MICRO COMPUTER

PRINTOUT

A PLAIN MAN'S GUIDE TO PERSONAL COMPUTING

FEBRUARY 1983 95p

SCOOP
VisiOn
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16-BIT SOFTWARE

Will it win?

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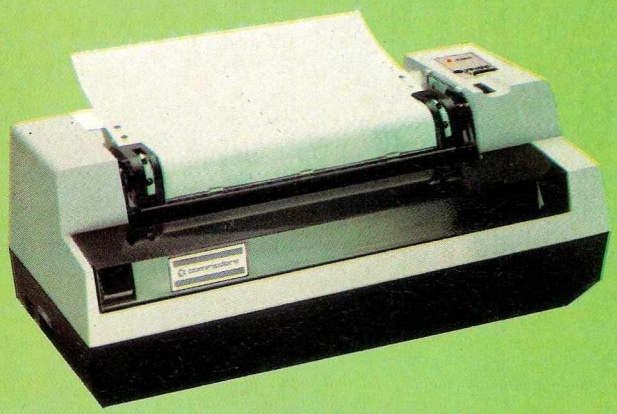

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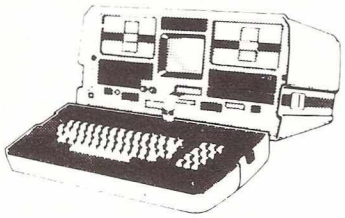

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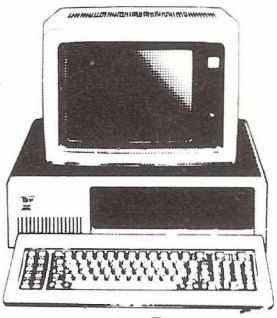

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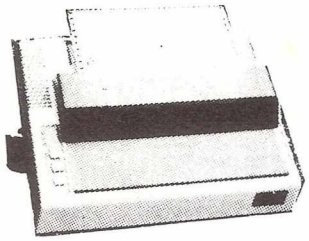

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FRONTLINE

Hare V. Tortoise

You all know the story: dashing young hare takes on geriatric tortoise in a race, but ends up losing out of sheer complacency. There is a danger in drawing too many conclusions from an analogy, but I firmly believe that this story is a fair representation of the current state-of-play in the business microcomputer market.

Few people question the idea that the extra processing speed and large memory handling of the 16-bit chips will *ultimately* make it the winner. But as at this moment, there is little evidence to prove that the end-user (who after all is the one paying out the extra money for the privilege) receives much benefit. In part, this is for technical reasons: the 'throughput' of a computer is far more dependent on things like the efficiency of its disk operating system than on the central processor, and there are now a good many 8-bit systems which have been modified to cope with more memory than the original 64K limitation.

The main problem, however, is the software. Programs converted across from 8-bit machines show little improvement in either speed or capacity – and may even be worse. Writing software specifically for 16-bit machines takes a great deal of time and manpower – and such packages are only just beginning to trickle through.

Why, then, has the situation developed that the majority of new business buyers, who wouldn't recognise a RAM if it bit them in the leg, are asking whether a machine is 16-bit or not? The reason is that the computer market is a young one, and that means that it is controlled by the suppliers, not by the purchasers.

In contrast to, say, the market for cars – where a demand from the purchasers for better economy and safety has forced manufacturers into new designs – the computer market is a highly subjective one. One of the technocrats decides to design a machine in a different way and before we know it, the trade is alive with irrelevant discussions about whether the MSDOS operating system is better than CP/M etc.

There is another, more positive reason. The introduction of the 16-bit micro, co-incided with the large and serious mainframe manufacturers finally giving their seal of approval to micros. This *has* had benefits to the end-user: larger research budgets have produced better-designed computers: larger sales operations means better after-sales support.

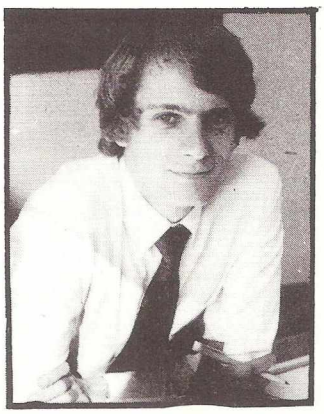
The 'new generation' of micros look significantly better than their predecessors. But high-resolution graphics, detachable keyboards, and large-capacity disks have nothing to do with 16-bits, contrary to the belief of many naive buyers.

In this issue of *MicroComputer Printout*, we have tried for the first time to look objectively at the 16-bit question: is it magic or merely a myth? Make no mistake about it – this is the direction in which computer design is going. So if you are a large firm buying the first of many systems, 16-bit is a must – simply to safeguard future compatibility.

But if you are looking for the proverbial small business solution machine, be a wise buyer! Ask the dealer to show you the same application running on both old and new generation machines, and judge for yourself if the difference is worth the extra.

P.S.

Next month we shall tackle a mammoth but fascinating subject: computer-gene ated music. What do the bleeps and squawks produced on your Sinclair Spectrum, have in common with he sophisticated synthesizers used by some of the top rock musicians?



Richard Pawson – Editor

Now the VIC 20 and 64 can communicate with PET peripherals

VIC and 64 users

Would you like to be able to access **any** of these peripherals from your computer?

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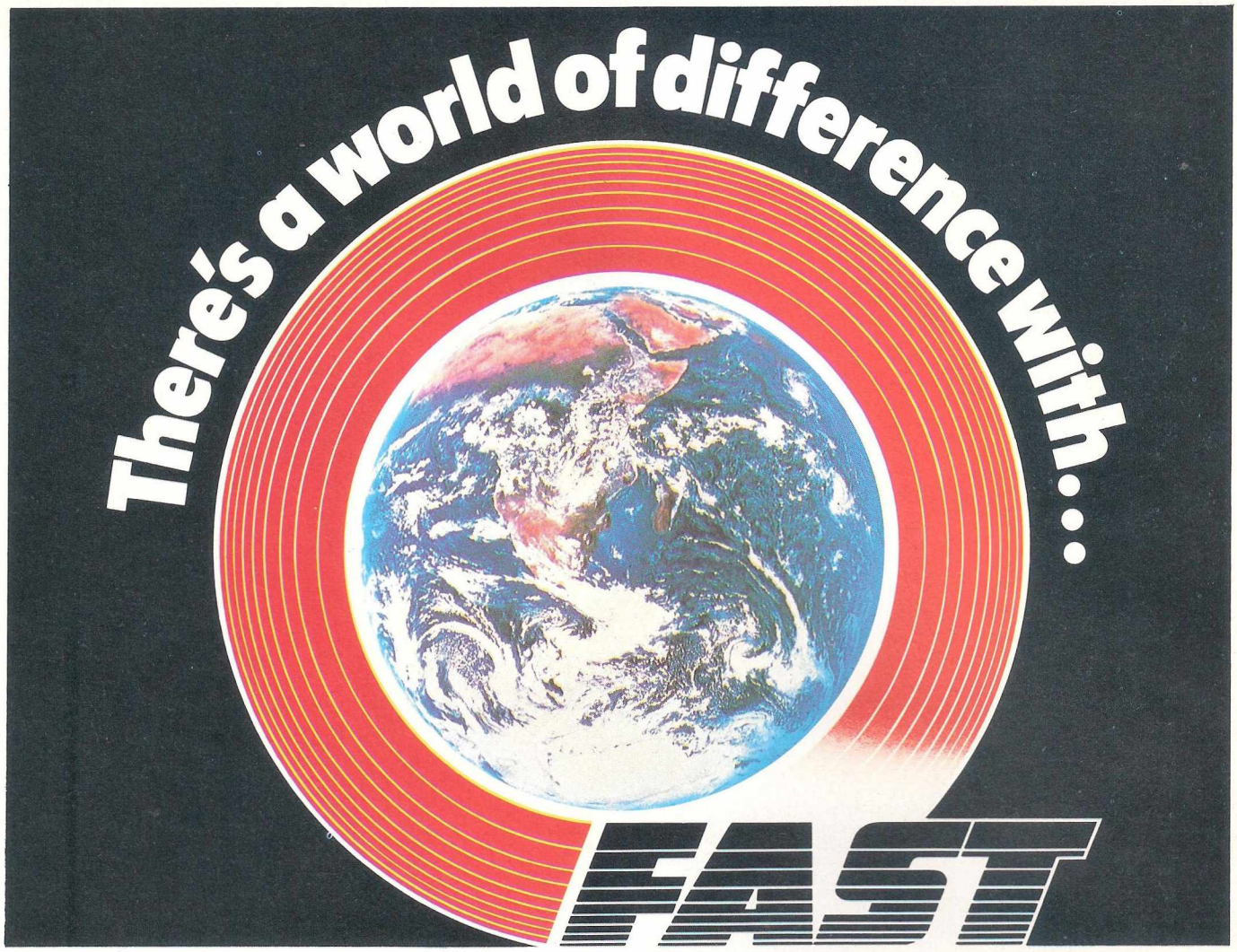
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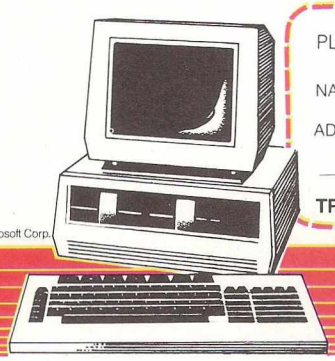

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CP/M 80 for the Sirius 1 and the PET

Sirius 80 Card

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- The card simply plugs into any one of the four internal expansion slots and comes complete with a disk containing all the usual CP/M utilities.
- By typing a single command, the system can alternate between CP/M 80 and CP/M 86. Files generated under either CP/M are identical in structure, providing file compatibility between operating systems.
- The card also has a Corvus hard disk interface allowing the CORVUS range of Winchester drives to plug directly into the SIRIUS.
- Z80 4 or 6 MHz with no wait states.
- 64K RAM. Corvus hard disk interface.

Sirius 80 card (4 MHz)..... £299.00
Sirius 80 card (6 MHz)..... £335.00

Softbox

Simply by plugging the SMALL SYSTEMS SOFTBOX into the PET IEEE port and loading the CP/M disk, the PET will run under the world's most popular disk operating system, CP/M™. No internal connections or modifications to the PET are required.

Application packages designed to work with specific terminals (e.g. Lear Seigler ADM3A, Televideo 912 or Hazeltine 1500) will need no modifications to work with the PET screen, as the SMALL SYSTEMS SOFTBOX allows the PET screen to emulate any of these devices.

- Full 60K byte RAM
- CP/M version 2.2
- Z80 CPU running at 4 MHz with no wait states

new low prices!

Softbox..... £495.00
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STAND ALONE CAPABILITY

The Softbox, in conjunction with a standard VDU, will operate as a stand alone CP/M system with built in IEEE-488 interface operating with .5 MByte floppy storage or up to 80 MBytes of hard disk storage.

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5 MB Corvus Drive..... £2295.00
10 MB Corvus Drive..... £3595.00
20 MB Corvus Drive £4495.00

CP/M Software

LANGUAGES

ALGOL-60 (Research Machines) £130/£20
ALGOL is a powerful block structured language featuring economical run-time dynamic allocation of memory. The compiler is very compact (24k) and supports almost all Algol 60 report features.

C COMPILER (BD Software) £80/£15
This compiler supports most major features of the language including structure, arrays, pointers and recursive function evaluation. The compiler produces compact, relocatable 8080 code for use with the linker and library supplied.

CBASIC Compiler Systems £75/£12
This is a non-interactive BASIC used by many business application programs, It supports full file control chaining formatted output and random disk file access, 14-digit arithmetic WHILE/-WEND and optional line numbering.

C COMPILER (Whitesmith's) £455/£25
This compiler conforms to the full UNIX version 7 implementation of the C language, which has more facilities than Pascal or BASIC and produces faster code.

S-BASIC £195/£20
A structured BASIC compiler generating 8080 native code, combining structured programming and the speed of machine code while maintaining the convenience of BASIC.

BASIC-80 (Microsoft) £175/NA
This is Microsoft Extended BASIC interpreter, version 5. It is a powerful, ANSI compatible disk BASIC with many features not found in PET BASIC, such as WHILE/WEND, chaining, variable length file records, double precision floating point, PRINT USING facility, error trapping, hexadecimal numbers and more.

BASIC COMPILER (Microsoft) £205/NA
This compiler is language compatible with the Microsoft version 5 interpreter but generates 8080/Z80 machine code, so that program execution is typically 3 to 10 times faster.

COBOL-80 (Microsoft) £375/£20
An ANSI '74 COBOL compiler producing relocatable modules compatible with FORTRAN-80 or MACRO-80 output. COBOL-80 has a complete ISAM facility and interactive screen handling.

CIS-COBOL (Microfocus) £425/£30
An ANSI '74 standard COBOL compiler fully validated by U.S. Navy tests to ANSI level 1. The compiler also supports many features of level 2 including dynamic loading of COBOL modules and a full indexed Sequential (ISAM) file.

FORTRAN-80 (Microsoft) £230/£20
The popular science and engineering language, complying with the ANSI '66 standard (except for the Complex data type), with enhancements such as mixed mode arithmetic.

PASCAL/MT+ £375/£20
A Pascal compiler meeting the ISO standard, with many enhancements including full string handling capability and random access files.

PASCAL/M £220/£15
This compiler produces p-code and is an extended implementation of standard Pascal, with long (32-bit) integers, a SEGMENT procedure type (for overlays) and an added string data type.

PASCAL/MT £160/£20
This is a subset of standard Pascal, which generates ROMable 8080 machine code and supports interrupt procedures, CP/M file input/output, and assembly language subroutines.

PASCAL/Z (Ithaca Intersystems) £225/£20
A compiler producing ROMable, re-entrants Z80 micro-code highly optimised for speed, supporting variant records strings CP/M file input/output, and assembly language subroutines.

PRO PASCAL £190/NA
This Pascal Compiler implements the full proposed standard with improvement extensions such as random access files, strings and program segmentation. Pro Pascal is designed specifically for the Z80 and produces relocatable machine code which is very fast and compact. A linker and cross-reference generator are provided, and Pro Pascal object code may be used in READ only memory.

muLISP £110/£15
LISP is an interactive programming language widely used for artificial intelligence applications.

PL/I-80 (Digital Research) £325/NA
A general purpose application programming language giving mainframe capability for developing large-scale structured programs in a microcomputer environment.

TINY C TWO £130/£30
A compiler written in TINY C. The source code is included on disk.

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WORDSTAR (MicroPro) £255/£35
A powerful screen-oriented word processor designed for non-technical personnel. Text formatting is performed on the screen, so that what you see is what your print-out will look like. WORDSTAR'S advanced facilities include justification, pagination, underscores, boldface, subscript and superscript, block movement of text.

WORDINDEX (MIDAS) £150/NA
A program to assist WORDSTAR users by generating a table of contents and index from a WORDSTAR document.

MAILMERGE (MicroPro) £80/£15
MAILMERGE is an add-on utility for WORDSTAR users allowing the production of personalized form letters or other documents from a mailing list made using DATASTAR or NAD. Requires WORDSTAR.

MICROSPELL £165/NA
This is a spelling help program which scans through a document file stopping at each dubious word, offering correctly spelt alternatives and allowing you to correct the word with a keystroke.

TELECOMMUNICATIONS

BSTAM £115/NA
This telecommunications utility permits any type of CP/M file to be transferred to or from another computer also equipped with BSTAM. Transmission occurs at full speed with CRC error checking and automatic error recovery.

BSTMS £115/NA
An intelligent terminal program permitting communication with a mainframe computer.

NUMERIC PROBLEM SOLVING TOOLS

T/MAKER II £185/£15
An advanced utility for preparing management reports with tabular data, combining visual calculator with a full screen editor.

MICRO MODELLER £595/NA
The number one Financial Modelling and forecasting program.

ANALYST (Structured Systems Group) £130/£15
A customised data entry and reporting system in which the user specifies up to 75 data items per record, and can use interactive data entry, retrieval and update facilities to make information management easy.

muSIMP/muMATH £140/NA
A package of programs including muSIMP, a high level programming language for symbolic and semi-numeric processing, and muMATH, an interactive symbolic mathematics system written in muSIMP.

STATPAK £260/£20
A professional statistics and probability package which can rapidly handle large files of data.

DATA MANAGEMENT SYSTEMS

dBASE II £385.00
An interactive relational database management package with full screen formatting and its own fully structured high level command language. Interactive data entry and Validation with WordStar-like commands. Allows you to develop application packages in days rather than months.

MDBS £675/£30
Micro Data Base System is a full network data base with all the features of HDBS, with fixed or variable record length, read/write protection at the ITEM, RECORD, SET and FILE levels.

LANGUAGE APPLICATION TOOLS

FORMS 2 for CIS Cobol £120/NA

FABS £115/£15
FABS gives you rapid access to large data files by using balanced tree structures containing up to 65,000 records. Instructions are included for use with CBASIC2, S-BASIC, BASIC-80, BASIC compiler, PL/1-80, Pascal/MT + and FORTRAN-80.

M/SORT FOR COBOL-80 £130/£12
A record sorting utility for COBOL-80 conforming fully to the ANSI '74 level 2 sort/merge standard (except for alphabet name collating sequence).

SYSTEM TOOLS

CROSS ASSEMBLER £95/£10
XASM 05, 09, 18, 48, F8, 65, COPS 400 and 51
Cross assemblers for the Motorola 6505, Motorola 6809, RCA 1802, Intel 8048, Motorola 6800, Fairchild F8, MOS Technology 6502, National Semiconductor 400 and Intel 8051 families.

BASIC 48 - Enhanced Basic Compiler £195/£10
Produces highly optimized assembly source for 8048 family. Includes XASM48.

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READ/WRITE

Birdbrain

Dear Sir,

For your collection of computer languages. To get the full flavour of the last two, try looking up the entries in the Reader's Digest 'Book of British Birds'...

MEWS	for gullible teachers...
LOREAN	for gull-wing entrepreneurs...
BACH	for aerobatic seagulls, I presume...
HERRING	for scavengers...
SKUA	for software pirates...
PUFFIN	for computer salesmen...
RAZORBILL	for editors...

Michael Fancourt
Lymington
Hants

Ed – OSTRICH for non-computer owners?

Polyglot

I liked your article on specialised computer languages, but I was disappointed that you didn't mention my world famous language and games generator program. The – 'Definitely no more after this one' – one. I spent nearly a week one afternoon, writing this program, and I can confirm that T.D.N.M.A.T.O.O. is the ultimate computer program, suitable for anyone – anywhere – anytime.

Once in operation, T.D.N. etc, asks the operator several highly personal questions about their sexual habits and stores the responses in a Blackmail file for future reference. The main part of the program will then generate specialised languages and/or games tailored to your particular (or perhaps peculiar) requirements. I'm not about to reveal what answers I gave to the initial questions, but here is a selection of the languages and games that I was presented with:-

PAWSON	A language for family pets to use (comes complete with a modification to change your keyboard to two large keys).
REGOL	A language for Royal persons only.
PDQRSVP	A very high speed word processor.
BEETOL	For fans of Rock Music
PAPOL	For writing Catholic sermons

A new version of an old Russian language primer is KABOL, but this is still in the testing stage.

T.D.N. etc. will also develop related families of languages, to provide smooth coverage over a wide area of application. A good example of this is the Languages of Ascending Age, Family – (L.A.A.F.).

NATL – SWODL – RATL and TODL, for the very young.

MODL and WOGL, for pre-teenage children, and the teenage and adult group starts with SNOGL, and GRAPL leading on to MATERNL and HASSL, and continuing with CHAPL and BATL. These will last most of an adult's life until gradually the final group will be phased in – SHAMBL – FATL and finally BERYOL.

Another group is the Languages for Intelligent and Aspiring Radical Speakers, (L.I.A.R.S.) specifically designed for Politicians of all parties, these are:-

SKWOBL – GARBL – KAKL – PRATL – BABL – SKANDL – RADIKL and LIBRL (this last one used the new CP/M routine DOUBLSPK) and in extreme emergency – PANIK – FRANTIK and BLAME.

Here is a selection of individual languages produced by T.D.N. etc.

OATH	for Judges
THINK	for Swimmers
WRITHE	for Sex Maniacs
FALLIC	for Feminists
SITT	for Veterinary Surgeons
SKARGOL	for Miners
COFFIN	for Smokers
TWIST	for Casino Dealers
PYLON	for Haemorrhoidal Electricians
TRAGIC	for Hypochondriacs
REPEAT	for Gourmets
FABOL	for Universal excuse generator
SPAM	for World War II Historians
HAGL	for Salesmen
ARABOL	for Owners of American Cars
CYCLE	for the Unemployed
HOVL	for Building Society Managers
SNEER	for Bank Manager, and finally
PLONK	for Wine connoisseurs

While I have not had the time to test all of them (I'm not allowed anything sharp where I live,) the games generated by T.D.N. etc., do have some interesting scenarios:

SMAKMAN	A lively game for Sadists, requires a leather and rope interface
CHANNEL No 4	A gentle game for insomniacs, played in the evenings
AFFAIR	A game for more than one player (requires at least one joystick)
TANDY	Haven't tested this one yet, but I understand that it involves long communications with a brick wall

I hope you find these interesting and informative. Let me assure you that I shall continue to read your magazine, even if I don't win the coveted Space Invader Badge – although in that event, I might be too disappointed to cancel the subscription I have placed for you with the All England Plastic Surgery Clinic run by Hairy Larry and Knuckles Simpson (who, incidentally, use a TRITON programmed in THREATON to drive the latest DUFFUP Robot!).

Jim Bates
Wigston Magna
Leicester

VERBOS – for long-winded authors?

No Cowboys in Texas?

Dear Sir,

In reply to Mr. P. Lians' letter concerning the TI99/4A, machine code is available on the TI, but at a price i.e. 32K RAM, disk drives etc. You also need a good knowledge of the TMS 9900 processor.

With reference to Texas being a staid and reputable company, this is a good thing, because it keeps the cowboy's out, which is a big fault with many other home computers and quite a few business systems.

Another thing a lot of people say is that there are not many programs for the TI99/4A. Well, Texas now produce a small booklet listing some 680 programs. Also, the TI is the fastest selling micro in the USA, which could be one factor why there are not many in the UK.

N.C. Clemons
Coventry
West Midlands

Texas Instruments being a large company, it is extremely difficult to get figures for current sales and installed units – we wonder on what evidence you are basing your statement about the USA. Nevertheless, our own sources in the UK indicate that sales have probably multiplied by a factor of ten since the £50 cash rebate scheme was announced. Not all retail outlets appear to be aware of this scheme, but if you can prove you bought your TI99/4A over the Christmas period, Texas will refund you £50 off the purchase price.

Mini Review

Programming the PET/CBM by Raeto West is the best thing written on PET to date, by a long shot! Its over-500 pages include a complete table of contents as well as an 8-page index. There are 17 chapters plus 10 useful appendices. It is not the choice for a first book for a beginner, but it manages to cover thoroughly all the areas that any semi-accomplished hobbyist might want to know about. Listings are all legible (one

READ/WRITE

The Editor welcomes your letters, but if you require a personal reply please enclose an S.A.E.

has to comment on this these days), and errors are negligible. The author says, "The purposes of this book are to teach competent programming and provide a comprehensive reference text on the PET/CBM range of microcomputers." He does not attempt to cover VIC or any of the forthcoming new models. (Publication date was January 1982) Again he says, "CBM's product manuals are widely recognized to be unhelpful; this is one of the reasons for the existence of this book". It is the first book to include comprehensive coverage of the CBM disk systems (54 pages), and I could recommend its purchase for this reason alone. There are many references to other books and magazine articles scattered throughout the text, wherever extended reading might be desirable. Quotations from Anon and other authors are occasionally used as paragraph headings to set the tone of what is to follow. 'We found most of Blanksoft's programs were execrable', is a typical example.

If you were afraid that this book might turn out to be only a rehash of data available elsewhere, be otherwise advised! There is much original material as well as intelligently structured discussions of material which has been badly handled in other publications. Looking for an example of the former type, I opened the book at random and found a design for a guard to protect the STOP key, but allowed it to be pressed by a pencil point. Flipping a few pages, I came across a program to enable the user to define his own keyboard labelling. The program loads and protects itself in high memory, and is given for BASIC 1, BASIC 2, and the 8032. Again, anyone like myself who has made a few unsuccessful stabs at learning to program in Assembly could hardly do better than to study Chapters 11 and 12 plus the appendices, which provide a comprehensive set of tables of reference for the 6502 microprocessor.

