa while the gas board fitted my new cooker. I just grabbed the chance to make a few calls. Anyway, good job I did otherwise I

on sale late in October. Along with titles such as Mean Streets, Crime Wave and the Secret of Monkey Island. Of course, one of the more interesting products is the Epyx World of Games which features four events (such as BMX), and will be available for the newly unveiled Amstrad machines.

DR. M: Is that on tape or does it use the cartridge port and all its attendant hardware features?

EVANS: Blimey Doc, you've been reading your Pop Comp Weekly haven't you? No-one else came close with all the gen so quickly as the Popular johnnies. It really is the magazine to buy for up to the minute news. However, to answer your question, the game will be on cartridge only, and will be in the shops within the week. US Gold is negotiating to release further titles, depending on how well this one sells.

Back on older technology, that doesn't require rubber bands or steam to strip the wallpaper and to power it, Renegade Legion: Interceptor will be forthcoming on the PC from US Gold in October. This game is based on FASA Corporation's series of boardgames and involves guiding pilots through a series of combat scenarios between the Renegade Legion and The Terran Overlord Government.

DR. M: I believe it will also be released on the Amiga?

EVANS: Yes, that's right, the Amiga version is due for the first quarter of 1991.

DR. M: Now then Mr. Evans, is it true that the stress that accompanies continuous decorating has forced you to drink more.

EVANS: I'm afraid so. When the BT

engineer called to install a modern wall socket he found me completely plastered.

Ed: And that was all he said. With sufficient shock treatment and a good dusting Duncan should be able to rejoin us next week for his usual deliberations.

THE TIPSTER

This Horse Racing Software was used to select 100/1 NORTON'S COIN – outsider in this year's Gold Cup. Phone for details.

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£19.95 with Tipster – **£29.95** without Tipster incl P&P.

THE PUNTER

The Australian pools are finished and Mr Greg Evans and his Worcester based syndicate is just one of many punters who received not one, not two, but **three** cheques from Littlewoods.

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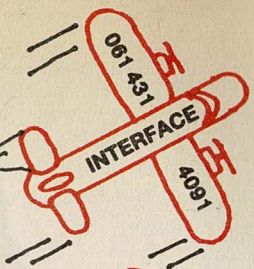
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BIOMECHANICS PUT HUMAN ACTIVITY UNDER OBSERVATION ON A DOMESTIC MICRO. ARTHUR KING EXPLAINS HOW THIS APPLICATION IS HELPING US TO BREAK NEW PHYSICAL BOUNDARIES.

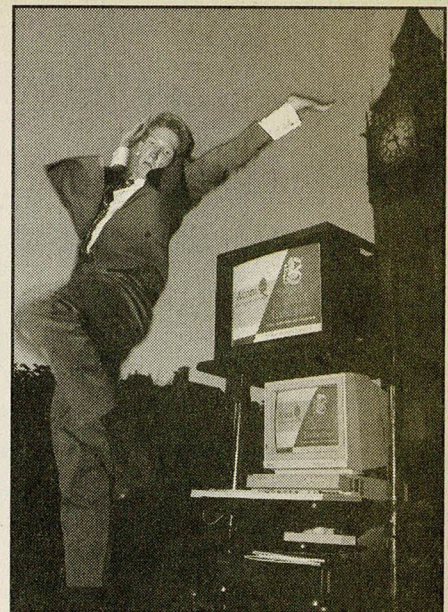
You could be easily forgiven for mistaking biomechanics as one of those pseudo-scientific terms dreamed up by science fiction writers. Add a few oddities like the importance of matchstick figures, video recording hardware and the odd Acorn Archimedes computer and you have some of the vital ingredients in the latest developments of an emerging science.

Biomechanics is the study of internal and

Biomechanics is already being used to analyse and help the progress of post-operative patients attempting to regain limb movements with the help of physiotherapy and at the other end of the scale it's helping top athletes, like Brendan Reilly, the world's number one junior outdoor high jumper, improve their techniques in the increasingly difficult quest of extending the bounds of human physical achievement.

◆ POETRY IN MOTION

The science of Biomechanics has been around for many years. The core of the work requires filming the movement of a person so that the action of his or her body and limbs can be digitised into accurate moving sequences of vector-graphic, Lowry-like matchstick figures. Up until just recently, data capture usually relied on 100 foot long 16mm film reels lasting just 62 seconds and requiring around £30 worth of processing. Some more wealthy establishments have had access to professional video recording equipment but analysis of the resulting motion sequences has required either main-frame or at the very least powerful



● Going for Gold—Brendan Reilly with the Biomechanics Workstation outside the House of Commons.

MIRROR IMAGES OF MATCHSTICK MEN

external forces acting on a human being and the effects produced by them. It's more to do with engineering than biology and is an ideal application for modern computer technology. Derek Littler and Drew Harrison of the Salford College of Technology near Manchester have produced a hardware and software package, called the Biomechanics Workstation, based around an Acorn Archimedes 400 series computer which brings the science of biomechanics well and truly into the Nineties: making analysis far more flexible and convenient than previously possible and making it relatively convenient.

mini-computer number crunchers.

The advent of cheap and portable, but also high quality, VHS video equipment and the raw power now available from inexpensive micros like the RISC-based Archimedes has enabled Littler and Harrison to put together a fully-integrated system which should be affordable by many more universities, colleges, hospitals, research establishments and even athletics coaches!

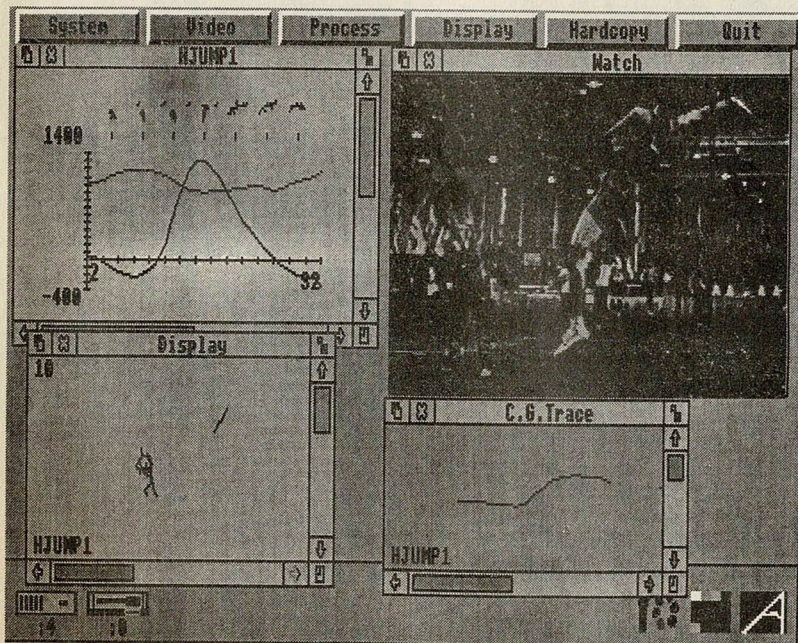
Full use of the Archimedes multi-tasking RISC 05 graphical user interface (GUI) is made by the Biomechanics Workstation. This makes the

complicated package easy to use for students not interested in getting to grips with a computer at any lower level. Individual action frames captured from a 50Hz video sequence are currently digitised into vectors by hand using a mouse, however, it's in the next stage where data is analysed and presented that the system really shines. An example of the Biomechanics Workstation software in action shows graphical analysis of momentum in a motion sequence in one window, a matchstick figure animation in another, a centre of gravity trace in another and a frame-by-frame video view of the subject him or herself in yet another window. The free applications, like the !DRAW object orientated drawing and !PAINT painting programs supplied with all Archimedes computers, are highlighted by the authors as useful means of producing high quality results presentations, especially in conjunction with high quality laser printers for which the Archimedes has copious built-in support.

Brendan Reilly, who has been associated with the development of the Biomechanics Workstation, says he has clearly benefitted from the computer analysis of his high jumping technique. Speaking at the official Biomechanics Workstation launch at the House of Commons in Westminster recently, Brendan described the system as brilliant, and he feels that these latest techniques could help athletes in practically all sports.

Littler and Harrison are keen to point out that the Biomechanics Workstation software is still in its early stages of development. It's on sale as a practical, two-dimensional analysis package, but it's hoped a three dimensional version will eventually follow. The software-only package is currently priced at £1,750 plus VAT. For more details, contact Sue Chalmers at the Salford College of Technology, telephone 061 736 6541. I wonder what L. S. Lowry would have made of it all?

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GAFF CHECKED OUT THE
LAST EVENT...

Saturday August 4 was one of the hottest days this century, and it found me, not at the beach, but in London, under the glass roof of The New Horticultural Hall. What was it that provoked this strange irrational behaviour? The event – rather unkindly described by one of the exhibitors as “the car boot sale of the exhibition calendar” – was the Summer All Formats Computer Fair.

From this you will gather that this was no ordinary, hype ridden, hard selling event. Oh no, the stands here were just trestle tables, and the exhibitors looked uncannily human! I decided to have a quick look around before the heat became too intolerable.

There were what the organisers called ‘villages’ for companies who catered for a particular machine. Actually, these were tables arranged together, either in a square formation, or simply end to end. The machines catered for specifically



● **Bargains and box shifting at the All Formats Computer Fair.**

thoughts on Life, the Universe and Interest rates, for the price of a donation!

Micronet, the on-line database for computer enthusiasts was there, on the next stand to hi-tech modems (what a coincidence). Micronet had a very slick demo running, and was sending reports onto the Prestel host system from the show.

By now it was beginning to get rather hot under the glass roof, and it was obvious that the public at large had not all rushed here, as I had. I suspected that most people were leaving it till

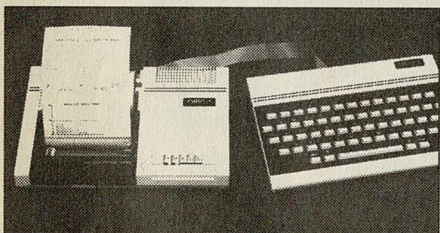
A small distance away, the Z88 User Club headed up a group of stands offering anything you could possibly want for the machine. Some Z88 users seem almost to be in love with the machine – very strange, I think.