The only area where you might require another text is that of interfacing to other non-Commodore equipment, although West gives some good advice and caveats about printers. A book which fulfills this need is *PET Interfacing* by Downey and Rogers, published in the US by Howard W. Sams. I am speaking now of filling the needs of an experimenter or designer of electronic equipment who wants his black box to giggle when the PET says 'giggle'. If you don't fall into that category, *Programming the PET/CBM* will cover all your requirements.

Lindsay Doyle
Salmon Gums
W. Australia

Points of View

Dear Barry Took,
We all thought that 'Inside Information' (BBC 2 29th November) was absolutely fab – well done BBC!

Why can't we see more of that gorgeous Richard Pawson on the telly instead of the same old faces? Surely the extra expense is worth it?
Yours devotedly

Christine Letcher and
Joanne Diffley
Yateley
Surrey

Financial Planning!

Dear Sir,
I read your article in *MicroComputer Printout* with great interest. As an accountant I am looking for a software system which will produce financial accounts for our clients. I have just bought a 'BBC Micro-B Model' primarily for home/children education but eventually for business use! I intend to buy peripherals as and when needed.

I worked in the recent past for a firm which had employed a computer with disks for each client which worked very well, even though it required a summary of the books and entry of special forms on the computer. The only saving achieved was typing and checking the final accounts. At present I work for a small firm preparing accounts for partnerships and small companies.

I would appreciate your comments on the following:-

1. Is it possible to produce final accounts, nominal accounts, cash etc. using 'Spreadsheet'?
2. Is it possible to key in direct from prime documents i.e. voucher, invoice and book summaries with the computer?
3. Which 'Spreadsheet' would you recommend for use in an accountants office?
4. Would the implementation of a more advanced computer language be more appropriate than BASIC?

Please find enclosed SAE and £1 contribution towards this weekend's beer!

H Nasralla
New Mills
Stockport

Let's establish here and now that bribing the Editor with used green ones, does not guarantee a quicker or more detailed reply. That requires blue and brown notes. OK?

Yes, it is possible to do the calculation *involved in management accounts, P and L and Balance sheets using a 'Spreadsheet'. But you can't use it for storing individual transactions i.e. as a ledger. A spreadsheet is nothing more or less than a single, but large sheet of paper, ruled in columns and rows in which all figures which depend on other figures, are automatically calculated.*

We're not sure quite what you mean in question 2 – since figures for management accounts usually come from ledgers rather than individual documents. We recommend that you spend some time at a local computer store, getting familiar with the various packages on the market.

All spreadsheets are designed for financial calculation, but you should choose the one which you find easiest to work with. Upmarket packages such as Micromodeler *have the facility to consolidate several sets of accounts into one.*

Unless you intend to write your own programs, the resident language in a computer is irrelevant. Sophisticated programs like spreadsheets are often written in machine code.

Course Tutor

Dear Sir,
I am currently taking an Accountancy course. I would like to purchase a Home Computer so that I could practice my accountancy skills and become accustomed to computers.

It would be helpful if the computer could do things like Invoicing, Price Lists, Payroll, etc.

My price limit would be about £300 inclusive. It would be better if the software programs are readily available for the uses I require.

R. Tyler
Ashingdon
Essex

Applications which involve a large amount of stored information, such as Payroll or Book Keeping, would dictate a floppy disk based system, which you won't find within your budget.

Your best bet is to go for a machine with plenty of on-board RAM memory, and with facility to add disk and printer at a later date if required. The Lynx and Commodore 64 both warrant further investigation, and you would be able to use a 'spreadsheet' program for many accounting functions, or a 'database' to do price lists and a rudimentary payroll. In the coming months, both machines will be able to run CP/M on disks which would give you access to all the most popular accounting packages.

INTEREST FREE

On Atari, VIC 20, Commodore 64 and

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

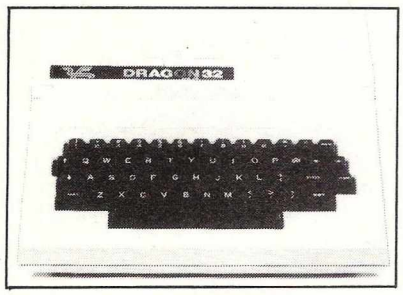
You pay 10% down, then 10% per month for a further nine months (to nearest penny). Example: VIC20 Colour Computer. Cash Price £169.99. Credit terms: £16.99 down then £17 per month for nine months: Total £169.99. Credit quotations on request.

THE NEW COMMODORE 64

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

(AF56L) Only £339.00

DRAGON 32



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

THE AMAZING ATARI COMPUTERS

4 Consoles Available:

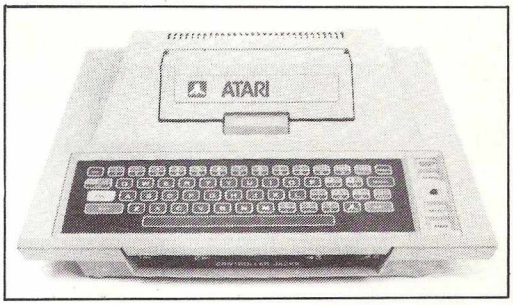
Atari 400 with 16K RAM (AF36P) £249.95

Atari 400 with 48K RAM (AF37S) £319.00

Atari 800 with 16K RAM (AF02C) £399.00

Atari 800 with 48K RAM (AF55K) £440.00

★All above with BASIC & handbooks



Other hardware:

Cassette Recorder	(AF28F)	£50.00
Disk Drive	(AF06G)	£299.95
Thermal Printer	(AF04E)	£265.00
Epson MX80T Mk III	(AF38R)	£399.95
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Floppy Disk	(YX87U)	£2.50
Le Stick	(AC45Y)	£24.95
Joystick Controllers (Pair)	(AC37S)	£13.95
Paddle Controllers (Pair)	(AC30H)	£13.95

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

JOIN THE U.K. ATARI COMPUTER OWNERS' CLUB

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

THE FINEST SELECTION OF ATARI SOFTWARE

Teach-Yourself Programs

Conversational French	-5C-16K-YG44X	£39.95
Conversational German	-5C-16K-YG45Y	£39.95
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Kids 1 (3 Programs)	-1D-24K-BG01B	£9.95
Kids 2 (3 Programs)	-1C-16K-BG02C	£9.95
Kids 2 (3 Programs)	-1D-24K-BG03D	£9.95

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Invitation To Programming 1	-1C-8K-YG43W	£15.95
Invitation To Programming 2	-2C-8K-BQ67X	£22.95
Invitation To Programming 3	-2C-8K-BQ68Y	£22.95
Basics Of Animation	-1C-16K-BQ57M	£11.95
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Player Missile Graphics	-1C-32K-BQ59P	£18.95
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Display Lists	-1C-16K-BQ51F	£11.95
Display Lists	-1D-24K-BQ52G	£11.95
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Page Flipping	-1D-24K-BQ56L	£11.95
Sounds & Music	-1C-16K-BG04E	£11.95
Sounds & Music	-1D-24K-BG05F	£11.95
Tricky Tutorials	-3C-32K-BG06G	£59.95
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Visicalc	-1D-32K-YL39N	£119.95
Atari Word Processor	-1C&3D-48K-YG42V	£99.95
Text Wizard	-1D-32K-BQ99H	£69.95
Mini Word Processor	-1C-32K-BG08J	£11.95
Mini Word Processor	-1D-32K-BG09K	£11.95
Calculator	-1D-24K-YG50E	£16.95
Graph-It	-2C-16K-YG51F	£13.95
Statistics	-1C-16K-YG52G	£13.95
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Mortgage & Loan Analysis	-1C-16K-BQ66W	£13.95
Bob's Business	-1C-32K-BG11M	£9.95
Bob's Business	-1D-32K-BG12N	£9.95

Adventure Games

Galactic Empire	-1C-32K-BQ14Q	£14.95
Rescue At Rigel	-1C-32K-BQ21X	£22.45
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Star Trek 3.5	-1C-32K-BQ15R	£14.95
Star Trek 3.5	-1D-40K-BG26D	£18.95
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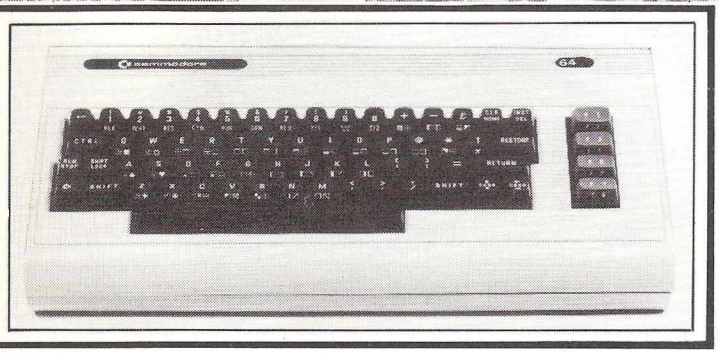
Arcade Games

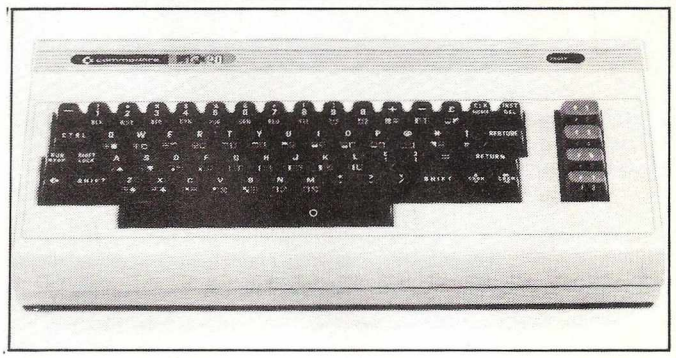
Star Raiders	-1E-8K-YG66W	£29.95

CREDIT

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

Dragon 32 computer hardware





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Shooting Arcade	-1D-16K-BG16S	£24.95
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Matchracer	-1D-16K-BG32K	£23.95
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Jawbreaker	-1D-32K-BQ26D	£20.64
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Time Bomb	-1D-24K-BG41U	£12.95
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Ricochet	-1C-16K-BG47B	£14.95
Ricochet	-1D-32K-BG48C	£14.95
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Gomoku	-1C-16K-BQ18U	£14.95
Gomoku	-1D-16K-BG55K	£19.95
Reversi	-1C-16K-BQ19V	£14.95
Reversi	-1D-16K-BG54J	£19.95
Cribbage & Dominoes	-1C-16K-BQ43W	£14.95
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Poker Solitaire	-1D-16K-BG53H	£14.95
Blackjack	-1C-8K-YG62S	£9.95
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Assembler Editor	-1E-8K-YG68Y	£39.95
Macro Assembler	-1D-32K-BQ73Q	£59.95
Basic A+	-1D-48K-BQ31J	£49.95
Basic A+ & Operating System A+	-1D-48K-BQ32K	£99.50
Microsoft Basic	-1D-32K-BQ74R	£59.95
Pilot (Educator)	-1E & 2C-16K-BQ75S	£79.95
Pilot (Consumer)	-1E-8K-YG69A	£54.00
QS Forth	-1D-24K-YL29G	£49.95
Tiny-C	-1D-48K-BG62S	£64.95
Inter-Lisp/65	-1D-48K-BG61R	£87.00

Utilities

Programming Aids Package 1	-1C-16K-BG60Q	£ 9.95
6502 Disassembler	-1C-8K-YL30H	£9.95
6502 Disassembler	-1D-8K-YL31J	£12.95
Atari World	-1D-40K-BQ27E	£43.95
3D Supergraphics	-1C-40K-BQ29G	£29.95
3D Supergraphics	-1D-40K-BQ28F	£29.95
File-It 2	-1D-48K-BG10L	£34.95
Filemanager 800	-1D-40K-BG59P	£72.80
K-DOS	-1D-32K-BQ76H	£49.95
Disk Manager	-1D-32K-BG58N	£21.80
Disk Detective	-1D-16K-BG57M	£24.95
Operating System A+	-1D-32K-BQ30H	£49.95
Telelink	-1E-8K-YG59P	£21.50
The Next Step	-1D-32K-BG64U	£27.54

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De Re Atari	-WG56L	£16.95
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Note: Order codes shown in brackets. Prices correct at time of going to press. (Errors excluded).

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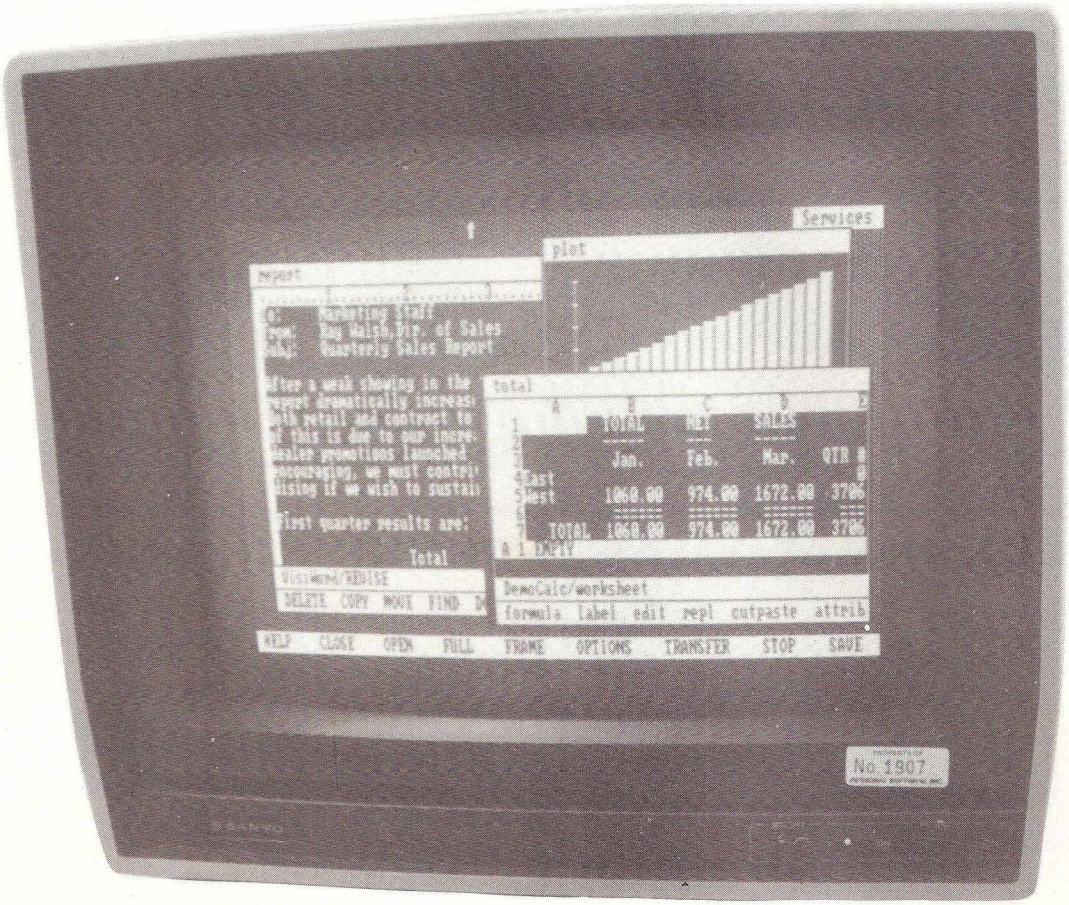
VisiON in Vegas



The VisiON screen showing the command bar and three concurrent applications

Las Vegas. The Strip. Napoleon Solo and Illya Kuryakin are slogging it out with assorted baddies on the forecourt of Ceasar's Palace.

Twelve stories above them a tall figure watches the film making with amusement. Turning away from the window he sits down at a computer system somewhat more sophisticated than anything the Men from UNCLE will have to contend with.

Terry Opdendyk moves a small box called a mouse across the table top. As he does so an arrow swings across the screen in the corresponding direction. Bringing it over the command bar at the bottom he punches a button on the mouse and immediately a box springs into existence on the screen.

The man is Terry Opdendyk, President of VisiCorp, begettors of *VisiCalc*, *Visiplot*, *VisiTrend*, *Visi etcetera*. He is using *VisiON*, a new operating environment that will take the world's computer industry, assembled in Vegas for the COMDEX exhibition, by storm.

Metaphor

VisiOn is a new standard for personal computer programs, and one that will allow the user to work with several applications at once. "The beauty of *VisiON* is that it allows you to work with a computer as easily as you would work with papers on a desktop. In fact, we have taken the desktop as a metaphor and recreated it on the screen," he explains.

Instead of displaying a single application, VisiOn can show any number of documents as windows on the screen, easily passing information between them.

With a few practised movements of mouse and keyboard, Opdendyk has recalled the spreadsheet program he was working on. Next he activates the word processing program and starts composing a memo about the figures he has just calced. He pauses.

A third window is opened and a graphics program is loaded. In moments it is plotting a bar chart based on the monthly results displayed on the spreadsheet window. As long as there is sufficient RAM, *VisiOn* places no limit on the number of applications windows that can be displayed simultaneously, overlapped or shrunk down as space requires. To Terry Opdendyk, *VisiON* is the realisation of a dream.

To me *VisiON* is intriguing. Ever since a visit to Xerox's Palo Alto Research Centre, otherwise knows as the Shy Institute, in the late '70s, I had wanted an *Alto*, the prototype user-friendly computer. It was at PARC that the mouse was born, the SMALLTALK language to which the now fashionable LOGO owes so much, and many of the concepts that Terry has been demonstrating. To the outsider, Xerox's failure to make these facilities available to anyone not possessed of the £11,000 that their Star work station costs (and that's just *one* work station in a network system) remains an enduring mystery.

Stolen Thunder

According to our worm within Apple, that company's long awaited LISA computer will incorporate the Mouse and many of the same concepts. But if Apple spokesman Stan de Vaughan was irritated by yet another press enquiry as to whether *VisiON* had stolen LISA's thunder, he wasn't showing it: 'A rather limited version of one aspect of one of our forthcoming products' was

by Julian Allason

his official comment.

Digital Equipment Corporation, the world's largest minicomputer manufacturer seemed happy enough with *VisiON*. "In fact we are real pleased with it," said DEC's Al Hueffner. "It seems to have about 70% of the Star's capabilities at a fraction of the price."

What price? Ah well, that was for VisiCorp to say. DEC, however, would be incorporating *VisiON* into the top end of their microcomputer range, on the grounds that you needed a Winchester disk to really get the system dancing.

Terry Opdendyk wasn't being drawn on what it would cost, either. "It will be aggressively priced because we want to establish a standard. A world standard for microcomputer software." According to Silicon Valley speculation, aggressive equals $300.

In fact there will be several ways of obtaining *VisiON*. Some 60 hardware manufacturers – like DEC – and OEMs are evaluating it with a view to taking out a licence that would enable them to incorporate it into their own systems software. It should perhaps be explained that *VisiON* is not an operating system, but an operating environment which sits between the operating system and the applications programs. For this reason, with minor tweaking of the VisiHost program concealed within it, *VisiON* can run with virtually any operating system, including a concurrent one like Concurrent CP/M.

In fact, *VisiON* already includes a limited degree of concurrency, since it allows output to a printer at the same time as it is processing on the screen. Combine it with Concurrent CP/M and you would be getting pretty close to my ideal system – but then I haven't benchtested LISA yet (*You must have been the only person in Las Vegas who hadn't – Ed*). (No, the others were just b*llsh*tt*ng – JA).

VisiCorp themselves plan to offer *VisiON* as a stand-alone package at the 'aggressive' (? $300) price for users to convert existing applications programs. Alternatively one will be able to trade in any existing *Visi* products for *VisiON*-linked versions of the same software. These, covering spreadsheet, database management, graphics and word processing applications will be available this summer from dealers.

What will be interesting to see, is how many independent software vendors follow suit. With VisiCorp offering software houses licenses at only nominal cost, it is an option that they would do well to consider.

VisiCorp are far from being the only people to whom has occured the idea of having more than one document on the screen at once. Apple's announcement of its LISA computer, expected imminently, is likely to disclose details of a comprehensive system that will represent a major step forward in user friendliness. Meanwhile Context Management Systems of 23864 Hawthorne Boulevard, Torrance, CA 90505 (tel: 213-378-8277) are advertising – but have not yet delivered – the MBA system.

Adopting an approach midway between the applications environment offered by VisiCorp and the *Silicon Office* and *Administrator* integrated applications packages available here from Bristol Software Factory and SoSoft, Context MBA combines spreadsheet, graphics, word processing, database and communications functions into a single program. These five functions allow the creation of a giant spreadsheet of figures and text with Search and Sort models to identify quickly the information you need. Pi, Bar, Line and Area graphs can be generated from data contained in the spreadsheet. This information is similarly accessible to the word processor so that tables of numbers and graphs can be inserted anywhere into a document.

Information can be drawn from the built-in database or, using the communications function, derived from remote mainframe computers. There is a promise too of electronic mail.

Bosses within the two software industry giants, Microsoft and Digital Research, confirm that they too have user friendly application environments under development, although neither company is prepared to go on record until development work is completed.

Using VisiON

VisiON on IBM Showing Mouse

To ensure that VisiON-linked programs are easy to use, each application has a consistent user interface, so that once you have learnt to use one, each succeeding application can be learned even faster. Data developed in one application can easily be transferred to another.

To keep matters simple the computer is operated with only 9 English commands and the 'Mouse' pointing device. With applications displayed as individual windows on the screen it is possible to pass the results from one to another. This is analogous to working at a desktop with a set of papers or files that can be placed, and worked on, side by side.

Moving the mouse and its screen cursor to a particular window, and then pressing the select button on it, causes that application to be selected automatically. Data from any previous applications is saved and stored, ready for resumption of processing whenever the user selects its window again.

The nine English langauge commands are displayed on a command bar always present at the botton of the CRT screen. Perhaps the most important of them is ***Help.*** *This can be invoked at any time, in any application by moving the cursor to it and pressing the select button.* ***Help*** *then displays a screen window showing various options open to the operator and their use.*

To create a new window, the user selects the ***Open*** *command. Once finished and ready to remove that window from the screen, the user simply selects the* ***Close*** *command from the command bar. Closed windows are listed in the upper right hand corner of the screen, and can be re-opened by moving the cursor to that list and selecting the desired window.*

The ***Transfer*** *command permits data to be transfered from one application to another when the user points the mouse to the data that is to be moved, and then again to its desired location.*

Windows can be framed, expanded, reduced and positioned with remarkable ease using the ***Frame*** *command and the mouse to establish the window's positioning on the screen. If this has to be done regularly, each step in the operation can be grouped under one macro command, called* ***Scripts****, and invoked using just that command.*

I found that one of the most useful features of VisiON was the function bar that appears at the bottom of each window listing that application's commands. Unlike most other pieces of software it is almost impossible to stall for lack of knowledge of what to do next; if the commands listed on the window's function bar are not immediately obvious, that application's own ***Help*** *facility can be invoked; this brings forth a much finer level of detail than the one on the main command bar at the bottom of the screen, and its contents are specific to that application.*

Using VisiON is a lot easier than describing it – take my word for it! ***J.A.***

Interview

Julian Allason talks to Chuck Peddle

Charles I. Peddle IV passed through the revolving door of the Dorchester Hotel at speed, propelling two startled Arabs into the arms of the commissionaire.

Chuck Peddle, father of personal computing, designer of the 6502 microprocesor, creator of the PET, founder of Sirius and now president of Victor Inc., had arrived. All activity ceased, as tail coated hotel managers cleared a respectful path through the lobby for the tanned, athletic looking figure in the cream three piece suit that is the badge of successful electronics tycoons and washing machine salesmen the world over.

Not an eyebrow was seen to twitch as the pair of pointed Texan boots landed on the Louis Quinze table with a thud.

Chuck, with statutory entourage of vice presidents and blondes, was in London on a fleeting visit to straighten out European distributors of his Sirius 1, and raise capital for financing the company's dramatic expansion.

The way Chuck tells it, Sirius Systems Technology was born in a bar over a brace of beers with fellow Commodore big shot, Chris 'Fun Boy' Fish. Funding for the enterprise came from their own life savings, personal investment by friends, and Victor United, an office equipment distributor owned by Walter Kidde Inc., America's 152nd largest corporation.

After a year of frenzied activity and buoyant European sales, the tiny Sirius company had become the tail vigo rously wagging an embarrassed looking Victor dog.