Now if you can afford an Archimedes, Calligraph reckon you can afford their Laser – or more accurately LCD – printer, which gives printouts up to Postscript standards, for a mere £899. It only runs on the Arc, as it utilises the machine’s processor to do a lot of the donkey work. Definitely a bit out of my league, but

ALL FORMATS FUN OR CAR BOOT SALE?

were, the Archimedes, QL, Z88, PC, and the SAM Coupé. This is not to say that users of other machines were not catered for. The rest of the exhibitors were either box shifters or components specialists. OK, so some of them were selling junk, but there were some nice bargains to be had, if you knew what you were looking at. How about a PC tape streamer for £25, or a 20Mbyte hard drive for £65? Of course these could turn out to be expensive paperweights!

On the software side, the show was truly all formats – at least on the gamesfront. I have never seen so much for so many machines, all



● **Unload your unloved Oric.**

in one place. From ZX81 to Amiga, and from Dragon to PC, it was all there, and at knock down prices too. Where does all this stuff come from?

It was nice to see *Computers for Charity* selling off software donated by the big games houses. They also had a rather strange ST running a database containing text from the rich and famous, to which you could add your

the Sunday to attend, as the organisers had distributed many thousands of free tickets for that day!

After some refreshment, I returned to the show to check out the villages more closely. My first stop was at the SAM Village. Here, Alan Miles and Bruce Gordon, were busy explaining the unfortunate events that had caused Miles Gordon Technology to run into financial problems. However, they did seem to be shifting stock to those who came, and they had run out of 12 ROM upgrades when I got there. They are now called Sam Computers Limited, and will be mailing all existing customers soon to explain warranty arrangements and product info. I wish them well.

Enigma Variations were there, showing off their two existing SAM titles *Defenders of the Earth* and *Mind Games* – and previewing two more unfinished and as-yet-untitled games. One is a platform game and the other is a very impressive parallax scrolling, 3-D shoot-’em-up. Also in the SAM area was Steve’s Software. Their main product was a nice assembler for the SAM. It looked very promising too.

Next door, the QL folk were beaver away on a whole host of customised machines! QUANTA, the user group was there, as were Sector Software, Miracle Systems and Digital Precision. I saw nothing truly new, but it is very hard to believe that the QL is a discontinued machine.

interesting, nonetheless. From the looks of things, the Arc software scene could be looking up too.

The PC area was downright boring, but what else would you expect! Most of the clones on show were of the budget box variety, though I did see a nice 386 tower system being drooled over! Far more interesting, to me anyway, were the number of cheap PC cards being sold. All we need now is some cheaper serious software!

After a last look at the box shifters – who seemed to have an apparently unlimited supply of Spectrums – I decided to call it a day. I enjoyed the show, despite the heat, and walked away with some bargains, namely a cheap disc drive, some manuals, and heaps of discs. Where else could you buy ZX81 replacement keyboards and 386 PCs under one roof? Mind you, I did pass up the opportunity to own a Dragon 32 or an Atari 400 for a tenner!

NEXT SHOW

The next All Formats show is on September 1. It is only a one day event this time, and if you fancy selling that pile of ORICs in your garage, stands are only £75 for the day. If you just want to look for bargains, it will cost you £3 to get in.

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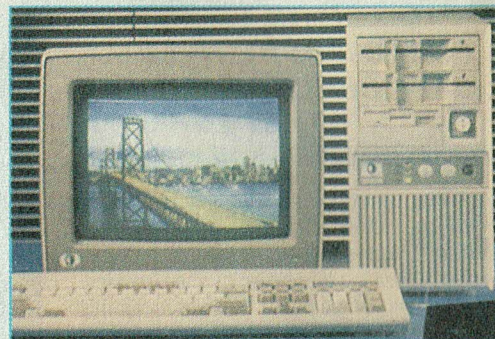
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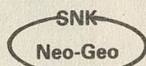
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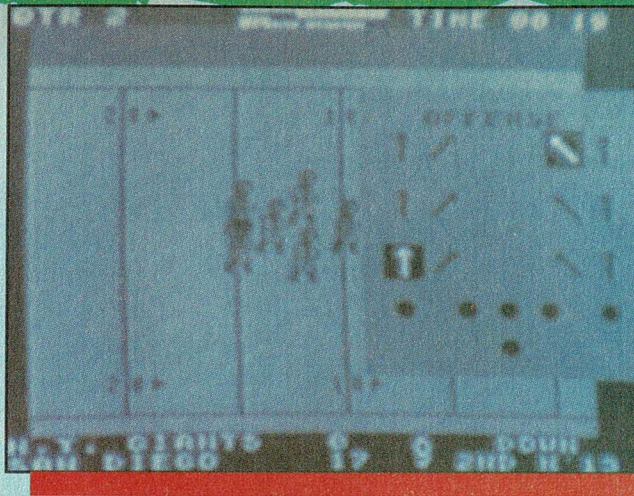
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GAMES

FAST ACTION AMERICAN FOOTIE, LATE NIGHT THUGGERY AND A SECRET MISSION ARE THE GAMES ACTION REVIEWED BY DUNCAN EVANS.

Before you all start thinking ahead, no, this is not the American Football game I was talking about in Hotlines a couple of weeks ago. For one thing this is a budget game. However, *Fantastic American Football* does offer a season's



▲ Budget American Football for your Spectrum.

SPEEDING SUPER BOWL

campaign culminating in the superbowl (although not while I was Head Coach they didn't), and the simplicity to guarantee a broad appeal.

While the default is the New York Giants you can change that to any of the NFL teams, and if you are having a two-player game I'd

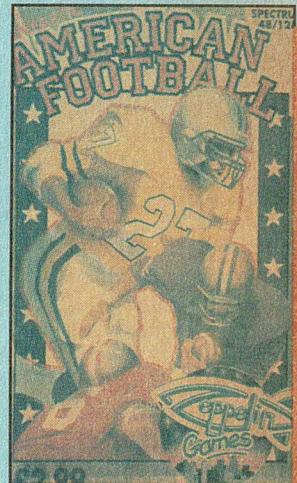
certainly make sure I wasn't running the San Diego Chargers. The time limit per quarter can be left to one minute, which does allow for a few interchanges, or pumped up to the full 15 minutes, in which case you end up with ridiculous scores.

After fiddling with the controls

(which is unnecessary as the game is playable on the keyboard and demands a joystick) the action rapidly gets underway. Too rapidly in fact. The players are animated rather well, and once the ball is snapped you are on your own. In fact, as the poor quarterback on passing plays,

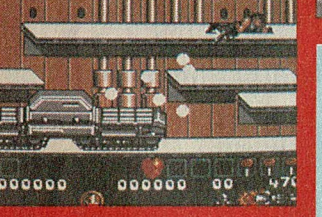
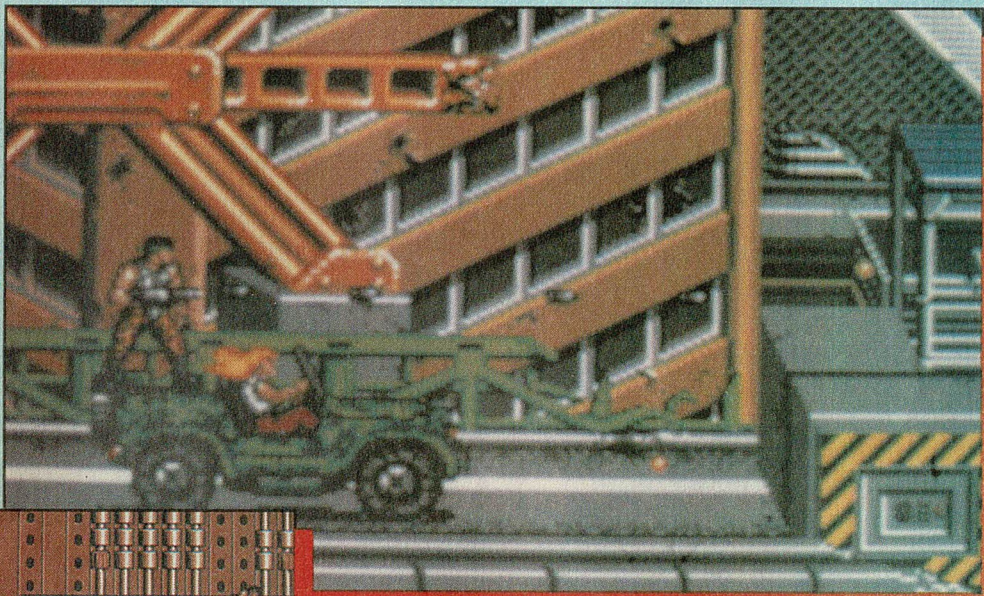
you're lucky if you don't have a blitzing linebacker in your face before you can say Lawrence Taylor, never mind trying to see where your receivers are.

Offensive calls are limited to pass, rush, field goal or punt. However, when passing there are six positions for each of your two-wide receivers to run to, so there is some variety there. The rushing side is far more limited, as is the defence. Do you stop the pass,



▲ Fantastic American Football

Continued on next page ►



★ Camouflaged jeeps for Midnight Resistance.

After the stunning and extremely good Tie Break last week we return to more familiar Ocean fare with the conversion of a fairly forgettable Data East coin-op. What I like about coin-ops are their total lack of reality; everything is just a thin excuse to blow someone away.

The bigger the gun, the more frenzied the attackers, the higher the satisfaction rating.

Well, you can end up with a decent-sized weapon, or series of weapons as you can store them in your back pack, and indeed the troops of King Crimson, the latest loony dictator to get in your

gunsight, like nothing better than to throw themselves at you with gay abandon.

There's sideways scrolling, which is a bit jerky, but not too bad, with only adequate graphics, and then there are vertically scrolling bits, which are rather smoother. At all times you can rotate your weapon through 360 degrees, even stopping at some points, so you could suddenly whip round and shoot diagonally up and back. You can even shoot while crawling along the floor, of which there is a fair amount. What slightly lets the system down is that you then start moving in the direction you were firing, which results in a lot of aiming wandering in the middle of a firefight.

Between sections, usually after fending off a particularly nasty tank or otherwise armoured vehicle, you get to tool up with the latest big boy blaster, if you have collected enough tokens.