Now Sirius had taken over Victor and Chuck had installed himself as President, with a mandate to carry out his plan to turn it into the world's third largest computer corporation. By 1985.

★ ★ ★ ★ ★

Two years is a long time in electronics, but those who know the industry well remember how back in 1973 Motorola had hired one Charles I. Peddle IV to design their revolutionary 6800 microprocessor. It had sold for $200. Ten times too much in Chuck's view.

So he had left to join the then unknown MOS Technology, in Valley Forge, Pennsylvania. Here he would have a free hand to create his dream of a low cost CPU. The result was the 6502, a chip that has stood the test of time, and in various versions still drives Apple, PET, Atari and many other microcomputers.

One of the few to recognise the value of Chuck's work was Commodore boss, Jack Tramiel. Although Commodore were themselves nearly bankrupt at the time, Tramiel in a remarkable display of sleight of hand acquired MOS Technology, and with it Chuck.

On the long road west from Pennsylvania to Commodore's headquarters in California, Chuck ruminated on his latest idea, the implications of which not even he fully realised at the time: a *personal* computer. It was to be a system, which unlike the very first microcomputers, cats cradle kits of components soldered together by enthusiasts, would appeal to non-computer people. It would be sold fully assembled under the name *Personal Electronic Transactor*.

Chuck stopped off en route to discuss the project with his friend Bill Gates of the recently formed Microsoft company. Together they took the idea to Radio Shack, the Tandy people. Radio Shack turned it down.

Next, the two putative partners offered to buy out the fledgling Apple company for $100,000, the most they could scrape together. But Apple's two young founders wanted $150,000. Chuck continued his journey westward to join Commodore.

The prototype PET with its resident BASIC language, integral screen, cassette and calculator type keyboard drew more than 1,000 orders the first time it was shown publicly. Commodore was propelled into the limelight, and a profitability that persists to this day.

The relationship between Peddle and Tramiel did not, and Chuck left to form Sirius Systems Technology, persued by volleys of writs.

Chuck Peddle: Father of the personal computer

by Julian Allason

Now here he was in London beseiged by the City's money barons, falling over each other to press shekels into his hands. But Chuck wasn't talking money, least of all to the press. His mind was on other things.

At this point the going gets hard because there are probably less than a hundred people in the world who could sit down and discuss computer technology with Chuck Peddle as his equal.

To make matters worse, Chuck uses a sort of verbal shorthand that is simultaneously illuminating and obscure. And as one enraged interviewer complained, it is what he does *not* say that is interesting. And so it proved.

★ ★ ★ ★

Would the Sirius, conceived as 'compatible with IBM plus a whole lot more' be upgraded from its present 8088 to the more powerful 8086 processor? A big grin spreads over the Peddle visage. Sirius designer Bobby Taylor was already on record as predicting such a switch in the first half of 1983.

Chuck beamed and talked about tennis.

Would the change be totally transparent to the user, manifesting itself merely in faster memory access? Would he care to speculate about the four to six fold increase in power that might result?

Hell no. With the press doing such a good job of speculating for him, why should he intervene ...?

Networking now, that was a different matter. And one dear to the Peddle heart. The Sirius concept had always been of a stand alone computer, competitive enough and reliable enough to be used as an executive work station. One that would support a network.

Pause. Another grin.

Networks were the direction in which microcomputers must sooner or later evolve. They would be used to access high performance databases. In practice this would mean an executive being able to interrogate and update a living information system.

But what if executives didn't want to get linked in?

No access – no influence! Knowledge is power, especially in business.

When would all this happen?

Sooner than everyone thought. Sirius was getting there already, with the integral Winchester disk model for example. Ten megabytes of hard disk storage plus 1.2 megabytes of floppy disk backup built in. And the cost was – what? About £4,400 in the UK.

To make the network/ database concept happen a really friendly operating system was needed. It just so happened that Sirius people were working on that right now... Another grin.

Once that was available, some very interesting developments would transpire. Like voice mail, a verbal form of electronic mail that cut out the keyboard bottleneck.

Graphics, too, were a key to the future. That was why such high resolution graphics has been designed into the Sirius. As it happened he was about to announce a few software packages relating to that line of country.

To get the whole network show on the road a low cost work station was needed. The Sirius 1 had been designed with exactly that in mind. Take away the disk drives and what would you have? A powerful low cost work station ...

Corvus' *OmniNet* looked to be the right system. It was ready; it worked; it was cheap. Much cheaper than *Ethernet*. Of course, it would be great to go out and design your own network, but then there would be the problem of getting everyone to accept it as the standard!

What about UNIX?

UNIX is the Pascal of this year. Chuck does not have a very high opinion of Pascal, at least not as a panacea. UNIX is important. It has a place in the market, but it won't be an all purpose solution, any more than Pascal was.

UNIX will be available on the Sirius, and on an upgrade machine. Grin. But no-one should waste time waiting for it.

People buy Sirius because they know it will never be behind with the technology. They can count on Sirius being a leader in networks, speech high density graphics, and the ability to link them all together.

And with that he was gone in a flurry of Arabs and hotel managers. Like the Cheshire Cat, only the grin remained.

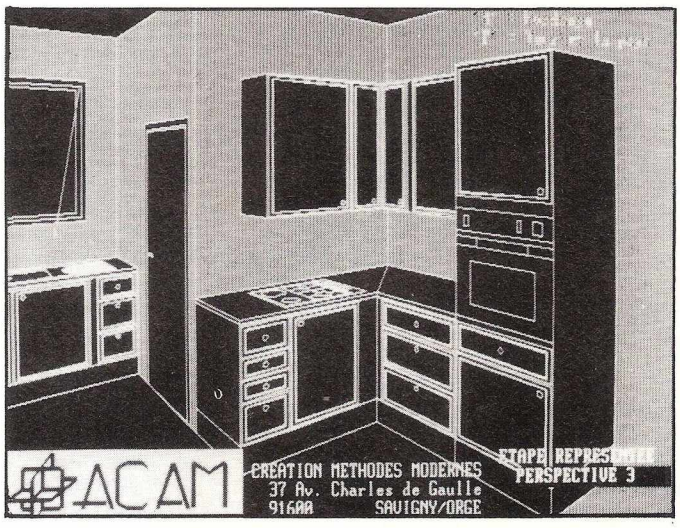
Unlocked at last – Sirius Graphics!

I knew it. No sooner had I delivered myself of a winge about the inability of BASIC type thicko programmers such as myself to manipulate the Sirius's superb high resolution graphics, than a Graphics Toolkit comes thudding onto the Editor's desk. I duly catch it in the neck on the grounds that I of all people ought to know what ACT had up their sleeve.

Well I didn't and woe is me. For the Toolkit looks like the answer to a maiden's prayer.

It comprises no less than eight modules including – and I quote – a GRAFIX KERNAL. Happily for all concerned it disappears into the operating system once loaded, giving you the ability to draw lines, circles, fill in and shade shapes, dump them out onto a high resolution printer or, alternatively, save the image onto disk.

Next comes GW BASIC, an extended version of the Microsoft BASIC interpreter which inserts a number of graphics handling characters into the language. For the clever clogs amongst us, its features include a built in full screen source code editor and audio support.



Example of the graphics possible with the new packages

Ever since Peter Jones told me about storing the entire contents of the Bible on his Sirius, I have had this desire to display old English letters on the screen. The Toolkit's character graphics function allows you to do just this; in fact you can design any special characters you want using a 16 x 10 dot matrix. Really serious Old English enthusiasts can create a complete new character set using EFONT.

The more software surprises one encounters, the more appreciative one is of Chuck Peddle's decision to make the Sirius completely soft. Now the *Toolkit's* KEYGEN enables us to reallocate all or any of the keys on the soft keyboard to other functions. So if you are desirous of changing the QWERTY layout to alphabetic you could do so. More usefully a variety of special functions can be coded into individual keys.

Finally, there is a routine that rejoices in the name of MODCON ...

The Graphics Toolkit costs £195 from ACT Sirius dealers.

Information Technology Minister Ken Baker inspects the new Stantec Zebra schools 'micro'

New Micro for Schools Shock

After lengthy deliberation the Government have selected a new microcomputer for use in schools. Information Technology Minister, Kenneth Baker, shown here inspecting the *Stantec Zebra* computer, says he expected the choice of a British system to create a number of jobs, many of them in his own constituency.

A spokesman for the Civil Service committee who have been evaluating the *Zebra* since 1955 described its ergonomics as 'unbelievable'. He said that although it was not as compact as the Sinclair Spectrum – the *Zebra* occupies 270 sq. ft. of space – it was a triumph of British workmanship which might well win an export order...

Unbelievable?

Exactly! But I have to report that we managed to get this column past the Editor, although to be fair it was a Monday morning.

The picture in fact shows *Nellie*, probably the oldest first generation computer to have been kept in regular commercial use anywhere in Britain. Built by Standard Telephone and Cable in the late 1950's, *Nellie* requires 3 Kw of power to heat up her 600 valves, and 21 fans to make sure they do not overheat. A further 4 Kw are required to enable her to do any sums when the high tension circuits are switched on; these give her the capacity of a small desk top micro of today.

The *Zebra* has a 33 bit word length, operation being entirely based on a magnetic drum rotating at 100 revolutions per second, 32 words per track, giving a word cycle time of about 312 microseconds. Not very fast when compared with your ZX-81: but the long word length enables a high degree of arithmetical precision to be combined with a multiplicity of switching operations that can take place in one word time.

Nellie started life as the main computer at the Woolwich Polytechnic before passing into the hands of Bruce Banks Sails Ltd., a small sail maker in Titchfield, where she gave sterling service until January 1981, when her programs were transferred to a microcomputer. Now *Nellie* is on her way back to her makers, Standard Telephone, where she will handle the company archives. Several pantechnicons were required to remove her multi ton weight.

I shall be awarding one of our celebrated and sought-after solid silver Space Invader badges and a year's free subscription to the reader who comes up with the best alternative caption for the picture. Maximum word length 100 words. Closing date February 4th.

Let's be having you.

CP/M Network

Ask a boffin to peer into his crystal ball and more than likely he will foresee a local area network. In fact there is so little disagreement about this that it is a wonder networks haven't made their presence better felt before now.

That could be about to change with the release of a debugged version of CP/NET, which enables microcomputers running the popular CP/M operating system to be linked together with coaxial cable.

Why link? There are two good reasons. The first is shared access to information, particularly relevant in the business context where several different departments might need to consult a master file of customer records, or to update a ledger system. As Chuck Peddle remarks in an interview elsewhere in this issue, "information is influence," without it the executive can quite literally be powerless.

The sharing of resources is another reason for going the network route. High capacity Winchester disks although expensive in themselves, provide a far cheaper means of storing data online than floppies, or even tape! And with a network the hard disk is just as accessible, even if it is physically remote.

Consider also such specialist peripherals as high resolution plotters, which although increasingly used in business and scientific applications, are still too expensive to justify siting one beside each workstation. Using a network that same workstation can dump data to a remote plotter as easily as if it were in the same room.

CP/NET is not the best, or even the best known, local area network system – yet. But the very success of CP/M, and CP/NET's compatibility with it must be considered major plusses. CP/NET will run on any 8088–, 8085–, or Z80 based system and can use virtually any network hardware to achieve network communication between computer systems. It also includes utilities for managing a network environment and – hear this! – handling electronic mail.

A further attraction will be that this new version of CP/NET provides CP/M with many of the capabilities of the multi-tasking MP/M II operating system. Boffins may like to note that these include support for shared files, record lock and unlock primitives, enhanced error handling and – importantly – password protection of files. As a result virtually all CP/M applications programs and indeed many MP/M II applications should run in the network environment.

Sensibly Digital Research have ensured that no modification to the existing CP/M disk, console and printer drivers are necessary. Only the network interface software has to be customised for the particular computer system and network hardware.

"CP/NET can provide the same support as a multi-user operating system with the added computing power of local CPU's," says Paul Bailey, director of Digital Research's European operations.

And that in a nutshell, is the point. Your dealer has the details.

Ace Poke

My cockles were warmed by news from a hitherto unknown organisation, called Remsoft, announcing the first software for the Jupiter Ace. It brought warm memories flooding back of those early days in personal computing when 4K was a lot of RAM. I quote:

"*Pica* is designed to run on the expanded 3K Ace. It disassembles ROM and RAM in decimal, hex, ASCII characters, and binary. 20 bits per screen. Single screen run on. Input start addresses in decimal or hex. *Pica* is available direct from Remsoft at £3.50 post paid."

Remsoft turns out to be Doug Bollen and John Noyce, two hotdogging enthusiasts who've started the National Jupiter Ace Users Club. The £7 per annum subscription promises three newsletters, advice and add-ons and – surprise, surprise – special offers on software.

Details from 18 George Street, Brighton. Tel: 0273-602354. As John Noyce remarks, "The Ace is a lovely little machine, but it will need utility programs for its current unexpanded 3K form, and much trial and error with add-ons before users can fully benefit from its uniqueness."

Just like the good old days.

by Julian Allason

Good Buys

One of the great mysteries of microcomputing is why Nippon Electric Corporation waited two years before releasing their colour microcomputers. The one I saw hidden away in a test site in Silicon Valley in 1979 only reached the shops here in late 1981, by which time much of its technological lead had evaporated.

Nowadays the NEC PC8000 is still a handsome system, and at a list price of £1700 it isn't bad value either.

Now, however, the Bonsai Computer Store at 112-116 New Oxford Street, London W.C.1. are offering that same CP/M system, comprising processor, keyboard, screen and two disk drives for just £1179 plus VAT.

A full word processing system including letter quality daisy wheel printer is selling for a fiver under the £3000 mark. I don't know how they do it, but it's got to be worth considering.

Another price cut which caught my eye was a reduction of the Atari 800 to £399.99 – about half its original price. Furthermore the new price now includes an Atari BASIC language cartridge as well as the self-teaching guide and BASIC reference manual.

VIC prices seem to have been drifting steadily downwards too, although no formal announcement has been made. The lowest price I've seen is £129.95 including VAT. That was in Boots.

Talking of the Commodore's VIC henchman, Mike Tomczyk, in Las Vegas, I was interested to hear that plans to terminate production have themselves been terminated. "We're making so much money from the VIC it would be silly to kill it off now," he told me. What you might call a chip off the old block.

NEC 8000 – a good buy this month

Two fingers from Desperate Dave

Stoppit, this very minute. If you don't, Desperate Dave Tebbutt will get very cross.

And in case you are wondering what it is that will attract the ire of DDT, I'd better warn you it's something that Terry Hope does late at night, and that the Editor does in bed. In fact most men do.

DDT thinks it could send you blind.

No – not *that*. He's talking about two finger typing, and he's determined to put a stop to it.

Touch 'n' Go is a new typing tutorial that aims to get you using all ten digits in just 24 hours. Based on the Harcourt keyboard method, the program, for reasons that are not entirely clear, comes in a pop record sleeve, on the back of which are written three simple instructions needed to get you started.

Desperate Dave's fellow director up at Caxton Software is Bill Barrow. Bill thinks that *Touch 'n' Go* should be shipped automatically with every microcomputer. "It's almost as essential as a printer cable...and about the same price – £25 plus VAT," he notes.

Although it's not intended for use by professional typists, Messrs Barrow and Tebbutt reckoned that by the end of the course you should achieve a speed of 40 words per minute, an alphabetic accuracy of 95% and a numeric accuracy of 100%.

Touch 'n' Go runs on 48K CP/M and MP/M systems. For more information let your fingers do the walking to Desperate Dave at Caxton Software Ltd., 10-14 Bedford Street, Covent Garden, London WC2E 9HE. Tel: 01-379 6502.

Two fingers indeed!

Into the third dimension

No company name is visible as we approach the double security fence. Our I.D. is checked twice by armed security men before we are allowed to approach the annonymous low building that sits within a local area network's throw of Stanford University and its Artificial Intelligence Laboratory. Nor do the windows give any hint of what lies within, for they are of mirrored glass.

The inside resembles a monastery in more ways than one. Young men, the light of private knowledge in their eyes, pass silently, with but a nod to acknowledge the rare intrusion of non-initiates.

We are led to a meeting room. Door, walls and ceiling are all of glass. You have the feeling of being watched. For furniture there is a glass table, four chairs of transparent plastic material, and a large video monitor connected to a point recessed into the black rubber flooring.

The feeling of intrusion is reinforced by our host, a short tubby man whose lack of hair is more than compensated for by facial growth. The combination of tonsorial effect and dark overalls lend him a deceptively monkish air.

"You understand that you may write about what you see, but that no notes or photographs may be taken, no names given." His voice, reflected around inside the glass box, has an unreal quality, as if transmitted over a great distance by marine cable.

"Understand please, that what you have learned is an embarrassment to us. You are therefore being shown enough to correct a misleading impression before you communicate it to the public. And," as an afterthought, "to our stockholders."

"You will see what you will see, and there will be no questions answered. Goodbye gentlemen."

As the door closed on his retreating figure the monitor flickered slowly into life. We watched with mounting fascination as planets and stars idled lazily across the screen. The defination was as good as watching '2001' in the cinema. I had heard talk of high resolution television.

It was only when the spacecraft hove into view that we realised that we were watching something very different indeed. Suddenly the screen had become a porthole, through which we were witnessing the docking of an enormous craft – in three dimensions!

As the screen dimmed, our escort appeared at the glass door. On the way out I caught a glimpse of rows of young men seated in front of similiar monitors, the screens of which were hidden from us.

As we emerged into the pale winter sunlight I wondered how long it would be before first video arcade owners, and then personal computer users, began to throw away their existing equipment.

... and the fourth!

Some of my best friends are bored of space travel. As Tommy remarked only the other day "When you've seen one galaxy, you've seen them all."

Some day I promised him, someone will write a computer game that lets you travel in time as well. Tommy snorted, but I could see that he was impressed.

As per usual someone has beaten your tardy columnist to it. *Timegate* is a Level 2 four dimensional, space time science fiction arcade adventure for the 48K *Spectrum*.

The publishers, Quicksilva, whose cassette covers are the equal of the very best in sci-fi art, have incorporated high speed graphics into a game that has you travelling back through time in a quest to blast out the home planets of the ruling alien tyrants. The key to success is to be found within the time gates' portals scattered throughout the fabric of time and space, that link the future with the past...

Timegate costs £6.95 from Quicksilva, 92 Northam Road, Southampton SO2 OPB, tel: 0703 20169. But hurry before they disappear up their own portal.

Busy, Busy, Busy

The I-told-you-so gap is narrowing. I refer of course to the time lapse between this column saying, "Awfully nice product. Pity it didn't include …, and the … happening.

Keen students of this page will recall (if sober) that we observed only last month how nice it would be if some busy fellow spared time to put a word processor onto a chip. Building the software into Read Only Memory would, we noted, eliminate the need to load the program from cassette and disk. Load errors and disk corruption would become a thing of the past.

Well, the thing of the future clearly is built-in firmware, and the busy fellows who are seeing to this are Graham Tuppen and friends at BusiComputers, who make the British *Prophet II* business microcomputer dedicated to financial modelling.

Graham Tuppen and 'Holy Moses

The *Prophet* – 'Holy Moses' to the trade – with both word processing *and* financial modelling built in, will sell for £895. Existing users can add the word processing firmware for £100.

Tuppen thinks there's another advantage: "Much of the available memory on micros is eaten up when software is loaded. Once *VisiCalc* has been loaded into a 64K *Apple*, for instance, the memory available for actually building models shrinks to 33K." And, of course, he can't resist adding that "with a 64K *Osborne* and *SuperCalc*, the remaining memory is even less."

I mutter something about people living in glass houses, on account of the *Prophet II* only having 32K of RAM memory.

Tuppen doesn't turn a hair. "That's the equivalent of an *Apple* or *Osborne* with up to 96K of RAM," he grins.

I don't think too many people will argue that word processing on a chip is other than a good idea. If you want to, you can reach Graham Tuppen at BusiComputers on 0832-72052.

Budapest Pest

'Lovely girls – totally naked'. It is midday in Soho and the strip club barker chants his doleful dirge to a Greek Street devoid of passing trade. Two stories up the Editor of *Private Eye* is picking his nose over the latest episode in the Helen Smith affair.

I am on my way to interview Crown Prince Vlasak of Hungary. Where better than at the *Gay Hussar*, Greek Street's premier, and indeed only, hostelry. Here, over a Bulls Blood and goulash, many a counter revolution has been plotted. Such, however, is the incompetence of the Hungarian Government-in-exile that, according to bar room gossip amongst the spooks, the KGB don't even bother to bug the tables any more.

Prince Vlasak is late. Nursing a glass of Imperial Tokay, I begin to sift through my file of 'Hotline' stories. It is then that lightening strikes. "New from Vlasak – the most powerful disk drive for Apple microcomputers at the most competitive unit cost to be produced for 1983," I read. An outfit called Vlasak Computer Systems had come up with a long low module housing twin 5¼" floppy disk drives for the Apple II and Apple III, capable of storing 1.25 million bytes – 10 times the capacity of the drive built into the Apple III.

Furthermore, this Vlasak will be charging £899, only £100 more than the cost of twin Apple drives. Should sell like hot blinis.

At this moment my reverie is interrupted by a waiter clutching a scroll. Breaking the heavy seal I slowly decipher the crabbed handwriting: "Regret delayed by VAT inspection. Kindly accept Order of Imperial Golden Zlotoi (3rd class)."

It is signed simply "Vlasak."

For information on the new Apple disk contact Vlasak Computers on 0494 448633. For reservations at the Gay Hussar tel: 01-437 0973, and ask for Boris.

PAC-MAN, E.T.,
Death Reports Premature

After Terry Hope's tour de force last month *(Desert Island Disks)* your videophobic correspondent is a bit reluctant to stick his oar into the shark-infested waters of electronic games.

The biggest fish in this particular pool is undoubtedly Atari and according to Graham Clark, Managing Director of their UK company, such is the demand for video games that they have had to revise their sales projection rather radically. "We've had to double our market forecasts for 1982 to a figure verging on the £100 million mark," says Mr. Clark.

But will the video games sales graph soon resemble a shark's fin? Pin-strip ed persons in the City of London are already suggesting that the video game market will be dead by spring. To discover who is right, I consulted our man with the Space Invader up his jumper, Terry Hope.

"The slickers must be out of their tiny minds," he laughed. "Every so often one sees a conjuring trick that is so clever that you simply can't understand how it's done until someone explains the secret. Something very similar is happening in video games software today."

"Last June I was at the Consumer Electronics Show in Chicago and all the movie companies – with the exception of Warner Brothers who already own Atari – were elbowing each other in a mad rush to buy into software. Broedbund have since had a takover bid from Paramount, whilst 20th Century Fox have been sniffing around Synapse Software," he adds, stroking his tame Pac-man.

"These guys don't work on a one-year plan or even a five-year plan; they're projecting ten, maybe fifteen years ahead, and they've reached the conclusion that the hardware market will be saturated well before then, leaving the consumer's money to flood into into software acquisition."

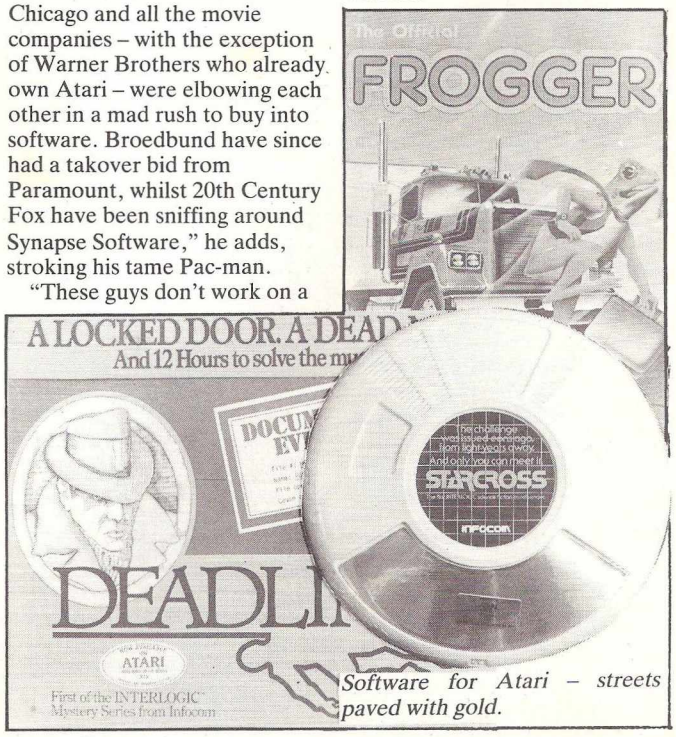
Terry pauses for breath, at which point it seems like a good moment to check the story out with the trade.