The only other flaw in an otherwise fine example of mindless thrashing is that one touch by the enemy and you're dead. You drop your last weapon as your next spiritual incarnation floats in. The stupid thing is that you can land very close to something extremely nasty which will send you

Continued on next page ►

ALL NIGHT TEMPTATION

◀ *Continued from last page*

expect the rush or blitz. It ain't exactly John Madden's Football is it? Things can get a little confusing as all those players merge into each other as well, but most of the time you can tell what's what.

Sound effects are fairly anonymous until someone scores, then the entire crowd blows a raspberry. Obviously they support the other side.

So we aren't talking about sophistication with Fantastic American Football, but then it is only £2.99. It is reasonably good fun, you can save your season after a game, and of course, for Bronco fans like me there's a chance to finally win the Superbowl.

RATING

Program: Fantastic American Football
Version: Spectrum.
Price: £2.99
Supplier: Zeplin Games
Reviewer: Duncan Evans

Grafix: 70%

Sonix: 50%

Gameplay: 71%

Overall: 70%

◀ *Continued from last page*

floating back up to the afterlife seconds later. If that huge weapon of yours happened to drop onto the ground patrolled by said enemy you can lose too many lives trying to get it back again.

Still, at least you are offered a number of credits so that you can continue on, and on the Amiga version (not the ST) two people can wage war simultaneously.

Not really the last word in all action entertainment, but Midnight Resistance could easily have you up past the witching hour with its decent graphics and plentyful supply of mindless violence.

RATING

Program: Midnight Resistance
Version: ST/ Amiga
Price: £19.99
Supplier: Ocean
Reviewer: Duncan Evans

Grafix: 74%

Sound: 73%

Gameplay: 70%

Overall: 71%



▲ Codename Iceman in a hot location.

MISSION IMPOSSIBLE

There are some that applaud Sierra-on-Line's graphical system for enabling authors and designers to come up with fresh and inventive scenarios without having to worry about the programming. Take Jim Wallis for example. A retired policeman, he brought you the thrills and spills of regulation policework in *Police Quest* and *PQ II*. The popularity of the *King's Quest* and Larry Laffer series is seemingly boundless, at least in PC circles.

In fact, let's face it, the games system was designed on the PC

pixels, wandering by, because you have an appointment with a submarine and a rescue mission. A US ambassador has been kidnapped by radical terrorists and against a background of super-power conflict and rising tension you must rescue him.

There's a nice submarine navigation chart in the package which includes five discs, but beside instructions on how to control your submarine there is scant information in the manual.

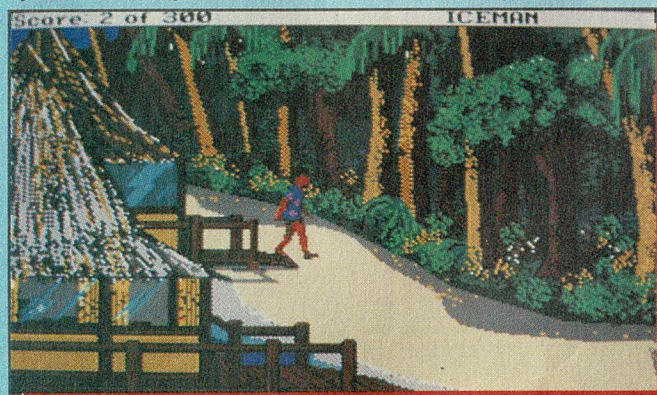
For example, it doesn't explain why the parser can take up to ten seconds to tell you it doesn't un-

parser. I was sat on a stool and the barman was stood right in front of me pouring a drink that I'd ordered for myself five seconds earlier. If I was any closer I'd be stood in his shoes.

The actual submarine part of the game is easily the best, but these things are relative and it doesn't stand up against real sub sims. There is a variety of music pieces that accompany the action, but most are fairly bland with only one or two memorable ditties.

What you'll really enjoy is all the pointless disc swapping if you only have one drive. Some situations do with disc two, disc one then disc two again. Which idiot planned this? Even better is the time it takes to go from screen to screen. Entering the Chi Chi club takes, are you ready for this, 52 seconds. How Sierra can justify this I'd really like to know.

The really sad thing is that Jim Walls' design and game ideas are good ones. There's a decent adventure under there desperately trying to get out. Unfortunately it has been virtually suffocated to death by Sierra's outdated, under-powered, overinflated and monstrously tedious game system.



▲ On to the balcony! Looks like a tough mission.

with the PCs limited abilities in mind. Porting the system straight over to the ST and Amiga has resulted in colourful but graphically crude and aurally simplistic games.

Not making the best of your Amiga is a statement which reaches colossally understated proportions in *Codename Iceman*, the latest Sierra game for the Amiga. You are that special agent, codename Iceman, and quite nicely, you find yourself sunning on beaches between missions.

Rest and enjoy the sights of suntanned girls, with the chunky

derstand what you are saying. Typing: "Hello" causes the computer to wring its RAM with worry that you are asking something terribly profound and far beyond the scope of a mere program to respond to. To be honest about this, the parser in *Iceman* is the worst I have seen in any commercial adventure game in the last three years. It makes the social interaction stages at the beginning a total nightmare.

"Buy Mai Tai," I said to the barman, following up the suggestion of the blonde lovely sat next to me. You're not close enough said the

RATING

Program: Codename Iceman
Version: Amiga
Price: £39.99
Supplier: Activision
Reviewer: Duncan Evans

Grafix: 58%

Sonix: 67%

Gameplay: 38%

Overall: 42%

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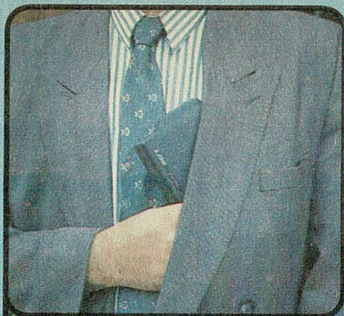
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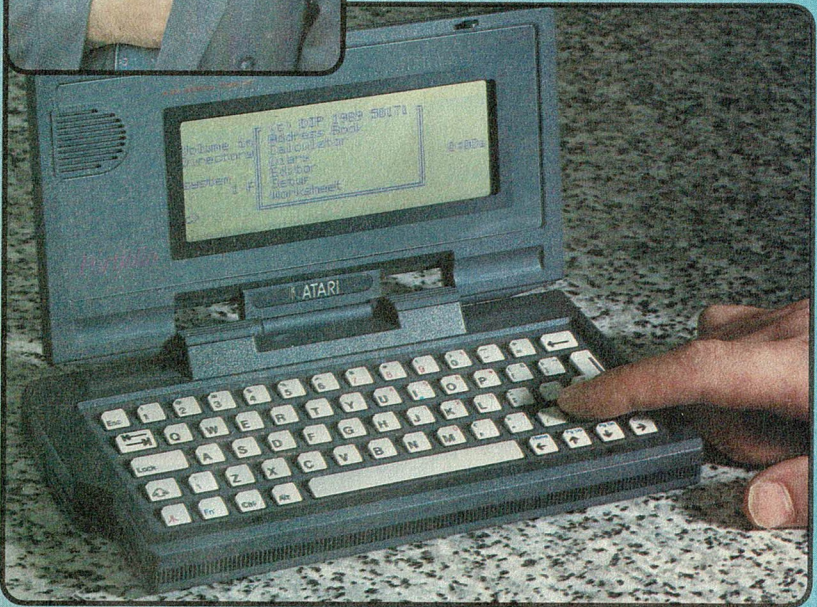
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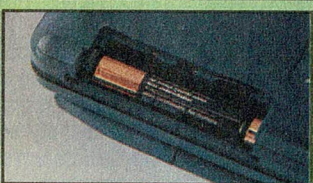
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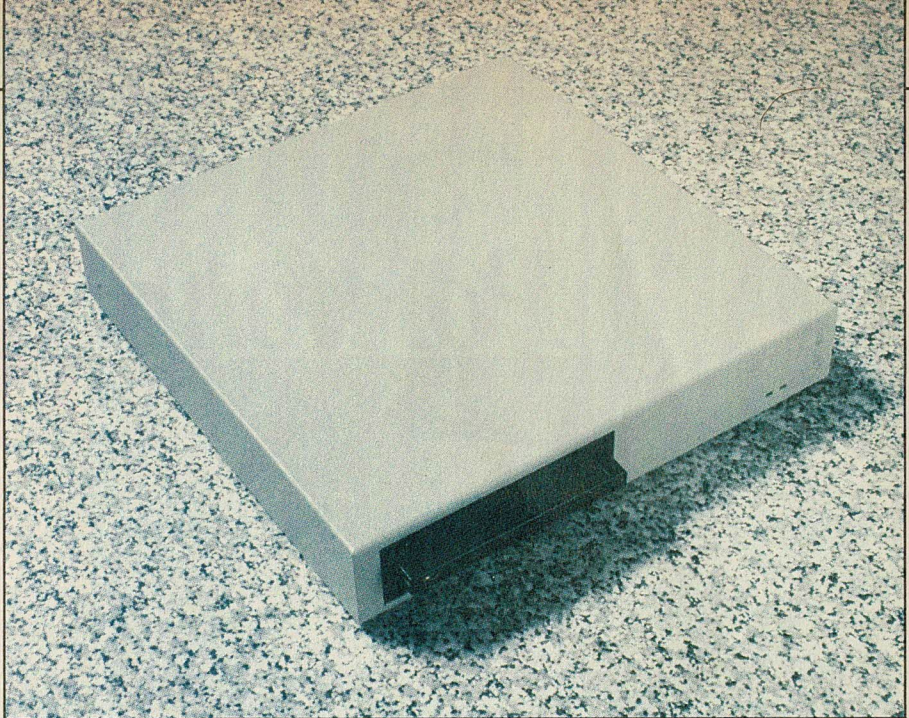
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Many people who use an Amiga or ST for serious applications will say that the computer is not complete without a hard disc. As a freelance journalist, I work with a 48Mbyte hard drive on my ST and would find it very difficult to work without it now. But there is no doubting that the hard disc option is an expensive one – and there are very many to choose from.

The advantages of having all of your most frequently used programs on one fast unit are



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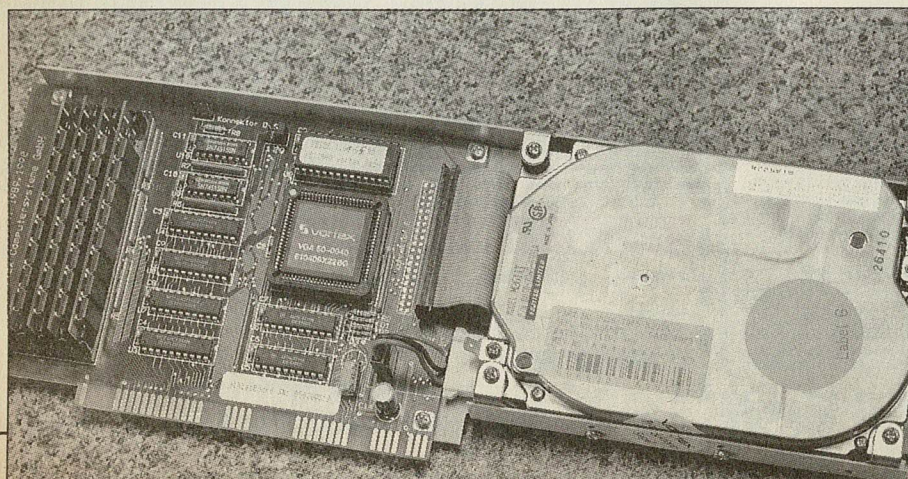
infinite: no more disc swapping, fast loading times and huge storage capacity all add up to a desirable and sometimes necessary purchase. But even £300 is a lot to pay — and for this amount you'll only be able to purchase a low capacity, slow device.

So, how do you go about spending your money – especially as new machines are always being launched. For instance, on the ST scene, Vortex of Germany has just released the *Datajet* range of drives (see news, *PCW* issue 422). Vortex has also launched an Amiga 2000 hard card.

The most important factor in buying a hard disc is its size. Do you need a 20Mbyte, a 40Mbyte or a 180Mbyte drive? You should carefully plan out how much data will be stored on the drive and allow a good 5Mbyte for future file growth. Remember a 20Mbyte drive will store the equivalent of just 28 double sided ST discs and only 23 880K Amiga discs. There's nothing worse than spending over £300 on a hard disc only to find that it's full after only a couple of months.

You'll also want what's called an "autobooting" unit. An autobooting hard disc will boot immediately after the computer has been turned on.

■ The Vortex Athlete Hard Disc for the Commodore range.



This is much faster than a floppy! Some companies will offer exceptionally cheap units and these are unlikely to autoboot. More importantly though, go for a drive that will automatically park the read/write heads. Because these heads float a minute distance above surface of the disc, excess movement in the unit will cause the heads to jolt and literally "crash" into the disc's surface. This will result in unrecoverable damage to the disc. With an autopark drive, the electronics will move the heads to a safe place periodically, to prevent this damage. Otherwise, you will have to run a program every now and then to perform the head park.

What's In a Hard Disc?

Generally speaking there are three major components in an Amiga or ST hard disc: the disc mechanism itself, a "host adaptor" and a power supply unit. All three components will vary in different systems – and because there is such a variety, you can be more selective when choosing a system.

There are many manufacturers of hard disc drives. The most well known is Seagate al-



■ A tower of strength from Gasteiner with their range of m



▲ The Atari Workshop Drive.

though Quantum, Miniscribe, Tandon and Fujitsu are also widely used. Each drive has its advantages and disadvantages. All these companies make two types of hard discs, Small Computer Systems Interface (SCSI, pronounced "scuzzy") and Seagate's ST506 drives. SCSI is a newer

development in interface technology and is generally better than the older originally PC oriented ST506 system. However, as in all things, better quality means higher prices.

Now, the very mention of host adaptors confuses some people. For the benefit of those who are baffled, a host adaptor is an interface which connects a standard hard disc drive to a computer. They are needed because hard disc drives are not made to connect directly to any particular machine, much like a printer, floppy disc or modem. Each of these require some kind of interface. In both the Amiga and ST, these interfaces are built-in, but to include a hard disc host adaptor as well would boost the price considerably.

A power supply unit is generally also connected, however in some drives these are housed in separate boxes. Again, power supplies are made by different companies.

Atari ST drives

I really cannot recommend Atari's own hard disc drives as they are over-priced and under-featured and are not SCSI compatible. There are

ably efficient. The Workshop, a division of the Radio Service Company, will install either a GE-Soft controller or the faster ICD adSCSI host adaptor.

Third Coast Technologies markets the range of ready assembled ICD FA.ST. These drives are available from 22Mbyte to 105Mbyte – each will autoboot and feature automatic drive head parking.

Driving that Amiga hard

Amiga 500 owners do not have a huge choice of hard disc units, but when you've got the Commodore A590, who needs it? The dedicated Amiga hard disc is attached to the bus expansion on the left side of the A500. Its 20Mbyte is not large enough in some cases, but it's all that Commodore offers. The A590 is fast, despite it using a relatively cheap drive mechanism. The well-designed electronics enable it to whizz along, and the distinct advantage of the A590 is the spare chip sockets inside which enables you to expand the memory (in addition to any memory expansion in the trap door) up to 2Mbyte.

board also has 512K RAM, thus boosting the Amiga to 1Mbyte. Available at the end of August, the board will support ST506 (not SCSI) drives. Although a drive is not included, Cumana tells me it is planning the release of such a unit in late September. In the meantime, DIY fanatics can assemble their own. The board will cost £159.95.

TECHNOBABLE

DMA – Direct Memory Access. Interface built-in to the Amiga and ST which directly accesses the computer's memory, thus speeding up access times.

SCSI – Small Computer Systems Interface (pronounced Scuzzy). Today's standard backing store interface. Will enable units such as hard drives, tape streamers and SyQuests to be connected with ease to 16-bit computer systems.

HARD DRIVE – A mechanism, precision manufactured, to store mass data. Contains a number of inflexible discs with read/write heads.

AUTOBOOT – System whereby the hard disc will automatically boot up once the computer has initialised avoiding the user having to issue the machine with tedious commands.

AUTOPARK – An autopark hard disc will periodically move the read/write heads to a safe position away from the discs' surfaces to avoid damage to the unit.

CONTACTS

Gasteiner Technologies
081 361 1151

The Atari Workshop
071 708 5755

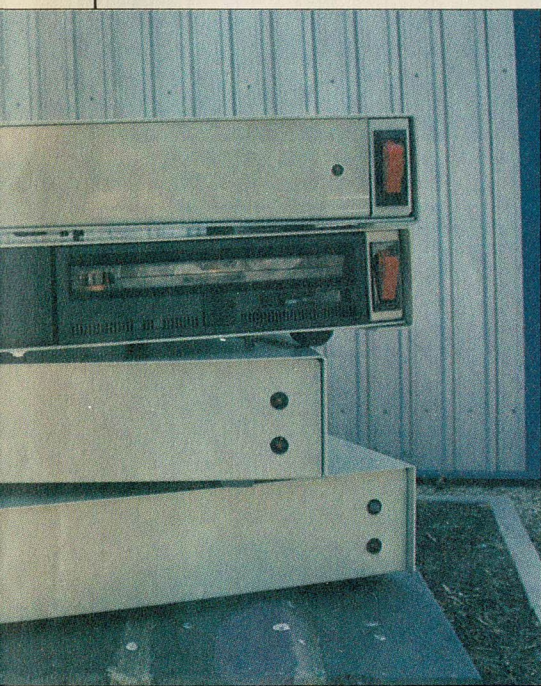
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Vortex (Silica Systems)
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Power Computing
0234 273000

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0257 472444

LOWDOWN



Amiga drives.

now a lot of hard drives for the ST from third party suppliers and manufacturers. A good buy is the range of drives from Gasteiner Technologies. These are available in configurations from 40 to 180Mbyte and all use the small German GE-Soft SCSI host adaptor which is imported by Gasteiner. The drives are housed in a hard wearing steel case and use quality Seagate drive mechanisms. A fully encased power supply adheres to new safety regulations.

If you would like to decide for yourself which host adaptor you want, give the Atari Workshop a call. They will make up an SCSI 45Mbyte drive using an ultra quiet drive. Made by Fujitsu, these 45Mbyte units are really small (they're designed for laptop computers) and are incred-

The A590 will autoboot under Kickstart 1.3 or higher. Priced at £399, the A590 is supplied without any extra memory, but still represents good value for money.

Power Computing imports the GVP range of Amiga hard discs. Like the Commodore A590,

“A HOST ADAPTOR IS AN INTERFACE WHICH CONNECTS A STANDARD HARD DISC DRIVE TO A COMPUTER. THEY ARE NEEDED BECAUSE HARD DISC DRIVES ARE NOT MADE TO CONNECT DIRECTLY TO ANY PARTICULAR MACHINE, MUCH LIKE A PRINTER, FLOPPY DISC OR MODEM.”

the GVP machines can also accept memory chips, this time in the form of Single In-line Memory Modules (SIMMs). Up to 4Mbyte can be fitted and the drives are available in 45, 80 and 100Mbyte configurations. Again, like the A590, the GVP drives attach to the expansion port of the Amiga. The GVP range begins at £599 for a 45Mbyte unpopulated drive £1299 for a 100Mbyte drive with 4Mbyte RAM installed.

Vortex produces a 40Mbyte device for £574. This unit does not have any RAM chip sockets but will autoboot under both Kickstart 1.2 and 1.3 – so many users of older Amigas will not be left booting from boring old floppies.