Much the same tale emerges from Terry's friends at Telesoft, agents for leading games publishers Datasoft, Infocom, Synapse, Broedbund, and the cuiously named Don't Ask Software.

"S'true," says Mr. Telesoft. "The year before last only Atari were doing Atari software. Now you've got Matell doing cartridges for the Atari system, and just about everybody else plugging in too. And that's before you even think about the tie-ups now being engineered between films and video games. Just ask Atari how much they paid for the rights to do an *E.T* game."

I did, but their spokesman wouldn't tell me. Could I speak to Managing Director Graham Clark then? "Sorry, sir, he's on his way to the bank."

Laughing, I shouldn't wonder.



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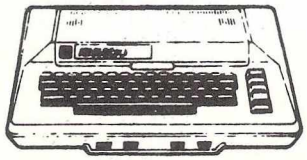

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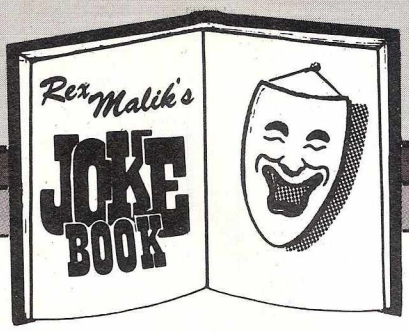


I knew at the time, I had a sneaking feeling, that I should not have written "What follows is the only genuine Russian computer joke I know" in the issue of January 1983. That was giving a hostage to fortune, for hardly had I written it than I came across another.

It was the earliest days of the Russian Chinese quarrel, the days when the Russian leadership was much worried about the growth of China and its population.

Moscow had installed a super computer and it was being used to predict the future, so the men in the Kremlin decided to ask it what would happen in the year 2000 which might be of concern to Russian Chinese relations.

The computer replied, "Nothing of any importance. All is quiet on the Chinese/ Finnish front."

Next, from France, a true story. Back in 1958, P. Ghertman, then a student of electronic engineering working for ITT's 'Laboratoire Central des Telecommunications' was asked to test a dead transistor. He placed it under the microscope, looked through the lens and saw something moving in the glue isolating the three leads from the socket.

It was a miniscule spider. It is Monsieur Ghertman's regret that he never patented the word 'bug'.

And from America has recently come the acknowledgement on the title page of the SPLT spelling checking program manual.

"Our thanks to Fred for proof reading SPLT which checks for spelling misteaks."

I will end this month with some more basic laws, as these seem to be in demand.

Osborn's Law

Variables won't, constants aren't.

Rule of Accuracy

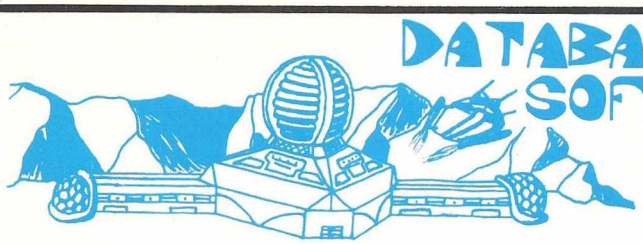
When working toward the solution of a problem, it always helps if you know the answer.

Snafu Equations

1) Given any problem containing N equations, there will always be N + I unknowns.
2) An object or bit of information most needed, will be least available.
3) Any device requiring service or adjustment will be least accessible.
4) Interchangeable devices won't.
5) In any human endeavour, once you have exhausted all possibilities and fail, there will be one solution, simple and obvious, highly visible to everyone else.
6) Badness comes in waves.

And, having fought your way through all that, you still need to remember the *Harvard Law*.

Under the most rigorously controlled conditions of pressure, temperature, volume, humidity, and other variables, the organism will continue to do as it damn well pleases.



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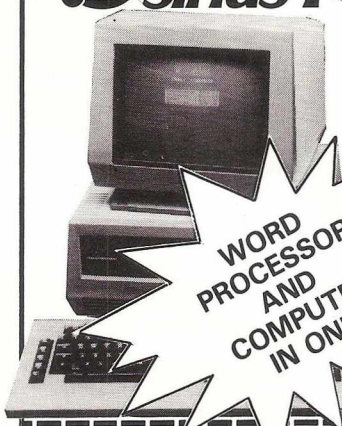

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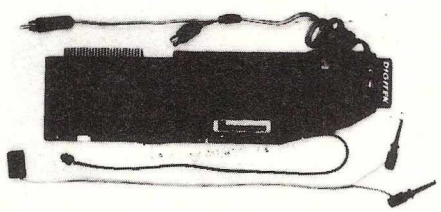

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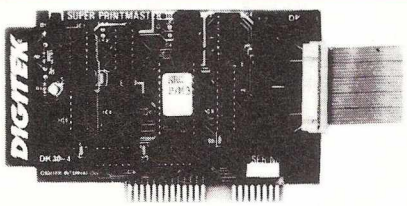

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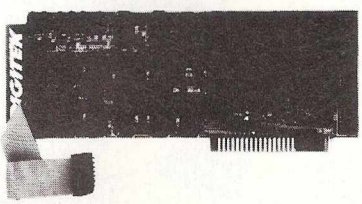

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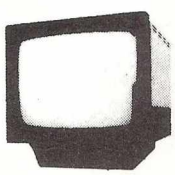

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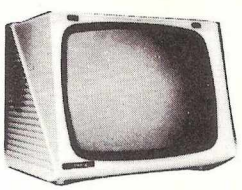

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MARTIN HAYMAN'S

PRO FILE ON

Rare is the inventor so fortunate to see his brainwave translated into a product so effective as to define all other products of its type, and for his name to be indissolubly linked with that product so long as language persists. Among those outstanding few brand names we may include Ford and Hoover, which will be recognized by people of all races, creeds and colours wherever you go in the world. The same is true, to recall some Englishmen of a bygone age, of Mackintosh, Wellington or Sandwich.

Will the same hold good for Osborne, the putative Englishman who has given his name to the world's first portable personal business computer? He is certainly having a good try: in the latest version of his machine, reportedly selling at 10,000 units a month world-wide, Osborne's name is blazoned forth on the new injection-moulded case in an immense and uneffacable logo. Only time will tell whether businesspersons will talk of "getting out their Osbornes" to check out the state of play as they rove from one important decision-making encounter to another.

Branding is vital for the Osborne computer. The Osborne is pitched at the businessperson, and it is exactly the kind of computer which everyone tells him he needs: Z-80 processor, 64K memory, CP/M operating system, a couple of disc drives and a few interfaces which allow maximum compatibility with other computers and the telephone system. Characteristically, the person who buys an Osborne will

not pay for it himself, at least not in the sense of the retail customer, who takes notes out of his pocket. It is a company acquisition, though it is used by an individual who refers to it with some justification as "my computer" (or, more likely, "my Osborne"). That individual might with equal justification refer to the Ford outside the door, from whose boot he has just taken the Osborne, as "my car". Of course it is his. He specified it (within his company's cash limits), he drives it, and no you can't borrow it, nor the Osborne neither.

Cash limits

Just as he opted for the sunshine roof rather than the expensive stereo, so with the Osborne he might specify Personal Pearl rather than Supervyz. Personal choice within company cash limits, with attractive sales and service and ultra-competitive pricing, that's what being good people to do business with is all about—and hard-hitting promotion. . .

"Roll up, roll up! We are giving away a FREE database manager with every new Osborne bought before Christmas. Yes, that's right! Free with every new Osborne Mark 2, with double density disc drives and modem option, comes a brand-name database manager software disc worth £385 at current retail prices. This offer must close soon, so hurry, hurry while stocks lasts. . . (cue jingle, roll videotape of thirtyish executive driving off in large company car)."

The analogy with the company-car market is far from facetious. It is a comparison which is specifically invoked by Adam Osborne's head of UK operations, Mike Healy, and extends his boss's celebrated remark about having located a "truck-sized hole in the market". "The whole emphasis," says Healy, "is that the customer has to like the car that the company is buying for him. The company has to consider the satisfaction that the user will get from owning it, but it also has to consider the cost to the company. How sound an economic decision is it for the company to buy a product for this individual?" The yardstick, he believes, will be the kind of service which the public expects when buying a product such as a video recorder, a television set, a typewriter. In exactly the same way, he says, the motorcar is a consumer product which is selling in the main to a business buyer: so too the computer must appeal both to its user, or "owner", and to the purchasing accountants.

This is not unconventional thinking for the computer industry. Any manufacturer of computers will sell the product to you with an

PROFILE ON OSBORNE

assurance of professional service and back-up. Why then has the Osborne caused such a stir, and why is it so phenomenally successful? The figures speak for themselves: referring to the UK market, Mike Healy claims that Osborne Computer Corporation (UK) is already in the top four or five suppliers after only 10 months, and that the annualized revenue puts them in the top three. Clearly the product is right, even if we treat the claims of £8 million-worth shipped from Milton Keynes with scepticism.

"The Osborne is pitched at the businessperson, and it is exactly the kind of computer which everyone tells him he needs."

Fountainhead

Why then is the product so right? It was originally conceived by Adam Osborne, who in a regular column in an American paper (rather pretentiously entitled: 'From the Fountainhead') had given the US microcomputer industry a regular rucking. Osborne, clearly no born diplomatist, worked on computer modelling for Shell Chemical but in 1975 turned to publishing books and pamphlets on microcomputing, giving rein to the strong views which he had formed during his time in petro-chemicals. Born in Bangkok of British parents, Osborne was educated in India and returned to a "home" which he found hard to recognize and, finding himself out of sorts with Britain, took himself to the US where he has made his living ever since. Clearly he found the challenge of putting his money where his mouth was one which he could not refuse and announced that he was to drop his column to undertake a far more serious "indictment of the industry's failure to innovate", in the form of a personal business computer. Though as a journalist his status in the US was higher than it would be in the UK, the sceptics were soon choking on Osborne's first-year profits of around $20 million on a turnover of $150 million.

The computer itself was designed to Adam Osborne's specification by Lee Felsenstein, 37, who had made his name with do-it-yourself electronic kits. There was certainly no magic about its spec. What was novel was the marketing; the ability to think outside the straitened sales plans of the traditional industry. "You don't have to be the best, you don't have to be the fastest, you just have to be the first," is the business philosophy which has come to characterize Osborne's operation, which has addressed itself seriously to the question of what business people need a computer for, and how to sell it to them effectively. Mike Healy, who is in charge of all shipping to Europe as well as controlling the British sales and service operation, is a graduate in philosophy from London University, where he studied under Dr Bernard

Williams in the 1960s. He describes himself as a person who has always been interesed in ideas, and who prefers to work from a firm conceptual base. His background is in time-sharing, where he sold a financial management package. He was also "involved" with the introduction of the Cray-1. He set up Intelligence UK but fell out with his partner Ashley Ward over a "lucrative acquisition from a time-sharing company"; rumour has it that the aim was to re-write the package that he had been selling for the bureau for implementation on a micro, an endeavour which fell foul of the programmers' inability to deliver. Financially damaged to the tune of £20,000 and still having little more than a menu to show to prospective customers, Healy retired hurt from the business of originating software and went off to the US to see if he could buy the UK rights to Micromodeller.

New customers

At this point Healy was fortunate enough to meet, through none other than Julian Allason, the legendary Adam Osborne, who was looking for someone to head up his operation in the UK and Europe. Undoubtedly Osborne supplied Healy with the firm conceptual base for which he yearned. Healy says that Osborne has the talent to inspire people to work for him and describes his as "the ideal corporate figurehead". Healy has soaked up Osborne's philosophy and his statement of the company's aims has a smooth, hypnotic flow in its constant reiteration of the main points: value for money; commitment to an aggressive marketing strategy which will bring in new customers (not merely pinch them from existing users); and support for software vendors to achieve really high-volume sales.

Much has been made of the "bundle" of software which comes with the Osborne. It comprises CP/M with utilities (an absolutely standard implementation); C-Basic; M-Basic; Supercalc; and Wordstar with Mailmerge; plus, as a special introductory offer, Ashton-Tate's dBase II. All undoubtedly useful but little to set the pulses racing. No "home computerist" would want a system like that (not unless someone else were paying for it, that is), because he wants to write his own programs. That's exactly what the businessperson does not want to do: rather, says Healy, he wants a "low-cost solution to a work-related problem with adequate technology". Those problems are characteristically a spreadsheet and a word-processor need: "The Osborne is essentially a minimal delivery system for quality software."

What is in it for software vendors? If you were among the original suppliers of the software bundle, you are home and dry. In order to defray start-up costs, Osborne offered Sorcim, Micropro *et al* equity in the corporation. Effectively the licences came free, which argues that Adam Osborne must be among the silver-tongued. Other software suppliers, though, do not fare so well. Healy has no mandate to offer any equity in the UK operation (though he does himself have a stake in the US corporation) so it's a straight persuasion job. Healy describes the transaction with a software supplier as "conventional": "We buy *x* number of licences and guarantee to sell *x* number of licences, for which we would pay upfront. That would go a long way towards defraying development costs. We pay a percentage of the retail cost for each licence, which could be anything from 10 – 20%."

Mike Healy: "You don't have to be the best...you just have to be the first."

Software Approval

So a software vendor offering a £300 product would expect to receive £30 – 60 for every licence sold? "He could, that's possible, in that sort of region." Healy emphasises that the software vendor must be capable of supporting the product properly, with good clear documentation and if necessary a "hotline" for customer queries. He must also convince Healy's software approval committee, headed by Steve Prentice, that the program will sell upwards of 1,000 in the UK alone. In return Osborne UK undertake to do all mechanical copying and printing of documentation.

In theory this idea is fine for all concerned, and everybody is well-suited. Osborne rep visits company, says "We want to offer your software on our computer, how about it? We're going to sell so-and-so many with the machine, leave the disc copying to us, all you do is sign here and put the half-million dollar cheque in your pocket at the end of the day." The hard-pressed software vendor, given the opportunity of this sort of volume business and usually pressed to recoup his start-up costs, will jump for it. For this reason Osborne is able to sell the computer for effectively no charge: so conditioned is the end-user into believing the software is expensive, which it is, either in terms of bureau charges of programmers' time, that he simply cannot believe that the software costs effectively nothing, which it does. It is not that the hardware comes at zero charge (even if its assembly is cheap and simple, involving only 40 screws), it is the software.

Generally dealers seem to be happy with the way Osborne UK goes about its business. Healy describes the selling of the machine as a three-tier system. At the top are the major chains Laskys, Xerox, Byte Shop and Computerland. Then come around 40 one-off dealerships, some of whom Osborne himself apparently had a hand in choosing, including Lion House in London, Westwood Computers in Birmingham and Datalink in Bristol. Such dealerships may offer added-value packages (extra screen, custom software and so on), leaving a little margin for hidden price cuts. The third tier, which is something of an innovation, is the use of independent salesmen working on their own account but reporting to a dealership for supply, service and support. This has apparently not gone down very well, though as Healy points out, it is in every dealer's interest to get the biggest possible throughput, especially since the Osborne is conceived of as a high-volume, low-margin product.

Independent salesmen

"What we've done is to recruit independent salesmen, typically people with an industry background and who may have come out of a large company and be looking for an opportunity to work independently. We give them initial training and then attach them to one of our existing main dealers, who will support three or four salesmen. They are self-employed, and get commission on their sales. Their objective is to initiate new contacts within companies, new opportunities to sell."

One of the tricks used by Osborne to keep these salesmen in line is its insistence that they return the guarantee card, which the customer must fill in, in order to qualify for his commission, which comes in the form of a credit worth 4 – 5% of the sale. This would seem to amount to £50 – £60 per sale on the published retail price of the machine, so high earners are going to have to work hard for the Mercedes. Nevertheless, "This is not untypical of the way companies reward salesmen," says Healy. "The advent of the portable computer opens up the opportunity for direct salesmen to come into the industry and work through established main dealerships by taking the computer to the customer and demonstrating it in the customer's office. People tend to be sceptical when you have a new method of distribution." So far 25 salesmen have been appointed; a further 35 are due to start.

John Lamb, who as MD of Comart sells the Osborne through the Byte Shop chain, is pleased on the whole with the machine's performance, though he has reservations about the usefulness of the software bundle, which may not, he believes offer the customer what he wants and may give him what he does not need. He describes it as an "attractive and very cost-effective package" whose worst feature is its screen. How had they found its reliability; Had it called on his shops' time? "Yes, there have been some queries in that area," he says, choosing his words with care. Healy says that he has tightened up on quality and should soon be into the industry-accepted margin of 2 – 3% returns.

Import ban

The Comart group of course builds its own Communicator range of machines whose base spec is similar to the Osborne's. Lamb does not accept that there is any competition or confilict of interests here though he does admire the hardware/software marketing package and the new low price threshold for a "proper" business

PROFILE ON OSBORNE

computer. Comart's position is an interesting one: Lamb's boss is David Broad, who is also president of the British Micro Manufacturers' Group, which is attempting to harmonize the British industry's representation at government level. Some of its more radical members are demanding a total ban on imported hardware, in order to give the British builder time to get on their feet, but it's an argument which is not likely to cut much ice

"...it's really just like selling soap!"

in the nearly foreseeable future. Osborne, in any case, has contingency plans to assemble locally where a local labour content is required and says that British— or Irish— assembly is likely in the second quarter of 1983. Amazing how 40 screws can sanitize a product for local consumption.

All this makes very little difference to the government's own purchasing agency, the Central Computer and Telecommunications Agency, who are doing a splendid job of preferring British products without appearing to do so. As it happens, the Osborne— along with various Comart products— is up for "approval" for the CCTA 1983 list, which will be announced soon after Christmas 1982. Jeff Webb, head of the CCTA's microcomputer branch, says candidly of the Osborne's prospects: "We've got an interest in delaying for a bit because we've got British products coming which may fit the bill." This is a reference to the ITCS Andromeda-Zeta, an alloy-cased machine weighing about 50% more than the Osborne, of comparable spec and selling for £1095. . . of software at list price. The machine you get free. . .

This seems rather unfair. CCTA do own an Osborne *and* use it, in fact during their current session of procurement: "Because we had to visit so many companies," says Webb, "it was quite convenient to take one and do the reports as we went along. But there is no great demand yet among government departments for a portable computer, and we have no plans to include one in our lists. If the Osborne wins, it will be because it is a cheap CP/M machine rather than because it's a portable device, so it's competing in the same market as the Comart and Research Machines."

Brand name

Yet the important point about the Osborne is that it is a portable personal business computer based on tried and tested components. It is now, in its Mark 2 version, capable of handling discs in a wide variety of formats (IBM Personal, Xerox 820, DEC 180 and Cromemco; Tandy TRS-80 and Zenith/Heath to come) which must make it attractive to a broad range of companies already using minis or mainframes. Its use as a communications device is a strong advantage— a London firm is using one in Nigeria to talk to head office, short-circuiting the telex and telephone problem out of third world countries. It now offers UCSD P-System Pascal. It can work as a remote front-end to some computer typesetting machines. It looks good and it fits under an airline seat and is the ideal gizmo with which to "frag" the opposition in tight negotiating situations. In the rhetoric of time-is-money Osborne looks to have a very strong no-trumps hand.

The comparison with that other Englishman determined to brand computers with his own name, Clive Sinclair, is instructive. Both are going for broke in a big way: Osborne with a no-frills, value-for-money package for the businessman who needs a computer; Sinclair with a technical innovation angle for minimal home computers. Since the comparison of Adam Osborne with Henry Ford has been made, you might say Clive Sinclair was the Andre Citröen of the microcomputer. Who is to say with any certainty which type of computer we shall all be driving in five years' time?

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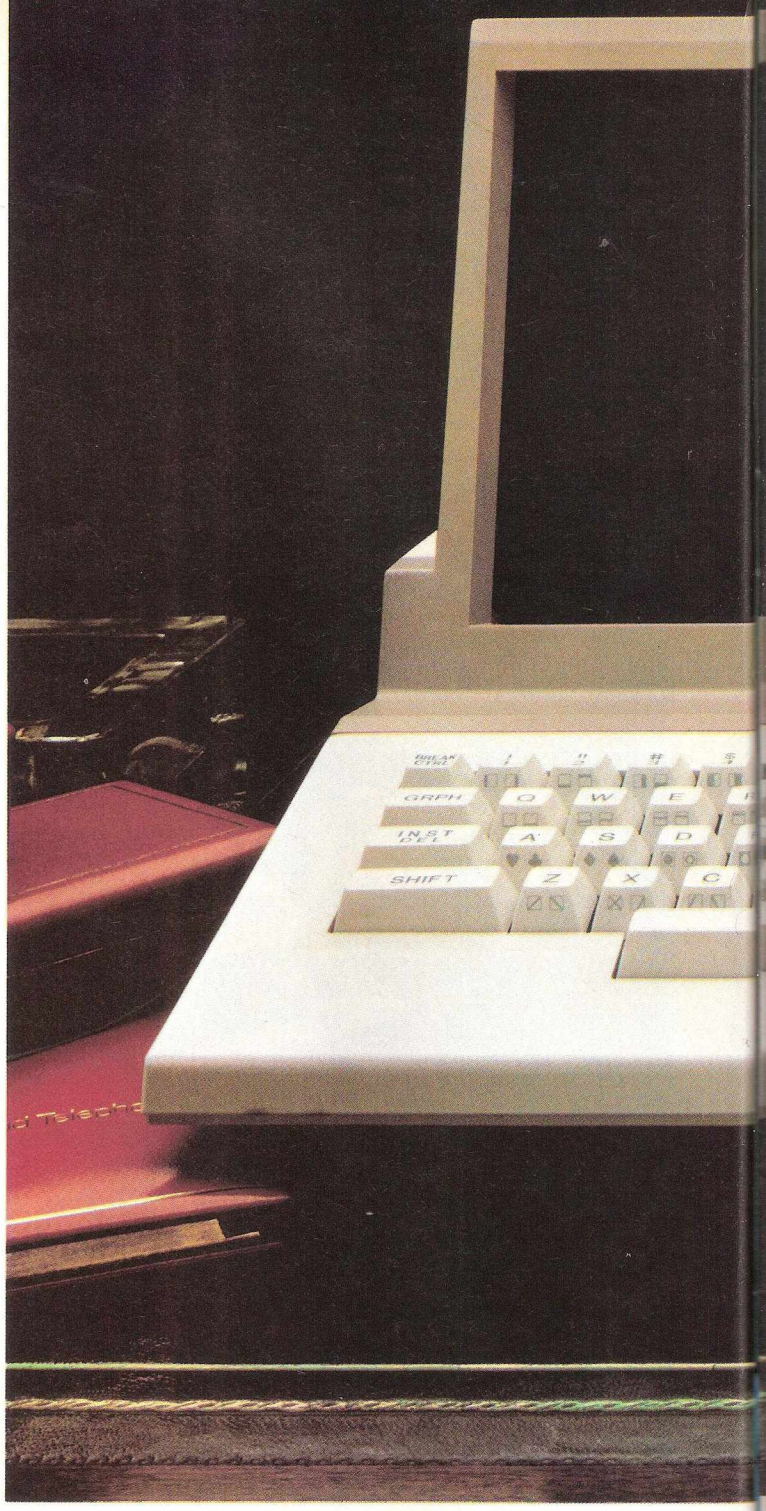

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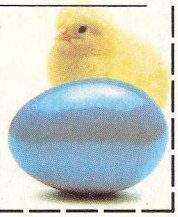

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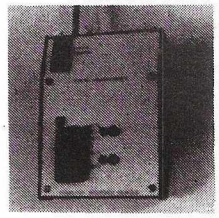

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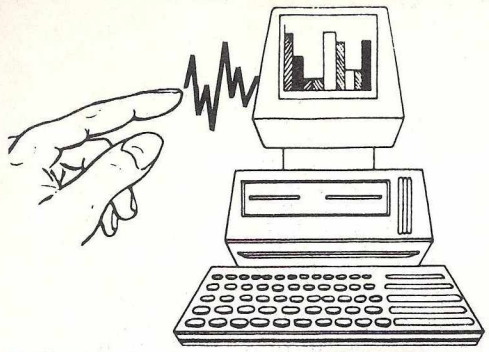