Cumana has just announced a hard disc interface for the A500, which is supplied as a plug-in board for the A501 memory expansion port on the underside. In addition to the interface, the

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ST

ONE OF THE FEW ST PD LIBRARIES RUNNING TOTALLY ON THE STE

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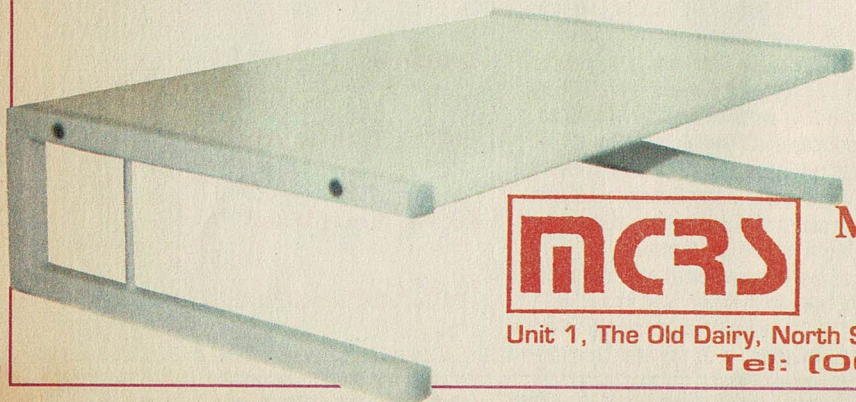
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ST

Frontier Software's popular Xtra-RAM board saw a price reduction earlier this month due to the falling cost of DRAM chips. The unpopulated board itself has just £4 taken off of it to make the current price £65 while the board with 512K falls from £99 to £79 and for 2 Mbytes the price is now a breathtaking £189! The previous price was £299! STE SIMM assemblies have also been affected by the price slashing, £69 will now secure you 512K and just £169 will buy you 2Mbytes. Frontier are on 0423 567140.

Gasteiner Technologies have been keeping quiet about a little gadget that they've, apparently, had in stock for quite some months. It's an addition to the Atari SLM804 Laser Printer that every owner will want. The Atari Laser is a noisy

beast at any time, but you must have it switched on all the time you use the computer. This adds to your annoyance from the noise and also adds to your electricity bill as it's not exactly a lean-burn motor. Enter this small gadget. Simply plug it into the laser interface and then the mains supply and it will switch the machine on and off as required. It's priced at about fifty quid which is a bit much, but just think of the hair you'll save.

Budget operator Hi-Tec has made a move into the 16-bit scene this week as it prepares to launch *Yogi's Great Escape* and *Future Bike Simulator* at £6.99 for the ST. I remember trying to play Yogi on the Commodore 64 a while back and gave up as the game was dull, boring and a complete waste of time. I wonder whether the ST version will reflect all the qualities that were squeezed into the C64 game.

Andrew Banner

AMIGA

Got your copy of AMOS yet? If not, then now there's an even more compelling reason to join the ranks of us who wouldn't be without it — the release of the AMOS EXTRAS disc, free as part of the package.

What do you mean, what's AMOS? It's the mega-enhanced Amiga version of the ST chart-topping 'game-but-so-much-more' creator from Mandarin Software. Interestingly, early reports back to Mandarin suggest that the kind of thing AMOS is already being used for is a lot nearer to the 'business applications, educational material, slide shows, video titles' and so on that we talked about than the almost exclusively games-orientated coverage in other computer titles. Just look at the list — "an educational program for motorists . . . a Mandelbrot explorer . . . an evolution simulator . . . flashy scrolling demos . . . plans of archaeological sites" and on and on.

In fact, the beauty of AMOS is precisely that kind of flexibility — the underlying code is so well constructed that nothing gets in the way of producing the programs,

simulations, demos and other wacky stuff in your brain. And now, with the release of EXTRAS, the whole AMOS environment shifts to a higher level. Why? Because, almost hidden in all the excitement is a small utility called RAMOS — a separate run-only version of AMOS that allows you to run your AMOS-created masterpieces independently of the creator kit.

So? So now you can pass copies of your programs to friends, to public domain libraries, anywhere. No longer will other people have to invest in the (very worthwhile) £49.99 in order to see what you've done. A whole new world of possibilities opens up.

Which suggests a whole new type of activity in the demo market to me, that at present is an alienating activity for the majority of Amiga owners. Let's face it, it's great to see flashy demos, boring to have to read endless lists of (frequently misspelt) messages and credits. In fact, the whole demo scene is rapidly descending into a very introverted set of coders' ego trips. However, AMOS offers the rest of us a chance to show what we can do — for once, perhaps, style and artistry can be on display instead of technical wizardry (after all, AMOS handles that bit). Why don't we see the

CPC

Well, you've read all the lowdown on the new machines, but you won't be able to get your hands on one until September. Doesn't the waiting kill you?

However, I've been lucky enough to play on not one, but all three of the little beauties, as well as getting even more gen on them from the inimitable Dr. Dorn, CPC maestro extraordinaire.

So, leading on from that, here's a vital piece of advice for all of those who want to get a new machine and use their existing peripherals on it.

The new machines come complete with jolly sockets instead of the old card-edges to attach add-ons, so what you'll need to proceed is your very own adaptor. Here goes. You'll need:

- One Centronics type 50 way male plug (Insulation Displacement type- IDC preferable) Maplin type JB56L (5.95)
- One short (roughly 6inch) length of 50 way ribbon cable
- One 50 way card-edge connector — again IDC type Maplin FS81C (1.48)
- One 50 way bus cross-over unit Maplin GD37S (reversiboard) (1.98).

Got it? Good! You'll also need either an IDC connector plier or a vice, (we've all got those, haven't we?). Right, take the 50 way Centronics plug and the cabling. Wit the index wire (usually the red one) at the right of the plug, crimp the cable to the plug. Simple, eh?

Now assemble the plug shell and

equivalent of the 3.5 inch video single — a well-thought out, co-ordinated sequence of music and graphics, arranged by AMOS and PD (or cheap) sampling packages. I'm tempted to suggest a move into Hypertext, but we can probably skate around the lower slopes of that concept quite easily. Imagine sample whale cries leading you to a digitised view of the sea, which begins to spin, sucking down and down to a new world of colours, movement and sounds — suddenly we're making films.

And can AMOS really do that? No reason why not. You can grab sprites and .IFF images, load up sampled sound and music, create

get hold of the 50 way card-edge connector. The index wire should also go to the right of this plug (NB! THIS IS VERY IMPORTANT!) You should now have the Centronics plug on one side of the cable, and the card-edge connector on the other side, forming a sort of 'Z'.

Having made sure that everything is where it should be, crimp the connector to the ribbon cable and assemble the shell onto it. Lastly, insert the reversiboard into the card-edge connector and hey presto, you've got an old-style Amstrad expansion port waiting for your peripherals to be slotted in.

There, no tips this week, but never let me hear it said that Gus never did anything for you. By the way, take a look at the picture if you're not too sure what your adaptor should look like.

Back to the fun and games next week, so until then, pick up your pliers and be prepared for the CPC launch.

Gus Ivyleague

slide shows, set up menus and title — then have the whole thing as a standalone treat. Before the end of the year, we'll see the compiler as well which will really speed things up.

Already AMOS is delivering its greatest potential benefit — unlocking our imaginations. For the price of a couple of games that you'll soon tire of, there could be no better way to spend your money at present. And the EXTRAS disc, with zappy new items like editors for smooth animation or map creation, has suddenly made it all even easier. What next?

Dave Reeder

Continued on page 25



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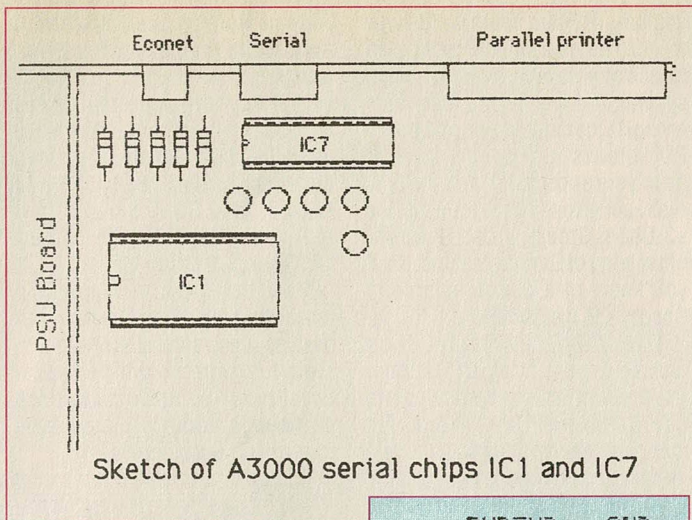
BBC

Ever since I have had my Archimedes A3000, the biggest drawback has been the lack of an RS232 or serial communications interface. All of the other machines I use (well almost all) have this vital piece of equipment which allows little programs to be transferred to my word processor to be cleaned up and printed out – this makes sure that there are as few mistakes as possible.

I had solved the serial link problem somewhat by transferring files to the A3000s PC emulator mode and then putting these discs on to the ST, which has a link built in, allowing the files to be moved anywhere. However, this process was rather tedious and a bug in the PC emulator's file transfer software meant that file lengths had to be kept below 16K – it either crashes or doesn't transfer anything for files over this length.

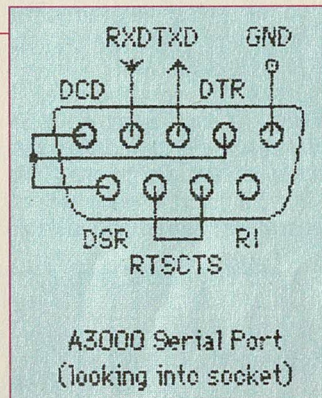
Anyway, after leaving through some adverts the other day, I saw that Walford Electronics were offering the serial upgrade for £19 – in the end it cost £23.37 with postage and packaging and VAT. Realising the amount of time and effort it would save me, I splashed out and ordered the kit.

Two days later I received a Watford catalogue and two chips. No instructions were included and



Sketch of A3000 serial chips IC1 and IC7

a small leaflet informed me that the upgrade should be fitted by an Authorised Acorn Dealer. Well, I'm not one of these, but I managed to take the top off of the machine – easy since there are only two screws at the back – and saw that there were only two possible sockets that could be used (see sketch). The orientation of the chips is shown on the circuit board so plopping them in was no harder than changing the old style BBC ROMs. Putting the machine back together and switching it on proved that I hadn't killed it so the next step was to fix up a lead. Unfortunately, this was not as easy as it seemed and took much longer than installing the chips – opening the A3000 slotting in two chips and closing it again took under five minutes, finding out how to



get it to talk to the rest of the world about an hour.