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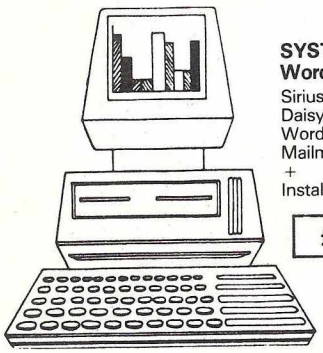

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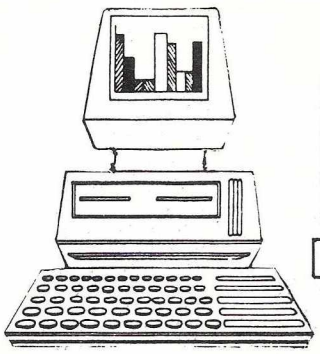

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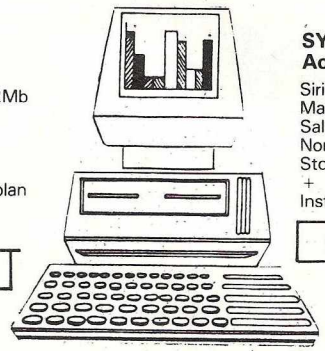

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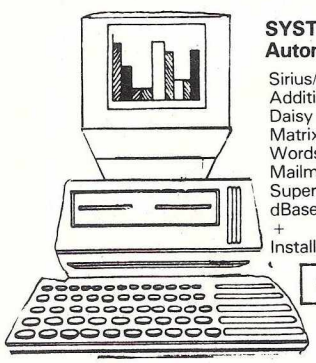

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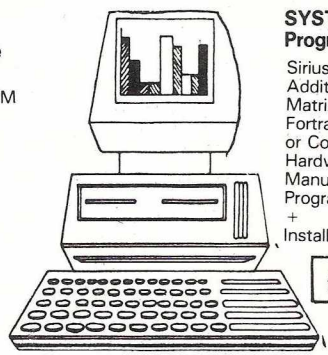

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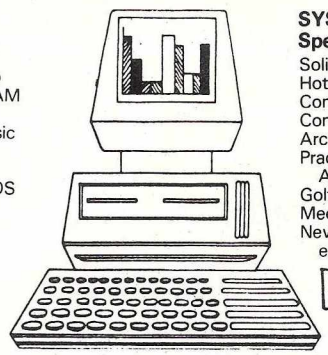

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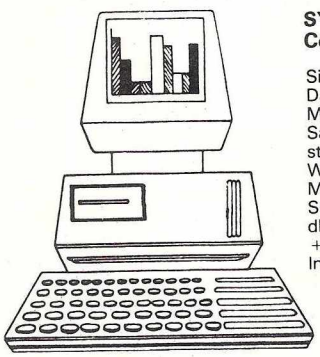

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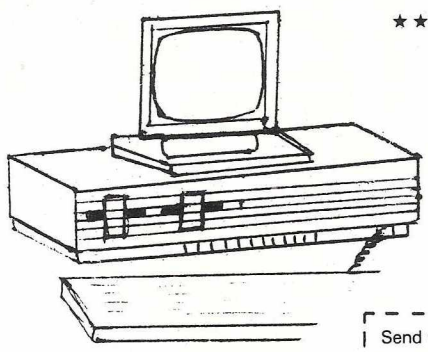

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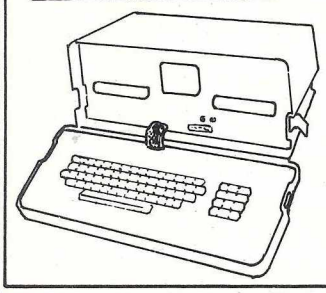

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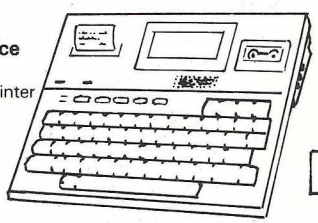

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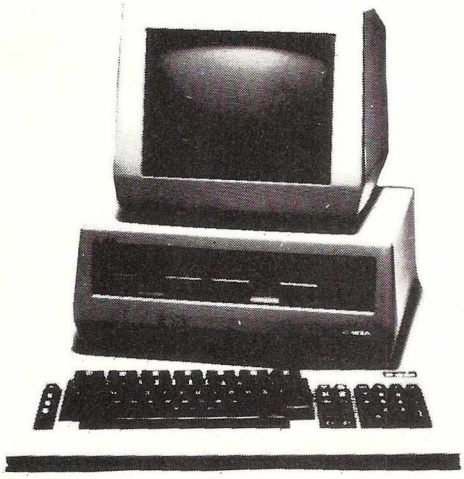

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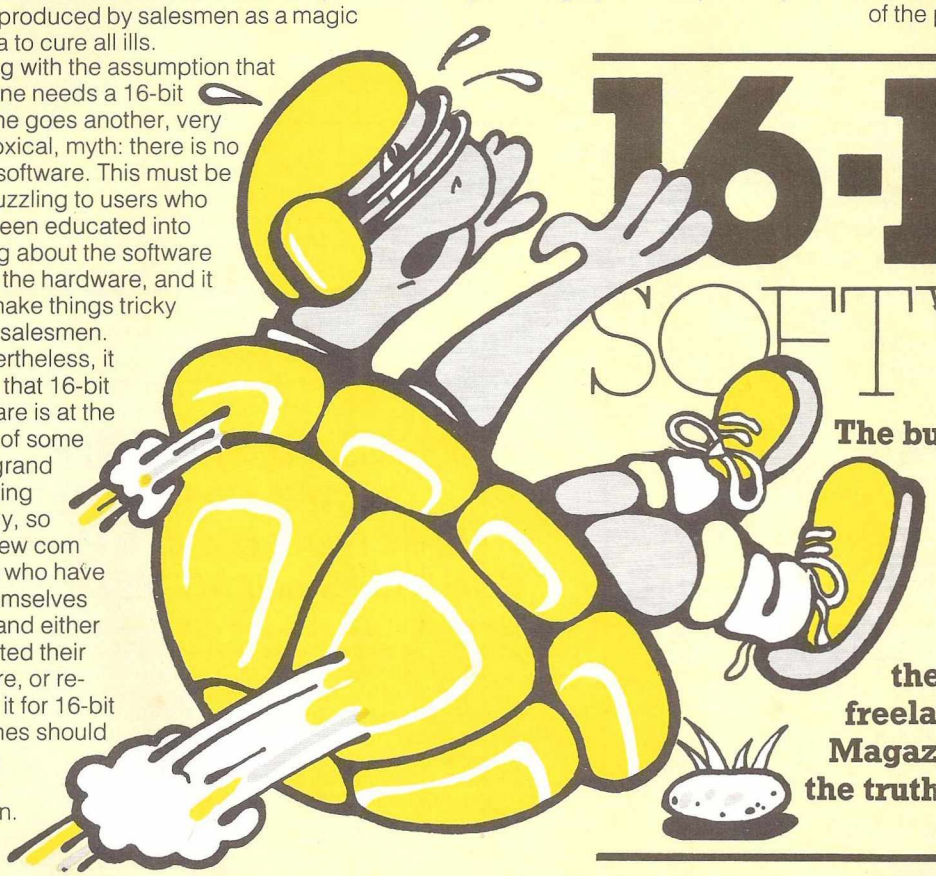
16-BIT SOFTWARE

The business microcomputer market is alive with the subject of 16-bit. But what practical benefit does this innovation give to the user? *Claire Gooding*, freelance Editor of Software Magazine, set out to discover the truth about 16-bit software: is it magic or myth?



The chances are, that if you are considering the purchase of a new system, your first question is going to be, "Is it 16-bit?" If the answer is positive, then your next question should be, "so what?"

Like all the crazes and phrases that have swept the computing markets, the actual significance of the 16-bit factor needs explaining. Like those other phrases 'user-friendly', and 'integrated', it can mean different things to different people and can often be misleading.

The new generation of 16-bit machines is simply continuing the evolution of computing power to become more powerful, smaller, and cheaper. Yet at the moment there is a 16-bit craze. It is the first factor to be mentioned in the press at the launch of a new machine, and is produced by salesmen as a magic formula to cure all ills.

Along with the assumption that everyone needs a 16-bit machine goes another, very paradoxical, myth: there is no 16-bit software. This must be very puzzling to users who have been educated into thinking about the software before the hardware, and it must make things tricky for the salesmen.

Nevertheless, it seems that 16-bit hardware is at the centre of some one's grand marketing strategy, so those few com panies who have got themselves ready and either converted their software, or re-written it for 16-bit machines should a be in strong position.

Language Compilers

There are, despite the widely accepted belief that there is no such thing, some packages rewritten for 16-bit software, although the attention at the moment seems to be centered on the operating systems (OSs). These are undoubtedly important, since they create the environment in which the user will have to work, but more important, the language compilers needed to create applications software are missing. It will be some time before systems programmers manage to produce completely bug-free, reliable compilers in the range already available for 8-bit machines. In the meantime, only the software written in the few 16-bit compiled languages will qualify as true 16-bit software.

Those magic 16-bits give the processor access to much larger areas of memory than their predecessors. The difference it makes is that as well as larger memory areas, operations are in some cases faster. The more complicated manoeuvering with large numbers used, particularly in scientific modelling or simulation, really demands the extra power, and some operations are so complex – processing of video images is a good example – that they can't be effected without 32-bit processing.

A good example of the extra facilities available with 16-bit processors is graphics. Because of the enormous amount of processing needed in colour graphics, 16-bit chips are a good vehicle for colour graphics, and applications running colour graphics will probably be faster than their 8-bit equivalents.

The idea of using 16-bits rather than eight-bits as the basic building block is not startlingly new. Texas Instruments' 9900 microprocessor has been commercially available for years, but its use has been restricted to process control and other specialised industrial applications. The exception is TI's own TI99/4a home computer which, incidentally, boasts excellent graphics.

The other well known 16-bit chips come from Intel, Motorola and Zilog, with Natsemi (National Semiconductor) a late entrant in the race with its 16000 family. Inevitably, the best-known chip is Intel's 8088, picked by IBM as the basis for the IBM Personal Computer, with the Motorola 68000, running it a close second.

In fact the 8088 is externally more like an 8-bit chip, in terms of the devices it can be interfaced to, though internally it runs the same instructions as a 'proper' 16-bit chip. Some PCs are now being built with the elder brother 8086 chip, already used by machines such as Altos and Hitachi. Just coming onto the market is the go-faster 80186, although there are few machines in production which use it.

Window Shopping

It seems that choosing a chip is not always a matter of the 'best technology' when a manufacturer does his window shopping. The chips themselves seem to have 'images'. The Z8000, one of the first 16-bit chips to be commercially available in large numbers, is generally considered to be a flop. "The Z8000 is dead," is quite a fashionable thing to say in the harsh world of micro systems. One of the people saying it is Bill Gates, founder of Microsoft, and there are plenty who echo him. But, say people in the know, the benchmarks show it to be excellent and better in some respects than the hands-down winner, in the chip race, the Motorola 68000. Certainly Olivetti was convinced enough to base its M20 microcomputer on it, and others using it are Onyx and Bleasdale, both of which run Unix operating systems, (see panel). Since the Unix market is also hampered by a lack of applications – now increasing – it would be misleading to judge the Z8000 market 'dead'. Ironically, the far less powerful operating system CP/M has just been implemented on the Z8000, which, according to Digital Research founder and CP/M author Gary Kildall, might just be the Z8000's salvation.

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THE ADVANTAGES

Many of the advantages offered by the new computers have little or nothing to do with 16-bits. Graphics and large memory handling, however, are two features waiting for software to take advantage of them.

The main advantages of having 16-bits to play with rather than 8 have already been mentioned, but it is the impact that the extra space has on applications which will interest users.

More efficient handling of text and the ability to handle larger numbers to a greater degree of precision are possible. It is also possible to increase the character sets, allowing user-definable function keys, and, because of larger number handling and speed, high resolution graphics.

The bigger the address space means that the machines can handle much larger programs, and faster. If, that is, the software is written for them. In some cases, benchmarks show that applications run more slowly – it all depends on factors sometimes outside the processor itself, such as disks.

None of these things need necessarily make any difference to the single user. Where 16-bit machines carry significant advantages is in the multi-user environment. Writing software for a multi-user environment tends to be a more complex task, given the problems of security and keeping shared records and data secure.

Multi-user capabilities are still the subject of much debate and controversy. The two opposing points of view are that processing power is so cheap that it is not worth sharing the power of one processor between more than one user, and on the other hand, that single user systems will not be able to grow with the users needs. Also, argue the champions of multi-user systems, their solution is cheaper still than having separate processors.

As far as software is concerned, the extra space and power mean that it can be more sophisticated in the way that it caters for the users needs. According to one of the many software houses which are beginning to supply applications for use with Unix, Precision Software, a lot of benefits can be passed on to the user.

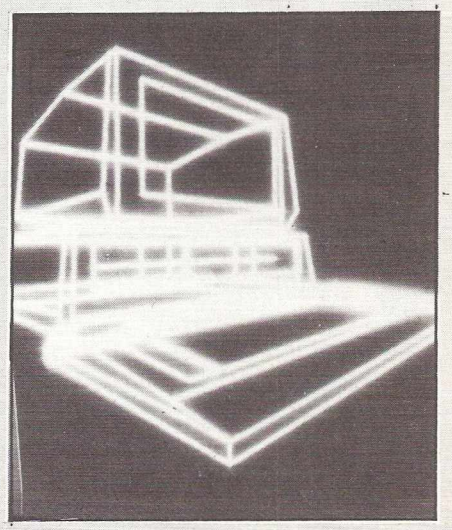
"One of the implications of having 16-bits is that we can offer full transaction processing," explained Nigel Lovatt-Turner Director of Precision. "That means that we can completely recover information after a hardware failure. You can't do that with an 8-bit system, – it's a matter of putting in the data all over again."

"Another thing about 16-bit software is the capability of nesting transactions," said Lovatt-Turner. "For instance if you are dealing with general ledger transactions and need to do a calculation or look up a customer file, or whatever, it can be nested and stacked."

"The other thing it allows us to do under Unix, is to hold data as documents rather than transactions. It is effectively document handling on the screen, with pointers between that document and whatever else you need to know, like the products, the discounts, and so on."

According to Precision this means that 16-bit microcomputers can effectively bring the era of the electronic office. "The key issue is the transaction processing," said Lovatt-Turner. "Using a network there is no way of logging calls through different terminals. Along with the data security, we're able to give central control as well."

Lovatt-Turner maintains that the transaction processing methods that the more sophisticated 16-bit systems can offer equal mainframe – and certainly most mini – techniques. Of course, Unix is a heavier operating system than MS-DOS or CP/M-86, but certainly it opens the way to sophisticated programming and the building of applications which are more or less custom built rather than tailored or even parameter-driven.



Greater speed and larger number handling pay off when using high-resolution graphics.

Which is precisely the point that many people make *against* timesharing and multi-user systems: they soak up resources and involve the overhead of controlling and administering the machine resources, and deciding who can use what, when.

However, to those who are interested in the advantages of running 16-bits software on a single-user system, the main attraction of purpose-built systems software and applications in a 16-bit environment is that programs run faster, and can afford to be much larger than programs running in 8-bits.

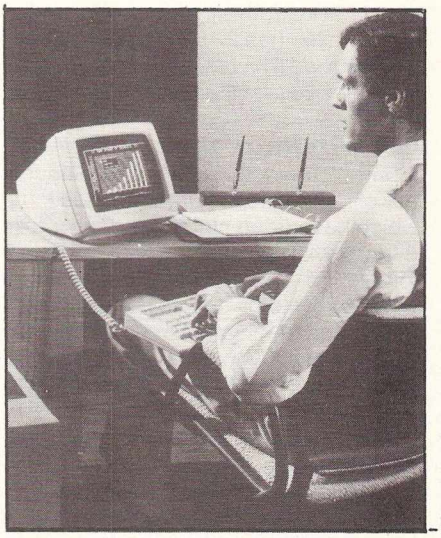
The Motorola 68000 chip seems to be the one which has best caught the engineers' and programmers' imagination, and despite being late (or perhaps because of it) seems to have been the subject of an underground PR campaign everyone seemed to be waiting for it, anxious to implement software on it, and generally excited.

This might be because the chip has a sprinkling of 32-bit registers which not only sounds good and impressive, but can actually be useful in terms of speed and power. Judging by the fact that several Unix machines, including the US Wicat and Fortune machines, have been based on the 68000, the extra power comes in useful for handling large and sophisticated operating systems. The Unixal machines from Bleasdale and Britannia are also using the 68000 as a base.

Taking their own 16-bit paths are those dominant powers in the 8-bit market, Apple and Commodore. Commodore is designing its own version of the 6502 on which the hugely successful Pet was based, only in 16-bit form. Apple seems to be taking the 68000 path, with its new machines, at the moment code-named Lisa and, if you can believe it, Mackintosh, both likely to bear the 16-bit tag as a necessary part of the hype.

High Risk

The next link down the line, once the manufacturers have chosen chip and operating system, is to supply the applications. This is the part which demands the time, investment and effort, and can be the riskiest part for those who have to spend large amounts on (largely unproven) hardware, raw system software, (probably with teething problems), and manpower, to develop applications for a market which really can't be evaluated until the applications are out there selling ... or not. It is a risky business, with plenty of Catch 22 about it. There is no way of proving a firm market until the applications are there, and no way of convincing software houses to produce them until the market is proven.



The DEC Rainbow was one of the first machines to employ both 8 and 16-bit processors.

Given that risk, it is understandable that a great number of manufacturers still invoke the magic name of CP/M, with all its many applications running and available, as a backup to the less established operating systems like MSDOS, Unix and so on. DEC, for example, actually went so far as to put an 8-bit chip alongside the 16-bit processor in its Rainbow Personal Computer so the CP/M could run. Since CP/M has been implemented on the 8000 and the 68000, there is at least a bridge, even if the operations do not use the 16-bit power to the full as the purpose-designed operating systems do.

There is a widespread feeling among distributors and software houses that 16-bit systems have been the subject of an untimely hype. "We have to respond to the manufacturer's promotion of 16-bit systems," said Phil Bowe, Managing Director of software supplier and Digital Research distributor Tamsys. "But the market place has been very much created, rather than just growing. The response we are getting, even from first time users indicates that the manufacturers' promotion is getting through. People are very aware of whether a machine is 8 or 16-bit."

The other magic password, is inevitably, CP/M itself. End users still ask for it, and software houses are still committed to it. But as yet the authors – Digital Research – haven't had time to produce the 16-bit compilers to run under CP/M-86.

"We haven't got the tools to do the job," explained Chris Towers, MD of Selven Systems. "The hardware's there but the compilers are not. Meanwhile the market is demanding 16-bit software. First we need the operating systems to run, then the compilers, but DR hasn't produced them yet, and the Microsoft products seem to be sold only through OEMs at the moment." Phil Bowe agrees. "There is a lack of the right kind of development tools. On the 8-bit side we have PL/1. CBasic 80, CIS Cobol and Pascal, and so on, but on the 16-bit side there is Pascal MT86 and CBasic 86 – that's the lot from Digital Research. Micro Focus has a 16-bit CIS Cobol on offer, but we'll have to wait until the New Year for CBasic 86 and PL/1-86."

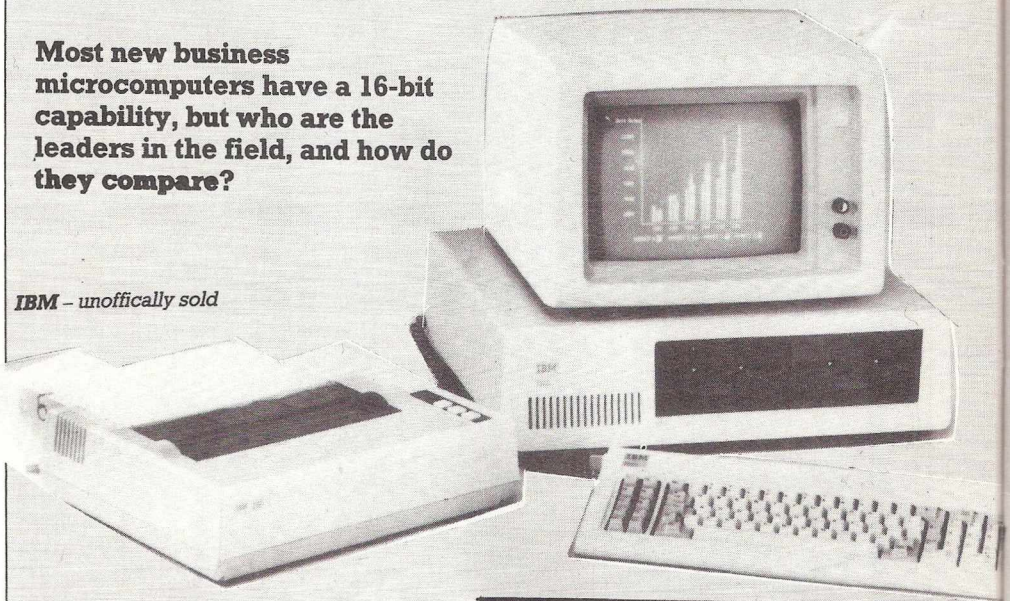
Growth Path

Meanwhile orders from software houses are piling up, especially from those which have good stable products on the 8-bit market, and are anxious not to be left behind. There are many that feel that the 8-bit systems are not necessarily exhausted, and that there is plenty of potential left. Even so they'd be relieved to know that the growth path is ready to take them.

"As per usual the hardware is ahead of the software," said George Perfect, Technical Director of Derwent Data Systems which specialises in CP/M business software. "It's the old problem of having hardware and OS but no

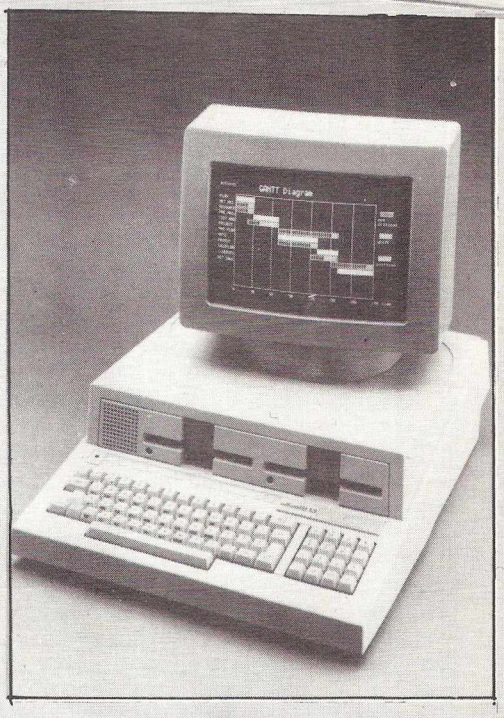
THE HARDWARE

Most new business microcomputers have a 16-bit capability, but who are the leaders in the field, and how do they compare?



***IBM** – unoffically sold*

***Corvus** – 68000 processor*



***Olivetti** – Z8000 processor*

Any machine based on the chips mentioned in this article – 8088, 8086, Z8000, Motorola 68000, and so on, can boast to be 16-bit. The machine which is probably the best known – despite not being directly sold here yet, is the IBM Personal Computer, whose very existence makes the 16-bit tag not only respectable but desirable.

In the US the machine is selling almost as fast as IBM can produce it – or at least that is the impression that IBM like to give. In the UK the machines are not officially sold, but enterprising suppliers have been getting hold of machines from US suppliers, many of which seem to have sold to software houses anxious to get on with producing software, rather than to 'end users'.

It is difficult to judge how many have sold into the end-user market in the UK so far. "There are so many small dealers shipping them that I don't think anyone knows, even IBM," said Robert Parry, Micro Editor of Computer Weekly.

Of the machines selling 'officially' in the UK, the winner has to be the Sirius, brainchild of Chuck Peddle, who followed up his 8-bit trailblazer the Commodore PET with his own machine, from his own company – only this time 16-bit and aimed very decisively at the business market.

The marketing strategy of Sirius' main UK distributor ACT has centred very much on software. The Pulsar scheme supplies approved software through ACT, covering a range of business applications. Just to make things

Icarus – IBM lookalike

Victor – Sirius lookalike

complicated there is another machine called the Victor, distributed by a company called DRG Business Machines, which is merely the Sirius under another name.

ACT puts its shipping figures at about 5,000 for the Sirius. The machine has been highly successful partly because of the effort ACT put into marketing the name Sirius. The machine supports several well-known packages including TABS and Omicron, both of which suppliers act as retailers for the machine.