The problem with the A3000s serial link is that it is rather pernicky about which lines are connected where. Most systems will work with TXD (transmit data), RXD (receive data), RTS (ready to send) and CTS

(clear to send) – even the last two aren't always necessary. To get a minimal connection from the A3000, ie, TXD, RXD and ground, RTS and CTS must be connected together, as must DCD (data carrier detect), DSR (data set ready) and DTR (data terminal ready (see diagram), the latter being an output which 'activates' the other two inputs. RTS signals to CTS that everything is okay for data transfer.

After using the normal *FX2,1 and *FX3,1, allowing another machine to replace the keyboard, I resorted to looking in the Advanced User Guide for the BBC Micro (old style). This has a rather useful section of getting a terminal program up and running – the main tricks being to flick between FX2,2 and FX2,1s that XON and XOFF from other machines don't jam up the input buffer and to use ADVAL (-ve) to read the number of characters in the various buffers. A simple terminal program was easy to write as were the basic text file transfer routines, not strictly necessary since all screen output can be fed to the RS232 with FX3,1 and FX2,1.

I don't understand why Acorn didn't fit this vital interface as standard, (all the competition have it), however, fitting it was no trouble at all. As soon as I can get hold of details on the XMODEM protocol (any advice would be gratefully received) I'll have a fully operational terminal program on the A3000.

Kenn Garroch

SAM

I have just received a copy of *Specmaker* by Ian Spencer, Marketed by SD Software, 3 Mitchell Place, Falkirk FK1 5PJ. "Not another Spectrum Simulator," I hear you cry, but this one is one with a difference. It recognises all the calls to Microdrive, Opus Discovery, Disciple and +D, automatically traps them and transfers the calls to SAMdisc. Not for your games buff, but for running utilities like Hisoft's *Pascal* or *OCF Assembler*, it works a treat, using the parallel printer port, all the extra keys like "delete" and "MOVE 2" which swaps modes from Speccy to SAM. More details later.

Steve Nutting was again selling his *Version 1.1 Assembler* at the All Formats Fair. I have now started using this regularly, and like it immensely. It's the little touches, like the way you just type stuff in, higgledy-piggledy, and the program shifts it all into neat rows, which make it so eminently user-friendly;

```

10 DO
20 OVER 1
30 LET rn=RND(200)+1,r2=RND(18)+2
40 RANDOMIZE rn
50 FOR i=1 TO 80
60 LET x=RND(255),y=RND(173)
70 LET p=RND(6): PEN p+9
80 BEEP .02,p*4
90 FOR r=2 TO RND(r2)*2+4 STEP 2
100 CIRCLE x,y,r: NEXT r
110 NEXT i
120 RANDOMIZE rn
130 OVER 0: PEN 0
140 FOR i=1 TO 80
150 LET x=RND(255),y=RND(173)
160 BEEP .02,RND(20)-20
170 FOR r=RND(r2)*2+4 TO 2 STEP -2
180 CIRCLE x,y,r: NEXT r
190 NEXT i
200 LOOP

```

although, as I warned before, Steve's instructions are poor and rudimentary. A good buy at £10: enquiries on 0223 235150.

Support for SAM continues. For instance, Enigma wax enthusiastic about the easy programming features, and clearly are strong in continued support. Meanwhile, many SAM readers already know the Dis-

covery Club, a non-profitmaking organisation which sends out information free to members who supply their own discs and postage (if not, £8 gets you 6 issues). Well, they're going to do a SAM disc in between the bimonthly *Discovery* disc-based newsletter. The demo disc I've just been handed is absolutely terrific, and crammed full of

programs and information. Details from Brian Mumford on 081 689 1439.

Finally, this little program has us all going round in circles, just like MGT. It draws 80 discs, each in a random colour and of a random diameter, randomly over the screen, making silly noises as it does it. Eventually, when the screen is simply covered with discs, it stops drawing and undraws them all. The effect is quite fascinating, and the program astonishingly simple. There's nothing fancy about it: the whole thing is contained in a huge DO loop, and each disc is drawn merely by drawing circles of progressively increasing radii (lines 90 and 100). Yet the speed is impressive; try doing it on a Spectrum!

Finally, can I once again appeal for any little snippets, short programs or unusual features which you have found in SAM, and would like us to include in SAMSPOT. Please send them direct to *Popular* marking the envelope SAMSPOT. Many Thanks.

John Wase

SPECTRUM

First off this week, I would like to ask for a wee bit of help. There is loads of PD and Freeware stuff around for other machines, but relatively little for the Speccy. In part this is due to the many different storage mediums in use. The question facing anyone trying to set up a PD library is, do I go for tape, Microdrive, Opus, Disciple, Beta, +3 or what? Now, I have come across some programs developed by the Dutch, called P Filers. These allow programs to be packed into a single code block, and then extracted to any of several storage systems. They were originally developed for use on BBs, to fix a standard for downloaded files. At present, they are less than user-friendly, but that should be easy to fix.

If anyone is thinking of setting up

a library, P Filers could be the way to go. The distribution could then be all done via tape, no matter what system of drive the user had. I am trying to compile a list of Speccy PD libraries. So far this has not been very successful, and the only really active one I have found is The +3 Users Group, which is yet another wing of Garner Designs. So, if you know of a reliable source of Speccy PD, get in touch.

A word of caution though, if you are thinking of starting a PD library, make sure that any items you are given really are PD. Try to deal with authors directly, as many people lose track of where a program came from, and the last thing you want is an irate author banging on your door demanding cash!

During the recent hot spell, a number of local Spectrum 128K users have been having problems. The machines tend to crash into 48K mode or just reset themselves. Most of the troubled machines had

add-ons like Interface 1 attached. It makes me wonder how the machines got on in Spain, as that is where they first appeared! If you are really keen, some improvements to the 128K's peripheral driving power can be obtained by fitting an NEC Z80, a +2 ROM chip and a new ULA. However, there are no certainties in Spectrum life!

What do software houses do when they have nothing new, but need to make a bit of money? Answer, they wheel out the compilations! *Heroes*, from Domark, is one of the most recent. This contains four ex-full price games.

First up is *Licence To Kill*, a very average Bond tie-in. It roughly follows the plot, but I could not get past the first stage - my skill with a chopper is, erm, well known! Next up comes *Barbarian II*. Now this is a good 'un. Plenty of blood and guts here! Not really for the squeamish.

Title three is *The Running Man*,

another film tie-in, but not much of a game. The graphics are nice though. Last up is *Star Wars*. This is a vector graphics game, and I found it quite good, although it could have been faster. A nice game as long as you don't mind the lack of Spectacular explosions.

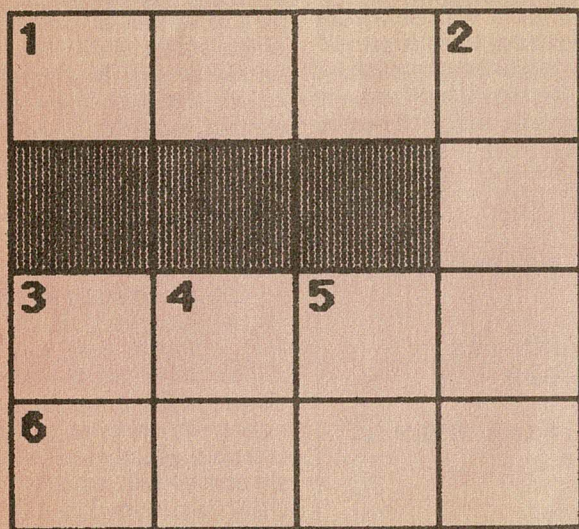
As always, compilations are only good value if you never bought the originals. I can't help wondering though, what would happen if everyone sat back and waited for new games to appear as budget titles, or on compilations!

As always, if you have any short routines you think might be useful, please get in touch. I would also like to hear from anyone who is still writing utility software for the Speccy. My address is 64 Roebuck Road, Chessington, Surrey KT9 1JX. You can also reach me via MBX 013970763 on Prestel, and as myself on the Maxwell House BB on 071 828 1577.

Brian Gaff

CROSSNUMBER PUZZLE

PUZZLE



Across

1. P² - PC
3. P² + C²
6. (P-4)²

Down

2. P²
3. C
4. P + C
5. P + W

This crossword puzzle, based on the letters PCW, should not prove too difficult!

Simply decide which values to give the letters P, C and W such that the values so produced from the clues will fit into the grid.

LAST WEEK'S SOLUTION

To the nearest inch the footbridge is 38 yards 2 feet and 1 inch from the tree. In the diagram shown with the question there are two right-angled triangles. Both have one side in common equal to the width of the river (40 yards). If we call the distance from the tree to the footbridge 'X' then the other sides of the triangles are equal to X and 100+X. The two hypotenuses of the triangles represent the distance that Freddie swims.

We are told that this is 200 yards so the program works by a process of reiteration. That is, it will make a guess at the answer and then, as a result of a computation, revise this estimate into a more accurate one. By continuing in this way a value can be obtained which moves closer to the required answer.

In the listing an initial guess of 100 yards is programmed in (line 100). This can be any value, greater or smaller than the true value of X. From any given value of X the two hypotenuses can be easily calculated using Pythagoras' Theorem. In this way D1 and D2 represent the hypotenuses. The total distance swum is the sum of these two figures (line 130) and this result is printed out together with the current value of X (line 140). If the real value of X is correct this combined total will equal 100 and the program will end.

However, in the first instance, it is unlikely that we will have hit upon the correct distance on our first try so line 160 revises the value of X by proportional amount relative to 200/T. As can be seen by running the program, the value of X rapidly stabilises on its correct value and the last result printed before the execution ends is the answer. Most micros, however, will fail to end at line 150 due to very small inaccuracies caused by calculating square roots. In this case the program will continue to run but the results will be seen to have stabilised.

Gordon Lee.

```

100 X=100
110 D1=SQR(1600+(100+X)*(100+X))
120 D2=SQR(1600+X*X)
130 T=D1+D2
140 PRINT "X=";X;" Distance=";T
150 IF T=200 THEN END
160 X=X*200/T:GOTO 110
    
```


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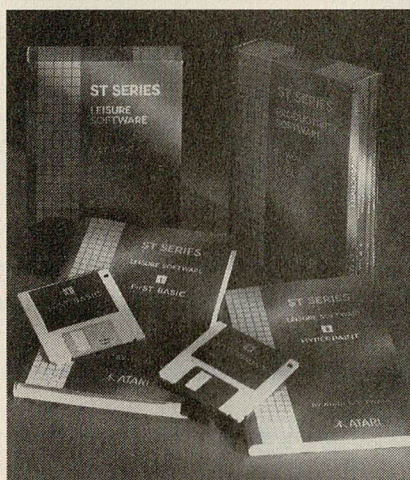
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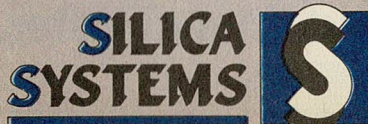
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HOW DO I CRAM MY MUSIC ONTO MY A500?