Both Sirius and the IBM Personal Computer are based on the Intel 8088, the 16-bit chip with the 8-bit external architecture, which means that it does not have the data addressing range of true 16-bit processors. However, from the beginning of 1983 both machines will be shipped with the full 16-bit 8086 chip, already used by some of the multi-user 16-bit machines.

These include most of the machines running Unix or Unix lookalikes, although there are other operating systems, such as Oasis, and OS9. The Unix machines are multiplying daily as the operating systems gains credence among manufacturers. Among the first on the scene was Onyx, running the confusingly named Onix, followed by the Imp running Idris, and the recently launched Positron OS-9 machine. In between come many other names, including the Z8000-based systems from Zilog and Bleasdale; the latter manufacturer will also be using 68000 chips. Future systems and Wicat machines are Unix machines based on the 68000.

One multi-user machine which isn't riding the Unix boom is Televideo, distributed in the UK by Encotel. The system allows users to plug-in more terminals, 8-bit or 16-bit: the system also operates standalone. Encotel cites this as the main factor in the success of the Televideo. "Most users want to feel that they can go multi-user tomorrow even if they don't need to," said Bob Jones, Encotel's MD.

Sirius – well-timed

Other recent launches tend to look like the PC – sensible enough in view of the undoubted success of the machine. Not only the Japanese but US and European manufacturers are cashing in on the formula, with machines such as the Columbia 16-bit Personal Computer based on the 8088.

In fact these days every machine being launched puts 16-bit architecture high on its list of features, (with graphics a little way further down the list) despite the fact that few buyers have a firm idea of its significance. Micro Fives Corporation's Series 1000, and the Columbia are almost certain to be the beginning of a flood of such machines, all running MS-DOS and CP/M-86. Some however, like the Alpha Micro 68000 – based AM-1000, opt for lesser-known native operating systems.

compilers – it was the same with MP/M II. Only for twelve weeks has a working copy been available, and it's a complicated and sophisticated system to get to grips with."

Perfect, agrees that manufacturers are producing and pushing 16-bit machines faster than software houses can keep up with them. "People want to work with such things as word processing and commercial and scientific applications, and they need something more than just and OS and languages to do that. As it happens most people running 8-bit software will be able to convert as soon as the compilers are available, but that doesn't necessarily mean that the re-written versions will use the greater memory addressing available with 16-bits."

Oddly enough, there doesn't seem to be a lot of concern about the extra memory addressing.

"No-one so far has said to me that they must have 16-bits because they need the extra memory addressing," said Phil Bowe. "Although some applications, such as financial modelling and critical path analysis, will benefit from the extra memory addressing."

Nevertheless, it is obvious that software houses are keeping an anxious lookout for the compilers, and there is a lot of pressure on Microsoft and Digital Research to produce them.

In the meantime some software houses are taking their existing code, and re-assembling it to make it run under 16-bit. Few will have had time to break the 64K limit and take advantage of the potential of 16-bit system to handle extra data.

Most 8-bit software is written in Basic, and can be adapted before the advent of the CBasic-86 compiler (generally hailed as 'promising', though few have actually come into contact with it).

"We write in CBasic, which is completely compatible, to the point that we can swap copies between different machines and still run it," explained Paul Rayner of software house Great Northern Computer Services, whose Aurora range of business and office software is said to run on both 8 and 16-bit machines.

Speed Factors

According to Rayner, a lot of so-called 16-bit software is actually cross-compiled 8-bit software. "If you take a program which is tailor-written for 8-bit, it could in practice run more slowly on 16-bit machines unless it were totally re-written."

"The trouble is that there are so many factors in the speed of a machine other than the processor itself. It can depend on the disks, and how well you have written the Basic I0 System which negotiates between CP/M, the machine, and the disk drives."

Rayner doesn't think that 16-bit hardware will make a great deal of difference to the standard single-user. The real crunch will come with the demand for multi-user systems. "Presumably we will get systems

software custom written for the multi-user market, and then we can start taking real advantage of the 16-bit power."

According to Rayner the multi-user market will bring its own problems of a different sort. "Multi user systems have to be administered. If someone does something stupid then they can give everyone else trouble. That means keeping central control, which is another overhead on the system."

"It comes down to a technical factor. Do people actually *need* multi-user systems? Often they don't – they've just been told that a 16-bit machine is what they ought to be looking at. People forget that what they are being asked to do is enhance Jog Blogg's profits with decent administrative software – not break the frontiers of technology."

"The more complex things are the more support they need – and our motto is to keep it simple."

Vince Wells, MD of the well-known business software house Omicron Management Software, agrees that there is no great hurry to provide 16-bit software versions, although there may well be advantages, especially in the multi-user market. "I don't think it's worth re-writing directly, although Unix and the multi-user OSs like MP/M come into different category since they would need extra features. At the moment I see it not as a dramatic change but as a development, an evolution. We will take advantage of 16-bit capabilities as we go along."

Wells sees the multi-user environment as a very different area from the 8-bit single user market. "The multi-user market is heavily influenced by the mini and OEM types, with a long professional background. A large percentage of companies who want 5 or 6 people running simultaneous purchase ledgers or whatever, are going back into minis. Once people get in, they move up quickly, and soon we'll be seeing more demand at the top of the range."

Meanwhile, Omicron has converted its MBasic applications to run under the Microsoft operating system MS-DOS. "We're not using the full register addressing as it doesn't make a lot of difference unless you are using high precision numbers. The update now takes 2½ instead of 3½ minutes – the user won't notice much difference."

The Real Thing

There are, however, some compilers that are already available in 16-bit versions, and a number of software houses already producing 'The Real Thing' in 16-bit software. Micro Focus lost no time in getting their world-famous ANSI standard Cobol compilers onto 16-bit processors. "We've had CIS Cobol, and later Level II Cobol, implemented on 16-bit kit for a couple of years now," said Peter Hewitt, Marketing Manager of Micro Focus. "It's nothing really new to us, but now that there's such a level of interest, people have begun to notice."

The readiness of the Cobol compilers

OPERATING SYSTEMS

The battle for supremacy amongst 16-bit Operating Systems, is at least as fierce as that for the chips themselves. At this stage, though, many of the arguments are irrelevant to the end- user.

Never in the history of computing have operating systems been such a trendy subject. A vast amount has been written about MS-DOS, the operating system from Microsoft adopted (as PC/DOS) by IBM for the PC, and about CP/M-86, Digital Research's 16-bit response to MS-DOS.

This is partly because the Press enjoys a good scrap, and the CP/M versus MS-DOS has all the signs of a fierce commercial battle. Digital Research and Microsoft used to produce complementary products, Microsoft in the language area (the most famous being its Basic) and Digital Research with the CP/M operating system, in OSs. Now both have invaded one another's territory, Digital Research by offering a series of languages (apart from the original PL/1 which Gary Kildall wrote before CP/M), and Microsoft by going in for operating systems wholesale with Unix-like Xenix and MS-DOS.

Most commentaries seem to assume that it is a fight to the death, with one or the other bound to win. It would be more realistic to picture a market split between the two.

CP/M acquired such a reputation that the phrase 'runs under CP/M' was like a magic touchstone. It became the standard operating system for 8-bit microcomputers, so much so, that those machines which did not run it found themselves having to develop all their own applications packages from scratch.

Many manufacturers adopted the OS on an OEM basis because they were not prepared to go to the expense – like Apple and Commodore – of developing a native operating system. Ironically the operating system became so popular that even the Apple and PET, the most widely used of the 8-bit machines, could run CP/M through a plug-in card.

Portability

CP/M became so popular because it was ready when people needed it, comparitively reliable, and cheap. Even Digital Research is prepared to admit that it is not the best or most powerful operating system on earth, and that it left room for improvement. Those are minor points: the important factor was that CP/M introduced a level of portability which in effect created a market for CP/M software. The first question to be asked by prospective purchasers was, "Is it CP/M?"

Success bred success. Because there were so many applications written to run with CP/M, it became a gateway to a hugh market, and because there was so much software for CP/M, people still demanded the OS, and software houses keep writing applications to run with it.

It is this huge pool of applications which, ironically, handicaps CP/M when it comes to competing with MS-DOS on technical grounds.

MS-DOS has had to start from scratch; a commercial disadvantage, but it has on its side the advantage of having been designed from the start for the 16-bit generation, and of having IBM's blessing. The latter makes it a fairly safe bet, and software houses are already busy churning out applications to create and MS-DOS pool as deep and wide as CP/M's.

Digital Research, in order to maintain compatibility with the vast spread of applications which has given CP/M its power, has had to make sure that the 16-bit version of CP/M doesn't shut the 8-bit gate. That important commercial consideration has laid open the 16-bit version of CP/M, CP/M-86, to criticisms that CP/M-86 does not, and never can, take advantage of 16-bit architecture to the full.

Benchmarks

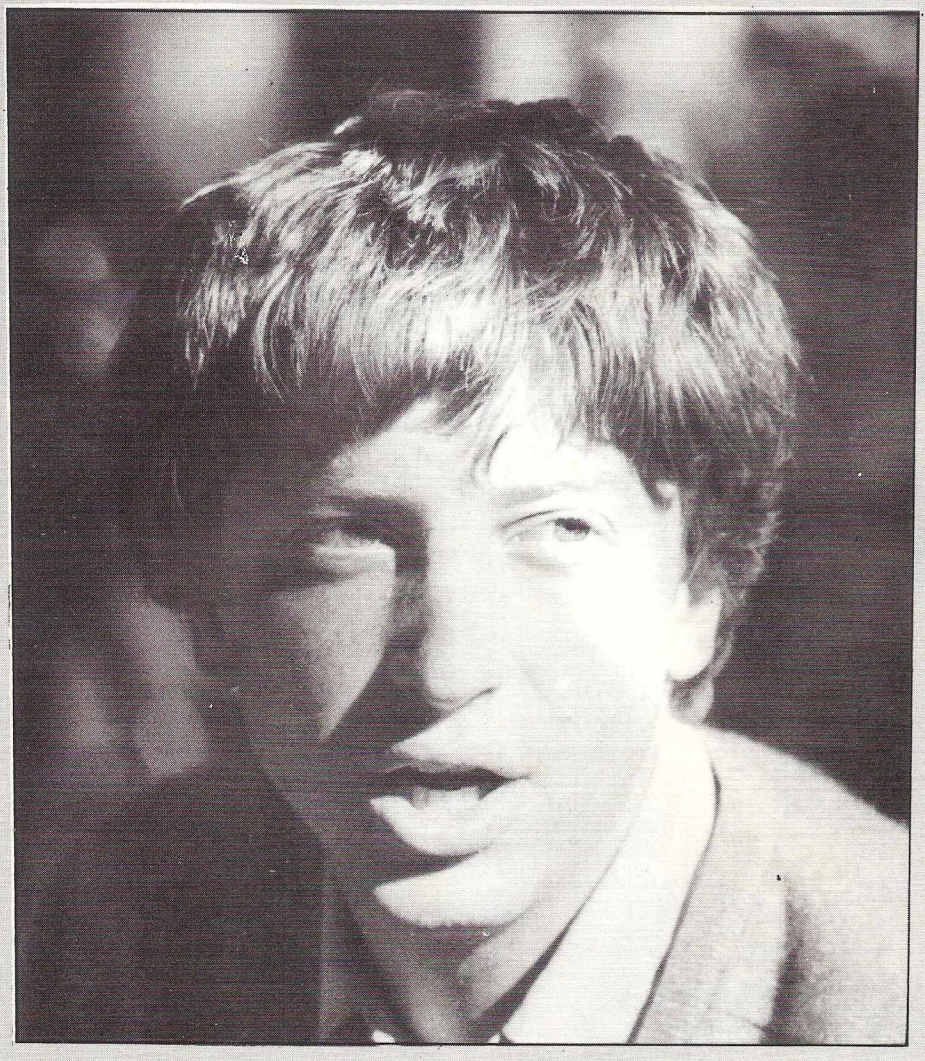
Digital Research counters the criticisms with benchmarks showing speed improvements and makes some convincing technical claims for CP/M-86. The main changes are the memory addressing facilities, data checking and security checks, greater disk support, and, predictably, the ability to run larger programs faster. Also, the running of 16-bit versions of CP/M meant that sophisticated graphics facilities could be built for use with CP/M-86.

Microsoft's MS-DOS, which some describe as a CP/M lookalike in any case, can match the claims with 16-bit bells and whistles of its own. It is very likely that someone somewhere will come up with a way of making MS-DOS and CP/M-86 applications interchangeable, so that the two can feed on one another's markets.

In the single user market MS-DOS and CP/M-86, recently joined by an interesting multi-tasking version, Concurrent CP/M-86, will have the stage more or less to themselves.

In the multi-user market there is Microsoft's Xenix, a Unix lookalike which has already become widely used in the UK, being sold by Logica long before Microsoft set up its own offices here. The operating system represents a huge investment from Microsoft, and was at the time quite a gamble, since Unix was only just making inroads on manufacturers, and still has not been proven as attractive to commercial end-users.

It is essentially a programmer's



Microsoft's Bill Gates: "We can already offer software solutions for all *16-bit processors."*

operating system, not user-friendly, but extremely rich with facilities for software development. It is timesharing, and started life on the 16-bit PDP-11, at Bell Labs, the research arm of US telecommunications giant AT & T. Portability of applications, possible through Unix' implementation language C, is one of the factors which has brought it out of research and academic use into the commercial limelight. Already software houses are producing end-user interface which Microsoft refers to in the description of Xenix as 'enhanced' Unix.

Multi-User

Digital Research's offering on the multi-user side is MP/M, which did not have a happy debut, many of its teething problems being due to being released too early. Digital Research hopes now to salvage its multi-user market with MP/M II, claimed to be much improved. While Kildall himself, (not personally involved in the development) praises the ease of use and reliability of the system, it is clear that his own heart is with single user systems.

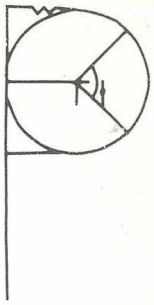
Nevertheless, Digital Research has taken the wise precaution of implementing C compilers under CP/M, and, just in case Unix takes off in a big way, will almost certainly ensure that Unix applications will run under CP/M, if not getting involved more deeply than that.

Other operating systems which are making a bid for a slot in the multi-user market include Oasis, an OS which uses Unix concepts but is not so large and heavy. Its main problem is that it stands little chance against the barrage of publicity enjoyed by MS-DOS, the CP/M family, and Unix with its offspring.

There are others, Microtek's Famos, and MPSL's BOS among them, which have already established their commercial advantage of ready-made applications packages, on offer from retailers all over the country and all over the world, combined with a strong OEM presence on lots of different machines. BOS is the only British operating system which has ever come close to achieving all this, but not on the scale of the Microsoft and Digital Research offerings.

It is probably up to the OEMs to establish which, if either, of the main OSs, will dominate. The lure of all those CP/M applications will tempt most manufacturers to hedge their bets – some, like Micro Five, put as many operating systems as possible on their system and leave the choice up to the retailers and buyers.

Digital Research's Gary Kildall: "New versions of CP/M are much friendlier."



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ABS	CRF	GOSUB	RESTOR	GRAPH	END
ADR	MEM	POP	RETURN	TEXT	BIT
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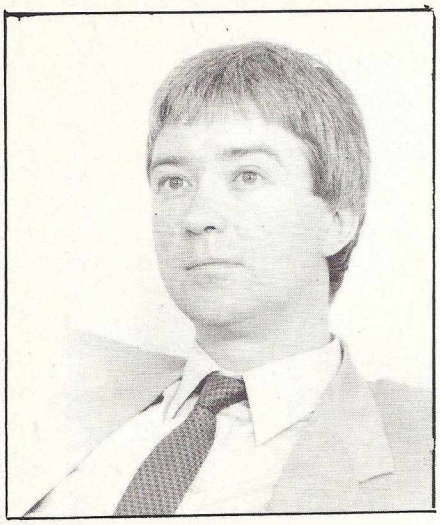


Microfocus' Peter Hewitt: "We've had CIS Cobol on 16-bit kit for a couple of years now."

meant that software houses which traditionally have their roots in the professional mini and mainframe market have been quicker off the mark than the BASIC software houses with roots in the 8-bit market.

One Cobol software house, Almarc, is offering its own 16-bit machine with applications written in CIS Cobol. Its systems, said to be fully upgradable from their 8-bit machine, use the CIS Cobol fileshare system with file locking and record locking facilities, and so, presumably, are well poised to take advantage of the multi user boom, when and if it comes.

There are other 16-bit compilers, but mostly using Unix. The improbably named 'C' and Pascal, running under the Unix OS, provide portable software – one of the great advantages of Unix.

One British company, Equinox, is offering a relational database manager, Dataflex, written in Pascal MT+ to run on the company's own 8086-based machine to run in native code. The emphasis at Equinox is on the multi-user environment, and the aim is that Dataflex and its associated applications should run in true 16-bit mode under MS-DOS as well as with Xenix (Unix) based systems, and native Pascal.

"Using Pascal makes our software more portable, although there is still some effort involved," explained Cory B. Casenove, Vice President of Dataflex developers Data Access.

Complex Applications

Equinox Director, Mike Kusmirak believes that Dataflex may well be the only real applications software currently available for a variety of 16-bit operating systems. Not only the database itself, but a series of applications are available, "not just 8-bit emulated, but using the full facilities of 16-bit, and fully portable."

Kusmirak believes that efficient and more powerful processing is the key to 16-bit software. "Why should people want 16-bit hardware? It means a better and more efficient processor, which means that users can process larger and more complex applications."

THE SOFTWARE

Software houses are working furiously to produce 16-bit software. Many packages sold as 16-bit, however, are simple conversions from 8-bit programs, offering little or no advantages.

There was a rush to put the successful packages from the 8-bit market onto the IBM PC as soon as it appeared. Those business packages which have already become popular in 8-bit form generally do not need the extra power offered under 16-bit OSs, but it does open the way to add speed, extra facilities like graphics, and deal with larger files.

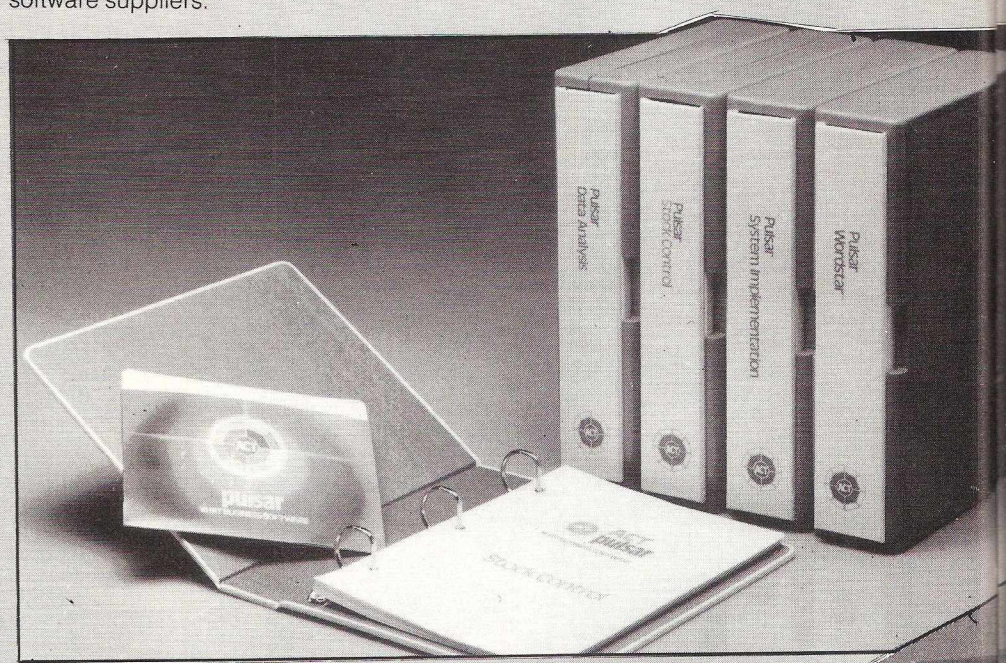
TABS, The Applications Business System from the Andover company of the same name, lost no time in appearing on the PC, along with Omicron software and the accounting packages from Padmede, already approved IBM software suppliers.

and size of operations. Another DBMS likely to take its share of the market is Ashton Tate's Dbase II, not yet released except on an OEM basis with the Sirius machine, but soon to be widely available. Compsoft's Data Management System is also undergoing the 16-bit re-vamp. Wordstar, the most widley used of WP systems, already exists in 16-bit form.

Any software house which can lay its hands on a 16-bit system can probably not inaccurately, claim to supply 16-bit software, but that does not necessarily mean that it takes advantage of the extra 16-bit facilities.

Because Pascal and Cobol do exist in various forms for the 16-bit machines, it has been possible for software houses writing in these languages to steal a march on their BASIC-bound rivals.

UCSD Pascal already has a large following, reputed to be growing. TDI Ltd of Bristol recently invested $250,000 in the portable development system from Softech, claiming that it is the fastest growing micro software system in the



Pulsar, launched by ACT on the Sirius, will be heavily marketed.

Peachtree's accounting and management software also got a boost with the IBM approval. Probably of more significance than the applications packages, which can be re-compiled to run on 16-bit machines with no great changes or even improvements, are the systems tools in-between, for text and data manupulation.

MDBS, already established as one of the most robust and thoroughly professional of microsoftware databases, is already under development for the 16-bit market. 16-bits can make a great difference in the case of a data management tool, both in speed

world. The company points to the 'vast amount of software' quickly available for the Sirius, IBM, and Sage machines, and is convinced that the p-system, a sort of intermediary Pascal code, provides the best possible bridge from 8-bit machines to 16 and 32-bit kit. Popular though the system is, it is not one which springs to the mind of the average buyer hunting for a system.

CIS Cobol was one of the first Cobol implementations on 16-bit machines. This has enabled a lot of business software houses, some of which have 'filtered down' from the mainframe professional Cobol market, to prepare for the 16-bit rush with packages which not only run on 8 and 16-bit kit, but actually make use of the extra bits on the larger systems.

Over 40 software houses are registered with Micro Focus, whose CIS Cobol and Level II Cobol compilers are implemented on a wide range of microcomputers. Applications written in Cobol for 8 and 16-bit machines include stock control and accounting, payroll packages for Action File Software, AM Programmers' Comprehensive Accounts Management Package, CSA Micro-systems' Policy Master for insurance brokers, Damanpay payroll and retail system from Daman Computer Services, Peachtree's range of management and accounting software, SM-Plan for materials requirement planning, Sitpro's SPEX for exports invoicing and administration, and Sun Account from Systems Union, for general ledger accounting. – insert Action File Bill us quote.

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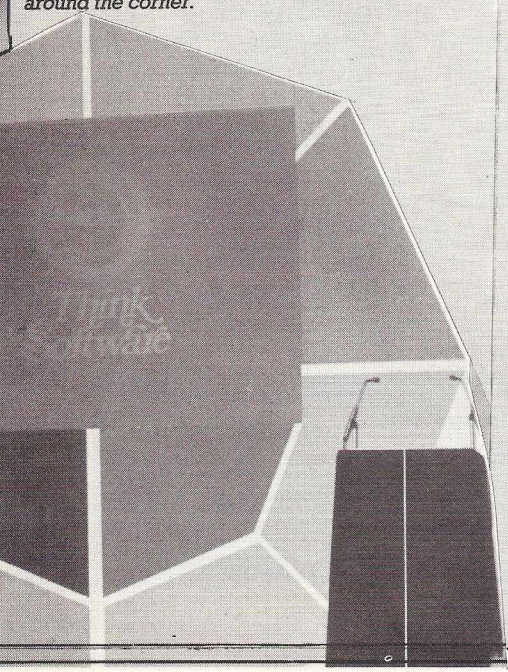

TABS' Terry Poole: "No advantage at the moment."

For those who are set on finding 16-bit packages which will make a difference in speed and power, then they are not impossible to find. It is more important to examine the wider needs – single user or multi-user – which should dictate the environment.

TABS and Omicron, two well-known business software suppliers, are taking different routes to upgrade their existing product lines.

TABS and Omicron probably number among the most popular of UK accounting packages, along with the US supplier Peachtree, which is bound to dominate because of IBM's initial approval at the launch of the PC. Both TABS and Omicron have gone through the necessary motions of adapting their software for 16-bit machines.

"The awful truth is that it makes no difference," said Terry Poole, MD of TABS. "There really is no advantage at the moment, although that will change when the 8086 replaces the 8088 in the PC and other machines."

TABS asked many questions about 16-bit operations when adapting their software for the Sirius, such as "does it give parity checking in memory?" The answer was no, although there are certain initial – not dynamic – checks. Disk error checking too was not much improved over 8-bit systems, although there was a read after write check. As yet the memory management and automatic loading of programs are not available, although that, with the 8086, is where the main advantages will lie.

The advantage immediately accruing, according to Poole, is the screen size. "The larger the screen, and larger disk capacity are a tremendous advantage over Apple. The 8-bit Apple can actually run larger programs because of the partitioning, but it only has a 40 column screen."

The worst problem in preparing for 16-bit systems, he says, is the compilation time, which can involve a man-day per machine. "There were a few minor modifications for the screen handling, but in effect, all we did was to connect a Sirius with a Superbrain and read from one, to write on the other."

However, some improvements are planned, when possible. "If we'd been able to use memory mapping we'd have been able to make some changes in program residency so that programs and data could be located in memory and thus accessed faster from disk." However, Poole recognises the importance of the advancing technology of networked and multi-user systems. TABS software has already been given record-locking facilities. He is of the opinion that MS-DOS will soon be supporting more than one terminal. "Most of the 16-bit machines will go into loosely coupled networks."

He cites the main problem as being the file structure incompatibility often encountered between successive releases of the same operating system. "It can mean six months ironing out the bugs – the software houses bear the brunt of all that."

Omicron too admits that a full memory addressing is not a feature of their 16-bit implementation.

"We've converted to run under MS-DOS on the 16-bit machines," said MD Vince Wells. "The update takes less time but not such a great saving that most users would notice, and we can handle high-precision numbers. Otherwise, it's really the long-term benefits that are more interesting."

Wells is planning to develop all the Omicron software on 16-bit machines from now on, mostly because of the benefits of data validation, and linking of applications. "For instance, in a job costing program, if there is a big base from which to work, it's possible to bring in a table of job numbers into core – that's typical of the kind of enhancement we can make with 16-bits."

The linking of such applications as sales order processing and stock control could be done with 8-bit systems, but would mean losing a lot in terms of speed and performance, not to mention disk space.

IS 8-BIT SOFTWARE DEAD?

Contrary to popular belief, 8-bit computers are continuing to sell very well indeed – since they offer a larger installed base, support mechanisms, and software range, for less money.

All the indications are that, at this stage, the only advantages in buying single-user systems based on 16-bit rather than 8-bit machines are 'fringe benefits' and hardly worth the extra cost unless high precision number handling larger screens, and programs size are crucial factors.

Most suppliers of software seemed to agree with Terry Poole of TABS, who believes that a misleading amount of emphasis is being put on the 8 or 16-bit question. "It's surprising how long it has taken people to realise that you don't get twice as much with 8-bit systems, or at least, only in terms of disk space."

The point at which it does make a difference is when a company is on the threshold of multi-user systems or networked and distributed processing. It is in the shared resources market that 16-bit power is going to come into its own, and it is very unlikely that the existing huge single-user market, and 8-bit software particularly, will die out.

The two classes of software are likely to exist alongside for some time yet, and no doubt a lot of work will be done to provide bridges between single user and multi-user systems so that 8-bit users can upgrade to 16-bit hardware with the minimum of trauma.

At the moment those predicting the imminent demise of 8-bit software had better take a close look at what is happening at the bottom end. Migration facilities are already on offer, with Digital Research's own CP/M Card. Significantly, it offers the chance for IBM PC users, in all the glory of their 16-bit machines, to run, guess what? – good old proven, comfortable 8-bit CP/M software.

At the moment, there are few demonstrable advantages for the single user to jump for 16-bit systems and their software. If one can manage efficiently on a small 8-bit system, why spend a lot of money on something that will be largely redundant? Perhaps that should be the next question after, "So what?" ... but there's no accounting for fashion.

Equinox claims that using Dataflex, the resulting applications are fully optimised for 16-bit working, and quotes a re-writing time of two weeks for a mainframe personnel system which was re-created – accurately – using Dataflex. The database system should be available some time in 1983 for the 68000, that trendiest of processors, and other operating systems are also in the pipeline for Dataflex implementations, including 'minority' OSs like Oasis. If it becomes widely available in the UK, it should be one of the first software products to give the lie to the 'no 16-bit tools' myth.

Logica – one of the UKs most successful software houses in the mini and mainframe business – has had its excellent RAPPORT database running under 16-bits for a good many months. Logica claim that RAPPORT is the only micro package to implement correctly the concept of a 'relational database'.

The long way round, if there are no portable routes available, is to re-write systems tools in native machine code. In the case of the MDBS micro database, and some word processing software, this is beginning to happen. MDBS in 16-bit form is on its way, as is the Ashton Tate Dbase II database, and Tamsy's has already taken delivery of the first 16-bit Wordstar.

16-bit software is open for business – just. It remains to be seen whether or not there will be a rush to buy it □

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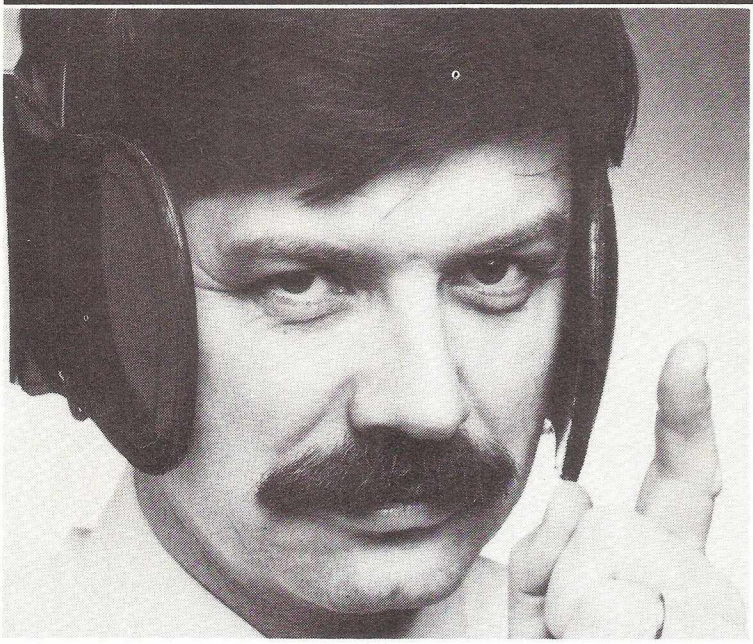
The blinkered approach...
'With 16 bit micros, there's only a couple of good software packages available'



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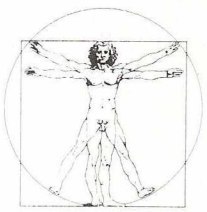

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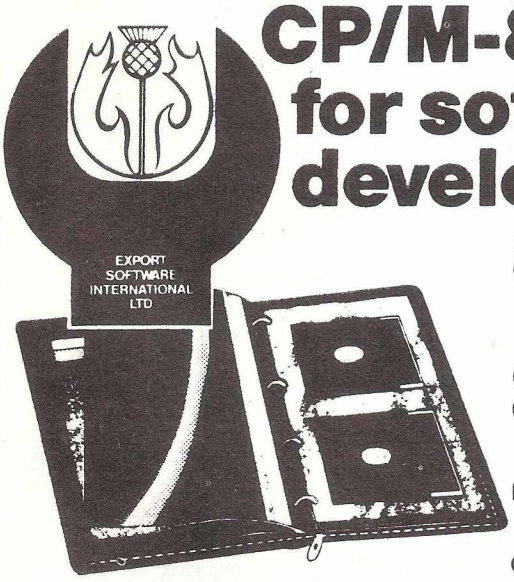

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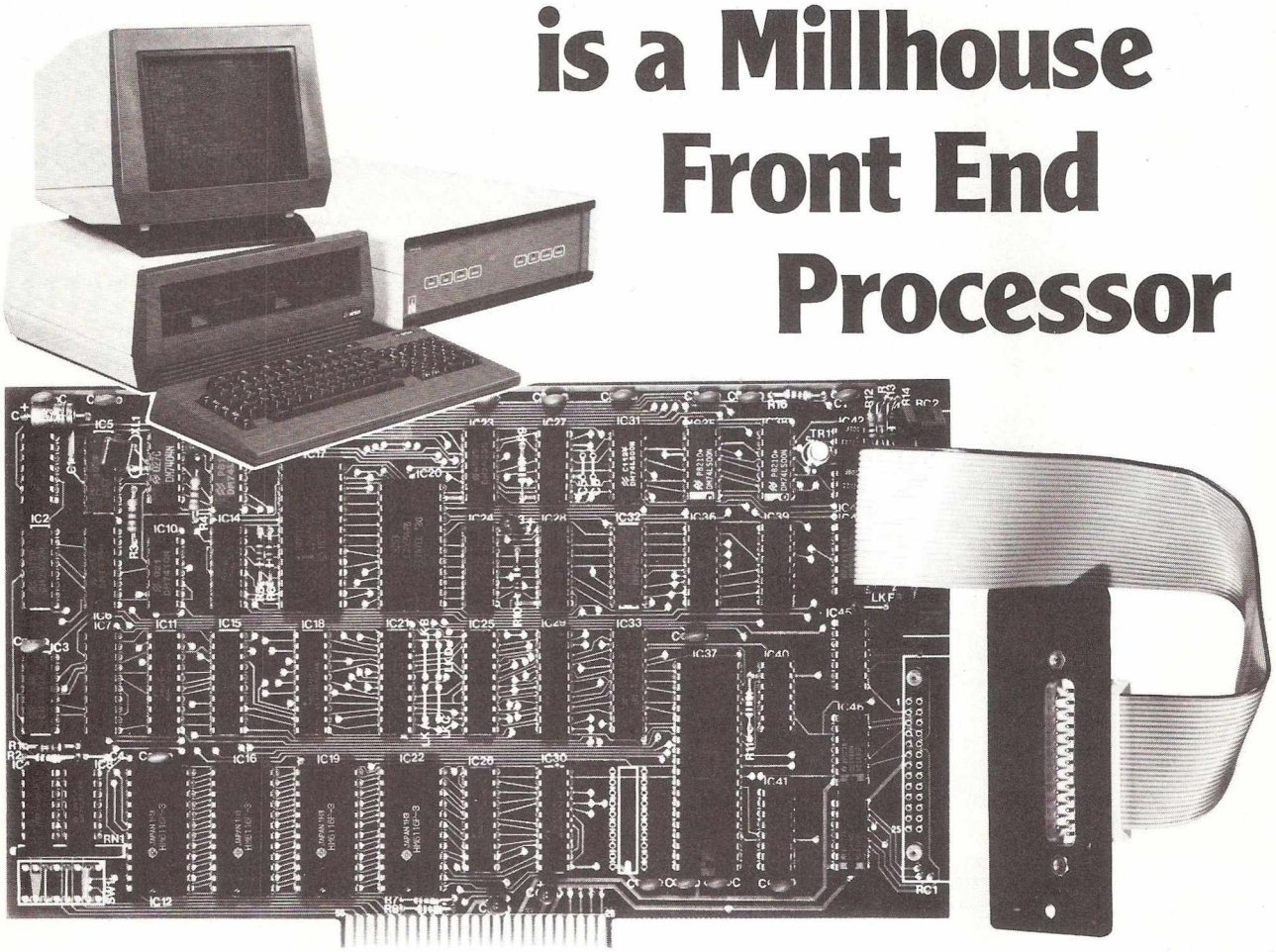

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HOME TO BUSINESS

Word Processing ...is it good for you?

Continuing his series looking at how much you can learn about business computing with a home Micro, *Charles Christian* tries out the brand new *Commodore '64'* with the highly acclaimed *Easy Script* word processing package.

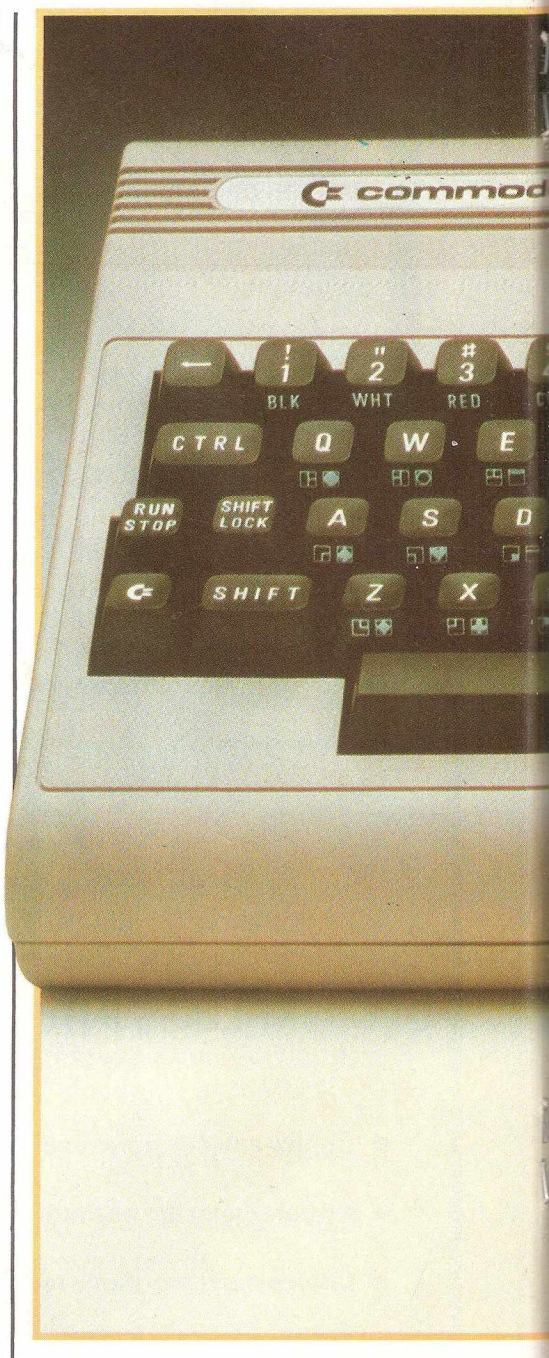
Those of you who ever read the 'heavy' newspapers – you know the ones that are full of words as opposed to just pictures – may have noticed from time-to-time over the last few months a series of advertisements being run by one of the major office equipment manufacturers. Enrolling the diverse talents of Jeffery Archer, Jilly Cooper, Len Deighton and Ernie Wise, they extol the virtues of a particular range of electronic typewriters and word processors.

These machines both look and sound good, unfortunately unless your earnings are on a par with the characters featured in the advertisements, the chances are you are not going to be able to afford to buy one of them. Indeed, if you are also considering buying some form of computer technology to carry out more generalised processing tasks, the cost of acquiring a dedicated word processor as well, is going to make it very much a luxury you can ill afford.

One way around this problem is to employ a general-purpose microcomputer system which can also double as a word processor. There are plenty of systems around which meet this specification for the professional/business user at the top end of the market, but what about the lowly home computer sector?

For someone just 'getting into' computing, word processing is an ideal beginners application, for within a very short period of time you can start producing results. By comparison some of the more complex software applications, such as bookkeeping, require weeks of rather tedious data loading before you have anything positive to show for all your efforts.

So if your introduction to computing also involves having to overcome a degree of 'techno-fear' – if you will excuse my use of a particularly noxious example of 'Guardian' social worker jargon – then word processing is the application for you.



For precisely this reason, I was particularly pleased to learn that one of the first applications I was to be able to try out on my long-awaited home-to-business computer, albeit a demonstration model on loan, was word processing.

Lively Interest

As those of you who have been following this series with anything remotely approaching a lively interest

HOME TO BUSINESS

will know (and the rest of you had better watch out, as we are going to be asking you questions on it later), those nice people at Commodore have been kind enough to lend me one of their new '64' personal computers. In fact the circumstances surrounding its arrival were such that I actually began to feel a bit like Charles Ryder – a character in the book 'Brideshead Revisited' by Evelyn Waugh, for those of you who don't know any better.

There I was whiling away my time having, as is my usual fashion, a light snack of plovers eggs and champagne before setting out for the evening's festivities, when suddenly out of the gloom of the late afternoon came the dazzling headlights of a racy Ford Escort. Who was this Boy Racer who had come to visit me? Why, it was young Sebastian Pawson, heir to stately Harpton Parade. And, clutched in his hot little hands, instead of the usual teddy-bear, was a box bearing upon its lid the mysterious message 'This way up, use no hooks'.

"Ere", he said, for he is a cultured fellow. "I've got just the job to keep you out of the pubs this Christmas. It's the latest 64 gizzmo from Commodore and their new word processing package."

I must admit I was initially rather taken aback by the idea of learning word processing, for, as someone who still does all his typing with one finger on an old portable, manual typewriter, I was

HOME TO BUSINESS

rather dubious as to what I would make of a word processor. Still mine not to reason why – just to get on with it and earn my fee.

Talking of being taken aback, it was not only myself that was taken aback, for 24 hours later our dynamic editor had returned to take back the '64'. Apparently he had managed to scrounge a special pre-production model designed to run on Commodore's new top secret monitor and it was the only unit in the country and desperately needed in Slough for a photographic session. So away it went. Several days later back came Squire Pawson with another model.

Curved Profile

I am sure you have all read the advertisements and technical previews of the '64' to make it unnecessary to go into any great deal about the hardware. Basically the heart of the '64' system, the processor module, is a surprisingly light keyboard unit incorporating all the memory and interface electronics. The actual housing is almost identical to that of the VIC with the exception of the keyboard, which has a slightly curved profile giving it a pitch and feel which I found easy and comfortable to use.

The layout of the alpha keys is in the standard 'qwerty' format with numeric keys across the top row – to get upper case you simply press the 'shift' key. The keys by the way are of the same shape and size that you encounter on a standard electric or electronic typewriter – indeed they are probably better than on some of the rival word processing systems around. This means that for the trained typist it is possible to achieve a fast typing speed. At the same time another plus point is that the keys are not unduly sensitive and will only register a character if they are firmly pressed. For a slow typist like me, who has a tendency to drag his hands across the keyboard in search of a particular key this can only be a good thing, as it means, unlike with other system I have tried, that I am not forever back-spacing to erase extraneous 'p's and 'q's.

The system I was trying out came supplied with a CBM VIC-1540 single drive floppy disk unit, and the CBM VIC-1515 dot matrix graphic printer. The disk unit was perfectly straight forward to use and I have no complaint to make about that. As for the printer, the '1515' is a fairly basic machine and for more elaborate word processing applications, particularly if you are going to be sending out letters on single sheet stationery, you would need to have a far more sophisticated, and expensive, printer. I was glad to note here that the '64' is compatible with a wide range of other printers including Qume, Diablo and the Spinwriter. For a beginner, or for accounts or technical work, however, the '1515' is perfectly adequate, and cheap.

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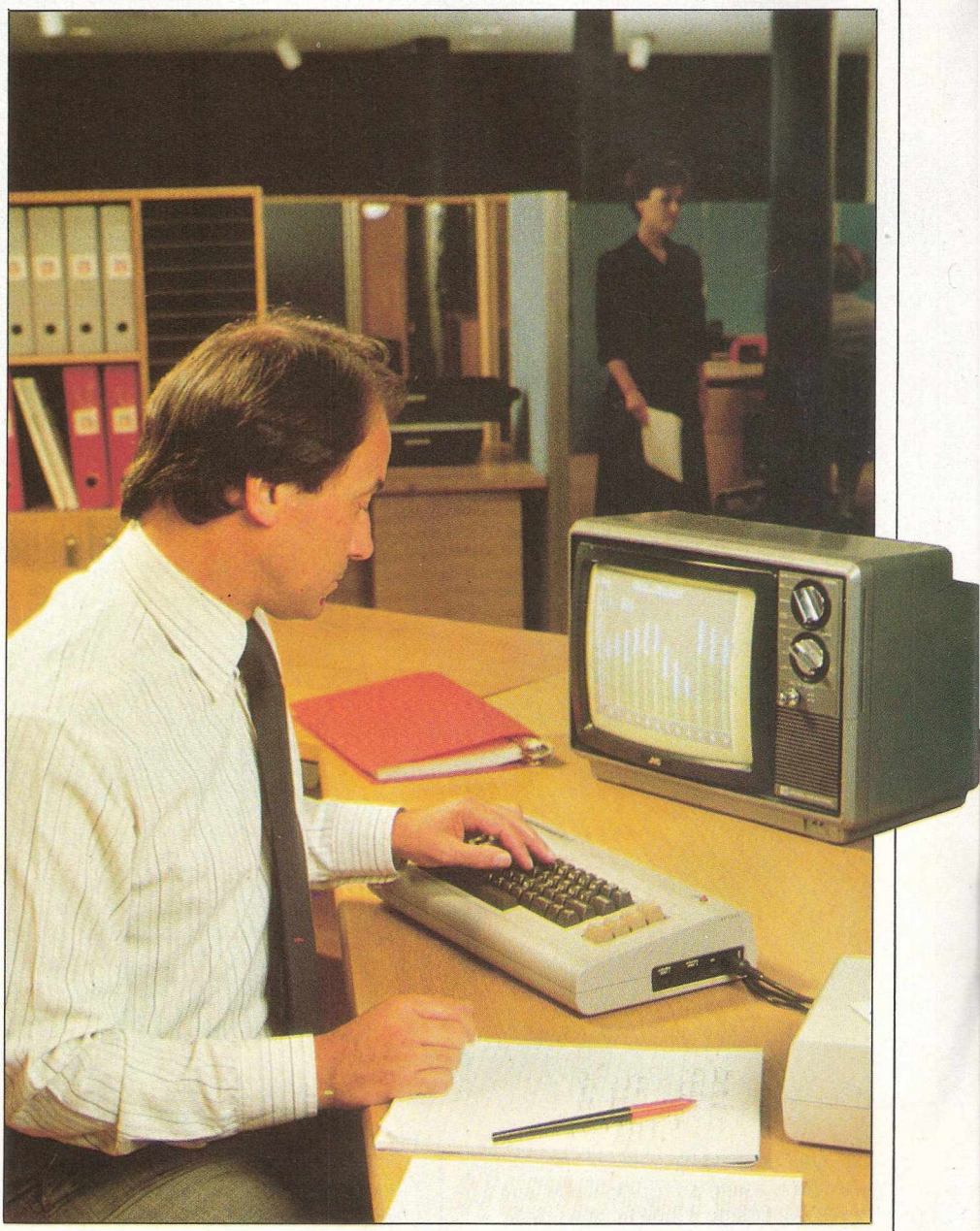

Within a few hours I had reached a point where I could compose, edit, store, print, recall and then print out all over again.

Noisy Printer

I would just say that I thought the printer was unduly noisy; indeed, when I first switched it on the sudden racket sent the cat scuttling off into the garden

to cower under the tool shed. Still it was in need of an airing, so perhaps that was no bad thing and, to be fair, the printer was really no louder than a lot of other cheap models on the market.

Finally on the technical side, the system came complete with a transformer-type device which looked like something off my old Hornby train-set and which I suppose – here speaks the complete non-technically minded person – completed the circuit between the mains, the 64, its peripherals and my humble colour television set, which I was using for a VDU. Anyway as far as I was concerned it was just a grey box which sat on the floor and which I occasionally tripped over.

And that neatly brings me around to my one big complaint about the hardware side of the 64. The fact that when I was running it, there seemed to be cables lying around everywhere, linking unit to unit and each unit, via its individual lead to a power source. Now I know that plenty of other computer systems suffer from exactly the same problem, but I do wish someone would take a leaf out of the hi-fi and audio industry's book and devise a method of doing away with all these yards of electrical 'spaghetti'.

And so, on to the word processing...

The actual software package I had was one of the latest entrants to the increasingly crowded world of word processing programs. Called 'Easy Script' it is a Commodore product which should be coming available just about now, costing £75 for the disk-based software and documentation.

Commodore, incidentally, intend this to be the first of a suite of interlinking business software for the '64'. Other projected programs, due for launch in the Spring and early Summer of 1983, include 'Easy Spell', a dictionary and spelling checking system; 'Easy File', an information handling program; and 'Club Secretary', a membership system that can generate subscription bills and mailing lists.

Commodore have taken as their design parameters the need for word processing software to be capable of providing the easy generation of personalised standard letters; the ability to create documents from standard paragraphs; and to view and edit an entire document before printing out a top copy. In other words, to provide a way of saving space, time and temper.