ET Jones of Richmond, North Yorks writes

Q I have upgraded from a Commodore 64 to the Amiga A500. I have purchased a lot of PD (Public Domain) discs with music on and use these instead of my tapes and record player.

To get to the point, I felt that I would like to try my hand at putting music onto disc so I purchased from Datel their Amiga Pro Sampler Studio and Dattel Jammer. It gave the impression that you could use this to put one's tape recordings onto disc – the problem is the samples only last for a few seconds. How does one put a full musical score onto disc? I'm wondering if I've wasted £79.99, only to get a few seconds of music from my tape recorder, plus a few words using a microphone. Any help would be greatly appreciated.

A Generally, sampled sound and music that plays for a long time is coded and crunched up so that it can fit into a much smaller space than it normally would. To explain this, it is necessary to look at how sounds are sampled and then stored as numbers.

A sound is made up from a series of pulses in the air and a microphone picking these up will convert them into electrical pulses. To 'sample' these electrical signals, the height, amplitude or volume of the signal is measured at regular intervals with an analogue to digital converter (ADC) and the numbers stored in a computer's memory.

Looking at how the sound varies with time and drawing a graph of it is a way of visually describing the sound. The sampling takes its measurements at instants along the time axis of the graph – see the vertical lines in the diagrams. Now, depending on how often the samples are taken, the quality of the final sample will be good or bad. If they are taken slowly then the resulting set of sample numbers won't accurately reflect the original sound. Increasing the number of samples improves the quality – see diagrams. Practically, the sample speed should be at least twice the highest frequency being sampled to produce accurate results.

Human hearing ranges from

around 20Hz to 20,000Hz so samples must be taken at 40,000 times a second to achieve reasonable quality. A little bit of arithmetic shows that at 40,000 numbers per second, an 800K disc should hold about 20 seconds of music. Obviously it is possible to increase this quite drastically since it isn't necessary to have the best quality and there is a lot of redundant information in music – for example, sampling a 20Hz sound at 40,000 times a second is rather over the top so filtering the sound and removing the identical bits cuts the amount of information to be stored.

The problem you have is that to

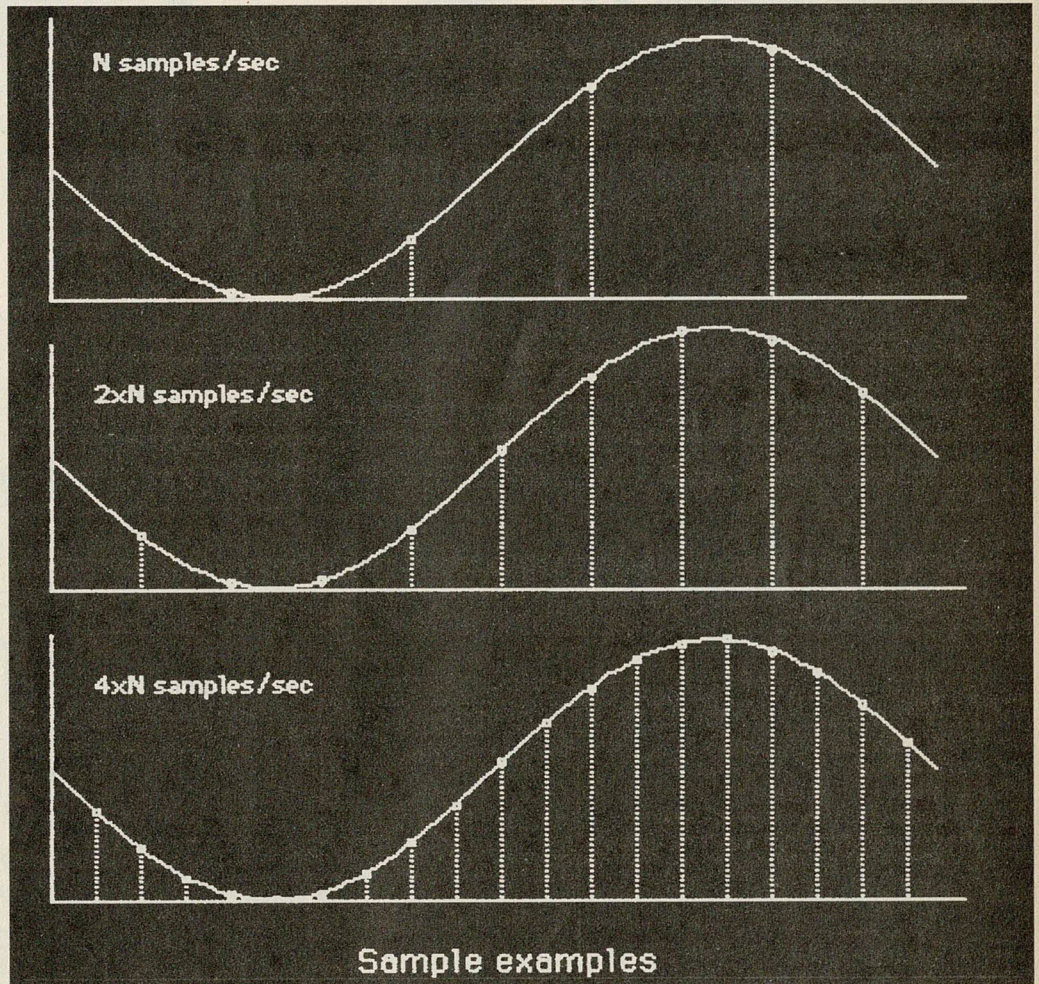
take a full frequency range (bandwidth) piece of music and then sample it, compress it and store it onto disc, is more than the Amiga can cope with. It is quite able to sample and store it, it's the compression that causes problems. The sound has to be mathematically manipulated to remove the redundant bits, and this can't easily be done 'on the fly'. If you had a large amount of RAM and/or a large hard disc, then you would be able to do a better job but the A500, although a pretty smart piece of kit is not really up to the job.

Incidentally, playing the sound back is reasonably straightforward

whether it be a compressed or standard sample. The numbers that make up the sample are simply fed into a DAC (Digital to Analogue Converter) which works very quickly to produce a voltage proportional to the number. Feeding these out fast enough produces a waveform – changing the speed of this allows the pitch to be changed – that is the same as the original.

The upshot of all this is that the samples you make with the Dattel sampler can never really be more than around 10 seconds in duration. I phoned, or tried to phone, Dattel to confirm this diagnosis but, unfortunately, nobody seemed able to answer the phone.

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GIVE US A CLUE

J Benson of Nantwich, Cheshire writes

Q I have recently been trying to load a NeoChrome screen in to my ST with a machine code and have come across a problem.

I keep getting address and bus errors for absolutely no reason. I have a little experience with machine code and I have tried everything I can think of. I am absolutely sure that the program is correct. I am using GEMDOS calls throughout apart from the XBIOS to find the screen position.

Could you provide some clues as to where I might be going wrong? I am at my wits end about what to do next.

A At a guess, I would say that you are loading the screen over the stack. When the ST starts up a machine code program, all of the

KENN GARROCH'S QUESTION TIME

memory is given to that program to use as it wants. The system stack starts just under the screen and would not normally be touched by the program.

However, if you try to load a NeoChrome screen into memory 128 bytes below the screen start - to allow for the header information - which I presume you are doing, then you will corrupt the stack. If the screen load routine is in a subroutine and an RTS is executed with a corrupt stack then the 68000 won't know when to return to and will probably return to either an odd ad-

dress (address error), an invalid address (bus error), or to some code which eventually causes one or two of these errors.

What you need to do is load the header information to somewhere else in memory and then the screen to the start of the screen memory. Alternatively, you can move the stack pointer to your own stack at the beginning of your program. Executing a TERM (GEMDOS 0) will reset the system stack so you don't need to worry about the program after it has finished.

WHERE DO I GO FOR RIBBONS?

L Hanson of Barrow in Furness, Cumbria writes

Q I have just inherited an old Apple Imagewriter 1 printer, with manuals and such like sundries, which I have interfaced to my ST. What I need now are some new ribbons. Could you tell me the best place to get hold of such things?

A If you look through the adverts at the back of *Popular*, you'll find that there are a number of companies that sell computer supplies. If they don't advertise that they sell ribbons for the printer you have, phone them up and ask. The chances are that they will have a book of equivalent ribbons from which they can select one that will meet your needs.

SHOW ME AROUND YOUR GALAXY

A Hyde of Newport, Gwent writes

Q Many years ago I saw a program on a BBC micro that moved a series of rings around a planet as though they were in orbit. At the time I thought this was pretty smart and having recently purchased an Archimedes, I thought that I would have a shot at producing a similar picture. Alas, I have had no luck. If you know of the picture I mean, can you show me how it was done?

A I think I remember the program you mention and my version is shown in the accompanying listing. It consists of three main parts. The first draws in some stars - lines 30 to 50 plot points at random. Secondly, a planet must be drawn using a random graduated shading technique - lines 60 to 110 do this using the formula $R^2 = X^2 + Y^2$ to draw the circle where X and Y lie on the perimeter and R is the radius.

The final section (lines 120-250) draw the orbit circles and switch the colours in sequence to give the impression of motion. This latter technique is a useful way of producing motion without actually moving anything. Each ring is assigned a blue colour in sequence while the previous one is set to black.

```
10 MODE 12
20 COLOUR 1,7:GCOL 0,1
30 FOR T=0 TO 100
40 POINT RND(1280),RND(1024)
50 NEXT
60 FOR Y=0 TO 512 STEP 4
70 XP=SQR((512*512)-(Y*Y))
80 FOR X=0 TO XP
90 GCOL 0,-(RND(XP)<X)
100 POINT X,Y
110 NEXT: NEXT
120 FOR T=2 TO 15: COLOUR T,0: NEXT
130 T=0:C=2:AINC=.00001
140 REPEAT
150 GCOL 0,C
160 CIRCLE SIN(T)*800+340,COS(T)*600-200,200*(T)
170 C=(C+1) MOD 16
180 IF C=0 OR C=1 THEN C=2
190 T=T+AINC:AINC=AINC*1.3
200 UNTIL T>PI/2
210 FOR T=2 TO 14
220 COLOUR T,0: COLOUR T+1,4:A$=INKEY$(6): WAIT
230 NEXT
240 COLOUR 15,0: COLOUR 2,4
250 GOTO 210
```

Archimedes ringed planet program

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IMITATION IS THE SINCEREST FORM



So Alan Sugar thinks 16-bit computers are a waste of time! If that's the case, why has Amstrad gone to such pains to make the 464 Plus and 6128 Plus look like clones of the Amiga? Could it possibly be that 16-bit computers like the Amiga are very popular because they are brilliant performers - unlike weedy Z80-based also rans!

I think we should be told, as they say in a certain satirical journal.

Dave "Billy The Fish" Hatley, Melchester.

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Editor Paul Marks
US Editor Steve Gold
Production Editor Dominique Coughlin
Reporter Marc Jones
Designers Paul Ellis, Adrian Hulf
Contributors: Software, Duncan Evans, Technology: Kenn Garroch, Music/MIDI: Tony Sacks, Comms: Malcolm Arnold, DTP: Tony Hetherington. Simulators: Lee Paddon.
Advertising Manager William Saville
Advertisement Executives Tony James, Charles Paravicini
Production Michelle Evans
Group Editor John Taylor
Managing Director Peter Welham
Publishing Director Ray Lewis

Popular Computing Weekly, Maxwell Specialist Magazines, Panini House, 116-120 Goswell Road, London EC1. Tel. 071-490 7161. FAX 071-490 8720. © PCW 1990, ISSN 0265-0509.

ABC MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS 14,506

Origination by Ford Graphics, Fordingbridge. Printed by Cradley Print. Distributed by SM Distribution, London SW16. Tel. 081-677 8111. Back issues and subscriptions from MSM Subs Dept., Lazahold Ltd., PO Box 10, Roper Street, Pallion Industrial Estate, Sunderland SR4 6SN. Subscription rates: UK £38.25, Europe £47.40, Middle East £58.10, Far East £55.10, USA \$86.00, Rest of World £49.50. Airmail charges on request.

'SAM BEATS THE AMSTRAD PLUS'

I can understand the disappointment with the latest CPC464 and CPC6128. In choosing the SAM Coupé I looked for features these or the Spectrum do not possess.

It must be the only computer on the market today with a specification that most people want, ie. 3.5 inch. disc drive, cheap games, lots of memory, user friendly etc. Incidentally you could buy a SAM with disc drive plus a colour TV and still get change from £429, the price of Amstrad's new 6128 Plus, with colour monitor.

I had ruled out the Atan STE or Commodore as expensive games machines and would prefer a PC at

£300 to £400 plus printer - but this is just too costly.

It was very encouraging to see Bruce Gordon and Alan Miles at last weeks All Formats Show, especially as they were continuing to sell the SAM. Maybe Alan Sugar should have been there to see the number of people interested in purchasing one?

Tasman, Enigma and Lerm must be congratulated in supporting the SAM also yourselves with John Wase's column.

I hope in the future when projecting the virtues of the Amstrad machines you include the SAM as an extremely good alternative.

R.J Chapman, Woodley, Berks

We are not continuing to cover the SAM because we think readers should go out and buy one,

but because there are allegedly 6000 users out there who bought one before MGT sank. Those users probably need more help right now than many other groups of micro users put together. Unless MGT is revived in some form and assures us that a reliable source of hardware and support will emerge, there is no way we can recommend the machine.

You forgot to mention that an Atari ST only costs £299, admittedly without a monitor, but with a comparatively massive 512K of RAM. I'd be tempted to compare the ST and the new Amstrads rather than the SAM, there's no point in steering people down what may turn out to be a dead end (though we sincerely hope Alan Miles and Bruce Gordon get over there troubles soon).

AMOS STILL CHANGING THE WORLD (ETC.)

AMOS users are lucky, Mandarin software responded to a few questions by return of post and enclosed "AMOS hints and tips" a sheet full of useful notes about some small problems that other users have encountered. For example one sub-heading is entitled: "Double vision for the LLIST" and they explain that this has been mistakenly carried over from the STOS version and doesn't work! You select a block and then select "Print Block" from the blocks menu; but easier still, hit CTRL/F10

What a helpful team Mandarin software are! And not only that - AMOS is to have a third disc with soundtracker and sonix convert-

ers. I am looking forward to receiving mine, but later purchasers will have all three in the box.

The fat 300-page manual is currently my most thumbed book. Hurry up and join the Amiga AMOS Users - it's great!

John Gray, Eastbourne, Sussex.

Okay, we get the message. See Dave Reeder's Amiga column for more news on AMOS. But now you've told us what software you like, what's the worst package you've ever had to deal with? All entries gratefully received - a consumer guide isn't doing it's job unless it warns readers of the dodgy products out there. Trying to fathom Cardbox on the Amstrad PCW was my worst ever software experience, closely followed by an unreliable Grafpad graphics tablet for the same machine.

COMING UP!

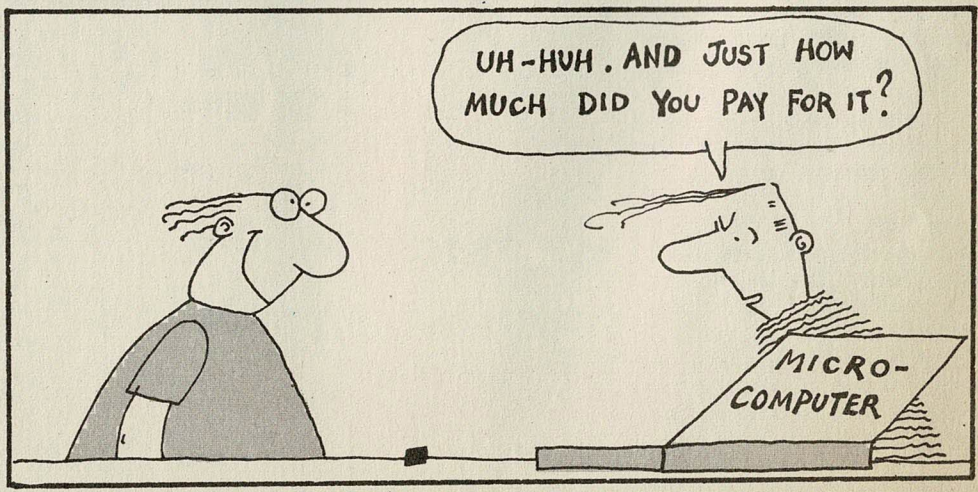
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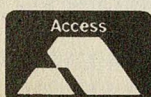
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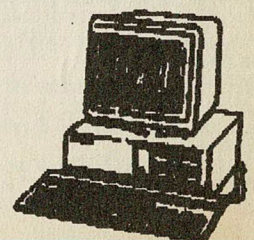
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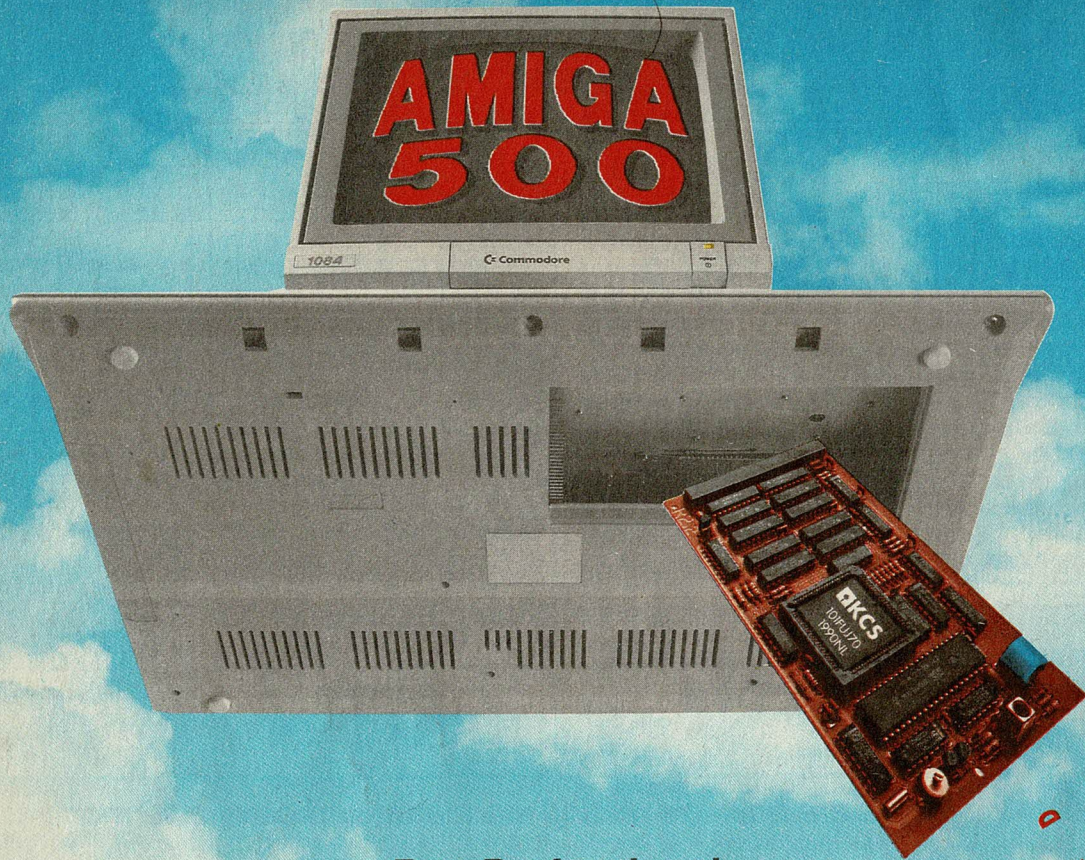
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