Document Handling

To this end 'Easy Script' is to some extent unremarkable because it contains all you would expect from a word processing system. There are such features as horizontal, vertical and decimal tabs; comprehensive printer controls, including variable margins and page length, underlining and bold print; easy document handling by means of file linking and automatic mail merge; and a range of editing and updating facilities including automatic 'locate and replace', text transfer of words, sentences and paragraphs, and insertion, deletion, erasure and merger capabilities. Quite simply 'Easy Script' gives you all you would expect from a professional word processing system, it is certainly not a 'Mickey Mouse' kiddy system.

That at least is the theory behind it, but how does it work out in practise?

According to Commodore's publicity material the software 'comes complete with an easy-to-understand manual' which includes an extensive training

One big complaint about the hardware side of the 64. The fact that when I was running it, there seemed to be cables lying around everywhere.

section. The training section consists of step-by-step exercises which enable anyone to learn to use 'Easy Script'. If you have never used a computer or word processor before, you can be doing useful work within a few hours.'

Question: "True or false?"

Answer: "Yes and no" – unfortunately.

Because I had been supplied with a pre-release version of the software, I did not have a finalised copy of the manual. All I had was several hundred feet of computer printout containing part, and only part, of the text. This made the training procedure rather difficult as, for example, sections dealing with error messages etc. were missing. It also meant, because there was no index or pagination, that in order to find a particular section of the text I had to work my way through the whole length and breadth of the printout. Needless to say this did not make life very easy, particularly when it became entangled with all the cables lying all over the floor. Still, serves me right for being so impetuous.

Teaching Programs

Anyway, despite this decided drawback, I pluckily settled down to teaching myself word processing and, surprise, surprise, with the aid of the teaching programs, within a few hours I had reached a point where I could compose, edit, store, print, recall and then print out all over again letters, text and even the outline of an article.

Not being a trained typist, I suspect that my experiences with 'Easy Script' may not be shared by everyone. I therefore offer the following comments, not in any particular order of importance, but merely as they were encountered by me:

- To begin with much emphasis has been given to the 64's colour graphics, and with 'Easy Script', simply by pressing one of three keys it was possible to change the colour of the border, the page and the text displayed on the screen. Needless to say, I wasted a lot of time experimenting with this facility, including creating a totally illegible combination of white on white on white. The odd thing is, the combination I found to be the most restful on the eyes was a green script on a grey-black background. In other words, the traditional colouring of a cathode-ray tube VDU. An example of race memory?

- Another aspect of using the system I quite enjoyed, was the flexibility it offered. For someone whose natural stance is the prone position, and preferably in bed at that, there is nothing I dislike more than being hunched over a desk, sitting in a badly-adjusted chair, being dazzled by an equally badly adjusted anglepoise lamp, hammering away at the keyboard of a typewriter. With this particular word processing system, however, it was possible to sit in front of the screen working the '64' in the classic VDU-operator position. Or it was equally possible to just slump on a couch with the '64' on my lap. (Although I must admit I did find it rather disconcerting as the unit began to heat up and slowly char my trouser leg).

- Other thoughts. Do no be put off by the fact you have to give each piece of work you do a name and file reference number – this information, it should be noted, does not appear on the top copy of any work you print off. At first I found the referencing to be a bit of a fag, but in fact when you think it through, it is equally laborious to have to put a reference number on a manually prepared letter – and that will show on the top copy – and then store away the draft or carbon copy in a folder in a filing cabinet.

- Likewise I initially found it annoying to have to keep moving the cursor backwards and forwards across the screen to make the appropriate insertions and deletions to the text. But there again it is equally tiresome waiting for the Snopake to dry, or trying to correctly line-up the text on a conventionally typed letter after you have removed it from the machine but find you still need to make amendments. And of course, it still involves less bother and annoyance than having to re-type the whole page all over again. Unless, of course, you happen to be a very fast typist!

Savings

So much for various pointers in favour of the system, but how did I find it generally? Have I now become a member of that school of thought that believes word processing to be the greatest thing since sliced bread?

That is rather a more difficult question to deal with, and I suspect that how it is answered will very much depend upon the abilities and preferences of each individual user.

In my own case, one factor I was conscious of was that because I am not a fast typist, I was unable to take advantage fully of the savings in time such a system can offer. My normal modus operandi (method of work for the thickies amongst you) is to type out the text as I compose it – my right index finger more or less operating at the same speed as my brain. I then scribble all over this rough draft until I am happy with the wording and then laboriously, and using the same digit, type out the final copy. Because I type at such a snail's pace, this final draft is almost inevitably free of any mistakes (he says modestly) thereby making it unnecessary to do any further editing.

Now I can concede that a word processor would speed up the production of the final draft, but because of the way I work, entering the original text into the system would take just the same time. Whilst at the correcting and editing stage, I am sure that I can still wield a biro considerably more quickly than most people can shift a cursor. Timewise, then I suspect that the production of text by word processor would take, on balance, about the same as if done by more conventional methods. Which I am afraid does not make a very powerful argument for investing in the necessary hardware and software. However, were I a faster typist then perhaps I would think differently.

By way of an aside on this aspect of using the system, one local authority with which I am familiar, observed a similar lack of increase in the productivity of their staff following the widespread introduction of computer terminals at their offices. They tackled the problem by sending all their staff off to 'Sight and Sound' touch-typing and word processor operating courses so that they could become adept at using the hardware and, thereby, get the most value out of it.

I found it harder to relate to the electronic page than I did to the proper page. The result was that I was not able to sustain the same level of involvement

Pseuds Corner

There is, however, a second and possibly more fundamental factor to take into consideration and that is becoming acclimatized to the idea of working directly onto a VDU screen rather than onto a sheet of paper. Now I know a word processor contains an electronic equivalent of the page format, but I personally found it hard to train myself to think of that as the text I was working on. To use a phrase worthy of 'Pseuds Corner' I found it harder to relate to the electronic page than I did to the proper page. The result was that I was not able to sustain the same level of involvement with or concentration on what I was writing, particularly when I was having to go composing an article for one of the other magazines I write for.

Bearing in mind that many of you reading this are going to be in the same proverbial boat as me – self-employed or with a small company and running your own enterpreneurial or even creatively orientated business; in other words, doing work where you have to think before you write – as opposed to mindless copy-typing. The question therefore arises as to whether, disregarding the physical side of your output, the use of a word processor is actually going to make you psychologically less productive?

To round off this article then, I would most definitely say that if you are looking for a relatively cut-price way to start a fairly professional standard of word processing, you would not go far wrong by opting for 'Easy Script' and running it on Commodore's '64' system. Indeed, armed with a printer of reasonable quality some businesses may well find that this will be all they ever need.

As to the more fundamental question of whether working with a word processor really suits you – that is something you will have to find out and decide for yourself.

In next month's *MicroComputer Printout* I will be looking at another type of business application which can successfully be run on a personal computer system. In the meantime I am going to keep trying with 'Easy Script' and the '64'. Perhaps then I might get to like the idea of word processing a little more!

For New Readers

The idea of using a home micro for business computing was introduced in our December 1982 issue. In January we looked at the type of hardware available and main applications. The series will continue with detailed looks at specific computers and software packages.

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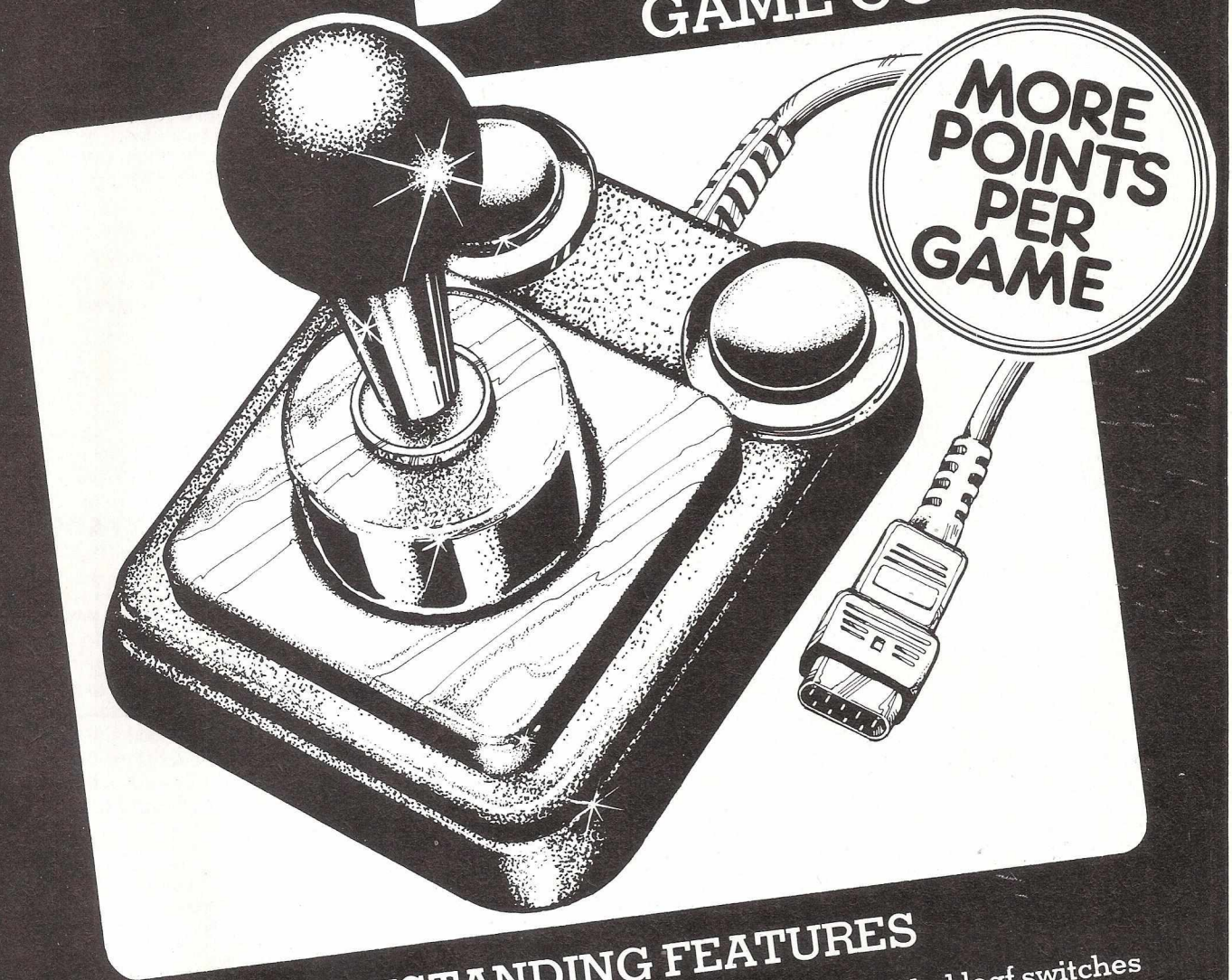

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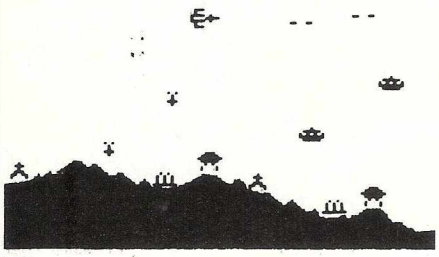

"A real action shot of the game"

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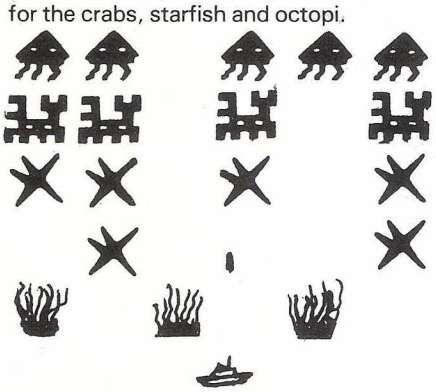

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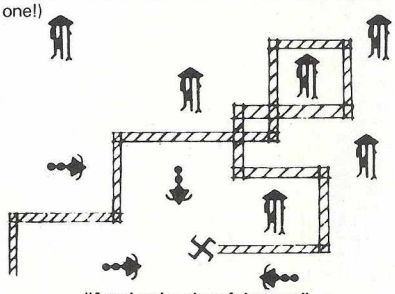
For unexpanded Vic20

You are in shark-infested waters after being thrown overboard from a pirate ship. Your only protection being an atomic net which you trail behind you, trying to cover all the visible ocean and ensure the sharks at the same time. Beware of stopping or covering your tracks for too long, if you do, then the sharks will escape and come after you. Watch out for the ever increasing deadly octopi (sometimes the sharks will eat part or all of one!)



"A real action shot of the game"

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NEW NEW NEW

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For the unexpanded Vic20

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PAUL DANIELS' MAGIC OF THE MICRO!

Paul Daniels, TV magician, Atari user and MicroComputer Printout reader – talks to Richard Pawson.

'RESIDENT'S PERMIT HOLDERS ONLY' said the parking notice outside Paul Daniel's regency house situated in one of London's more exclusive crescents. I parked there anyway, thinking that an interview with television's foremost magician had to be worth a parking ticket. I found myself remembering the chance circumstances that had led up to this visit.

A radio programme had been the trigger – Gloria Honeyford 'chatting' to Paul Daniels. "Does anything still baffle you?" she had asked the maestro.

"Oh yes, my computer for one thing..."

I turned up the volume to compete with the noise of my under-powered 1600, tachometer straining against the red line, but he didn't elucidate. Could he really be a home computer owner? Back at the office and fourteen sneaky phone calls later, I had his home number.

"*MicroComputer Printout*," I announced. "We are a magazine about home computers..."

"You are not just a magazine about home computers," he interrupted in that inimitable style with which he humiliates the victims on his TV show, "you are a very *good* magazine!"

That I wasn't expecting; not only does Paul Daniels have a home computer (an Atari 800), but he reads *MicroComputer Printout* every month.

A few days later, I was at his front door.

"Come in," said Joyce his secretary, "let me get you a coffee. Paul's playing with his toy right now."

"Playing?" said a muffled, but familiar voice from the next room. "This is *work*!"

I made my way into the inner sanctum, a small, crowded study with shelves and floorspace piled high with books and props; amongst them two Rubik cubes.

"What is your best time?" I enquired innocently, pointing to the cubes.

"A quarter of a second," he responded. "I just throw it up in the air and it comes down solved!"

I should have known better than to ask, really.

Puzzled

Warming to his theme – he showed me a model bird suspended, apparenty by nothing whatsoever, in the middle of a glass cage. Paul Daniel's shows have frequently left me puzzled, but that blasted bird has kept me awake at night ever since!

Trying to manoeuvre the conversation back to a position that would leave me feeling less stupid, I brought up the subject of consumer technology. Quite apart from the computer, one complete wall of his living room was taken up with a massive racked Hi-Fi system and a projector television.

PAUL DANIELS' MAGIC OF THE MICRO!

"I have always been a gadget freak," (I had already deduced this from the contents of his study) "and I bought one of the first Mattel Intellivision TV games. I still believe that this machine has the edge for video games."

"So what initiated the switch to home computing?"

"Everyone had been telling me what wonderful things computers were, but no-one explained what they actually did Having become a keen photographer purely by self-teaching, I set about trying to learn about computers by buying all the magazines."

"I have to tell you that eighteen months later I was absolutely none the wiser. All those glossy advertisements disguise the fact that computer manufacturers are really doing a wonderful job of *not* wanting to sell you their product! By virtue of all that gobbledegook they are missing the biggest market – computer ignoramuses like me."

(Readers note: at this point, Paul had the grace to say that had he seen Terry Hope's article on the Atari 800 in business, it would have saved him 18 months research. However, we won't be making anything of this because Terry is hard enough to work with without having endorsements to his articles by well-known personalities!)

Utopia

In near desperation, Paul entrusted himself to a computer dealer – in Guernsey, where he was on holiday.

"I had given up trying to understand what to buy, so I just handed over £1000 and asked them to give me the best machine for that money." He was doubly fortunate – first in being able to buy in that way (where most of us are counting the pennies) and second in finding a reputable dealer.

"With hindsight, I now know that the Atari 800 system I ended up with is probably the best system for my needs – because of all the software available."

I asked him what had been the original application he'd had in mind?

"I wanted to catalogue my collection of books," he said, indicating the unsightly piles of dusty volumes and tomes which comprised the main furnishings of his office. Like a great many businessmen installing their first computer, I suspect he secretly hoped that the computer would somehow tidy the whole place up! His bibliographic Utopia, however, proved to be further away than he first thought.

"I am no dummy when it comes to switches and operating gadgets, but the instruction manuals left me cold – they contained the same gobbledegook I had found in the magazines. Take this RS232 interface manual," he whined – grasping an extremely heavyweight loose-leaved tome, "it tells me everything I *never* wanted to know about parity, status bits and baud rates, but not what I can actually *do* with it. Even a can of beans tells you how to cook the contents!"

Computer manufacturers are really doing a wonderful job of *not* wanting to sell their product!

Did he read that in conjunction with watching the TV programme?

"I rarely watch any TV at all. My idea of entertainment is being talked to by a stand-up comic, I like watching Jasper Carrott, for example, but anything that involves an audience or members of the public is just too close to my work to be fun."

I wasn't sure quite what this had to do with the BBC Computer Programme, but clearly TV is a subject too close to his heart.

"TV audience ratings are dropping by the month. I think video games and home computers are assisting that decline. Once you've started interacting with a TV screen, you don't want to go back to just watching it all the time."

I steered him back onto the subject of computers and asked about the program he was running. It was clearly a business program so he had made progress since purchasing the system.

An Atari 800 forms the central part of Paul Daniel's home computer installation, with a single disk drive and cassette on the left. Behind these is the Atari printer interface, and a Panasonic colour monitor. The Epson MX-80 dot matrix printer will eventually be replaced with a letter quality model.

To most people computers are magical things in themselves – they wouldn't be surprised by *anything* shown on a computer screen.

"What is the one application everybody has in common?" he demanded of me. I shrugged – no match for this verbal juggling. "Names, addresses and telephone numbers – everyone has a book of those, so everyone can identify with that as a simple application."

Audience

Apparently the only book to have matched up to the Daniel's Standard for Teaching Material was the BBC's own book, *'30 hour BASIC, by Clive Prigmore'*, the vitues of which he extolled for a good five minutes.

"This program's called KEYWORD and it comes from a company called Amazon, run by a charming couple – Gil and Beryl Williamson."

Paul took a great liking to their company and products (he had already admitted that he usually gives suppliers a very hard time). "I seldom buy a product that can't be improved upon in some way."

Clearly KEYWORD is an exception. "The thing I like most is that on one disk you have both a word processor and a system for handling names and addresses. It's easy to use, telling you what to type in at every stage. Even when I deliberately do something wrong to try and beat it, it picks me up!"

Card Tricks

Paul is still in the process of transferring his client file from a box of cards onto KEYWORD: that's more than one thousand addresses of friends, suppliers, fans and theatres. He hopes to upgrade from the MX-80 dot-matrix printer, to a letter-quality model shortly.

PAUL DANIELS' MAGIC OF THE MICRO!

"In the meantime," he said, "I make no apology to the recipients for the type of print. My first word processed letter said, 'this letter has been produced on a computer. It might not look as good as a typewriter, but if I made any typing mistakes in producing it, you'll never know about them!'"

Phase two of the masterplan is getting his secretary, Joyce, to use the machine.

"She's the best there is," he whispered to me, "but terrified of computers."

I had already noticed the quaint handwritten instructions taped to the side of the computer – so he can't have been completely happy, even with KEYWORD's documentation.

His manager, Mervin (to whom he accorded the same degree of respect as does Telly Savalas on the famous Bacardi advert), is also not exempt from the Paul Daniels' Computer Literacy Project.

"Read this," he said, throwing the latest copy of *MicroComputer Printout* at Mervin, "you might *learn* something."

But all work and no play makes Paul a dull boy, so I asked whether he ran any games on his Atari. I had taken along a copy of *'Starcross'* as a present (Terry Hope had recommended it as the program Paul Daniels was least likely to own already).

"I'm addicted to adventure games. When I bought my copy of *Zork*, the fellow in the shop said he had been playing it for months and still hadn't completed the solution. I got back to my house with the disk about 4.30 in the afternoon. By 5 o'clock next morning I was still only scratching the surface so I typed in a very rude word. The system responded with 'ADVENTURERS SUCH AS YOURSELF SHOULDN'T USE SUCH LANGUAGE!' I roared with laughter then, but I was hooked."

I showed him Terry Hope's nomination of *Zork* as one of the programs he'd most like to be stranded on a desert island with (*Microcomputer Printout* December 1982) and asked Paul what his choice would be.

"You do come up with some difficult questions!" he expostulated. Then, after a moment's thought,"*Zork I* and *II* definitely, they could keep me amused for years, and on the strength of those programs, like Terry, I'd probably go for Infocom's other offerings, *Deadline* and *Starcross*." (Good, we had chosen an acceptable present!) "My favourite non-adventure game is probably *Preppie*, that's rather like the pub game *Frogger*."

Softporn

"Needless to say, I wouldn't go anywhere without KEYWORD – if only for typing out my messages to go in bottles. Oh, and one last piece of fun is called *Softporn* – a program which my sons enjoy – they are grown up I hasten to add! This last choice, is an adventure style game where, rather than collect pieces of treasure, you have to seduce different women. Goes down well at parties, though I must say I found it rather too easy." he added, immodestly.

I allowed him to nominate one piece of software that doesn't exist yet. "One package I could really do with at the moment is a program to convert listings as printed in magazines to run on any machine. I don't know why it hasn't been done already – it can't be all *that* difficult to write."

Changing the subject, I asked whether he had tried out the *Microwriter* (*my* favourite toy of the moment). No – he hadn't but he told me something interesting

"Cy Enfield, the inventor of that one-handed keyboard, is one of the world's leading card magicians. So too was a man called Maskelyne – who pioneered one of the earliest typewriters. Interesting coincidence, don't you think?"

I seized the opportunity: would Paul Daniels be inventing a milestone in computing terms?

"Well, I am experimenting with games at the moment and have in hand a project that will be an absolute winner, but it will take another six months to develop."

"TV audience ratings are dropping by the month. I think the video game and the home computer are assisting that decline. Once you've started interacting with a TV screen, you don't want to go back to just watching it all the time."

As with the bird and his repertoire of magic tricks he adopted his clam-like response to all further inquisition on that subject. My surreptitious search through his disk library, while he went to get another coffee, revealed nothing either.

Talking of magicians, had reminded me that I had been itching to ask from the start: did he plan to use the computer as a prop for some new kind of magic trick?

"That would be very difficult, unless I put my Atari up against that Dutchman who can beat the calculator with mental arithmetic. The problem is that to most people computers are magical, mysterious things in themselves – they wouldn't be surprised by *anything* shown on a computer screen."

On the way out, he handed me a bottle of 'Paul Daniels' Bubble Bath'.

"This stuff's magic," he said, "turns the bathwater bright yellow!"

I left with mixed feelings. I was still none the wiser about that blasted bird and the 'amazing' software project he was working on, but charmed by the man's friendliness.

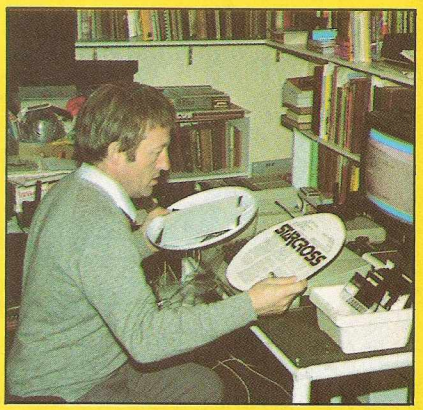
Must be my lucky day – I thought – the traffic warden had been asleep on the job! □

DESERT ISLAND DISKS

Following closely in Terry Hope's footsteps (!) Paul Daniels nominated these programs as the ones he would most like to be stranded on a Desert Island with.

KEYWORD	*– Word Processing and mailing list manager.*
SOFTPORN	*– Game involving the seduction of women.*
ZORK ***DEADLINE*** ***STARCROSS***	*– 3 very high quality adventure games from Infocom.*

(The last of these three programs comes in an unusual frisbee-style package. Inside this package is a perfectly normal sized floppy disk which fits into a disk drive with no trouble at all!)



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CX853	16K RAM Expansion		56.52	8.48	65.00
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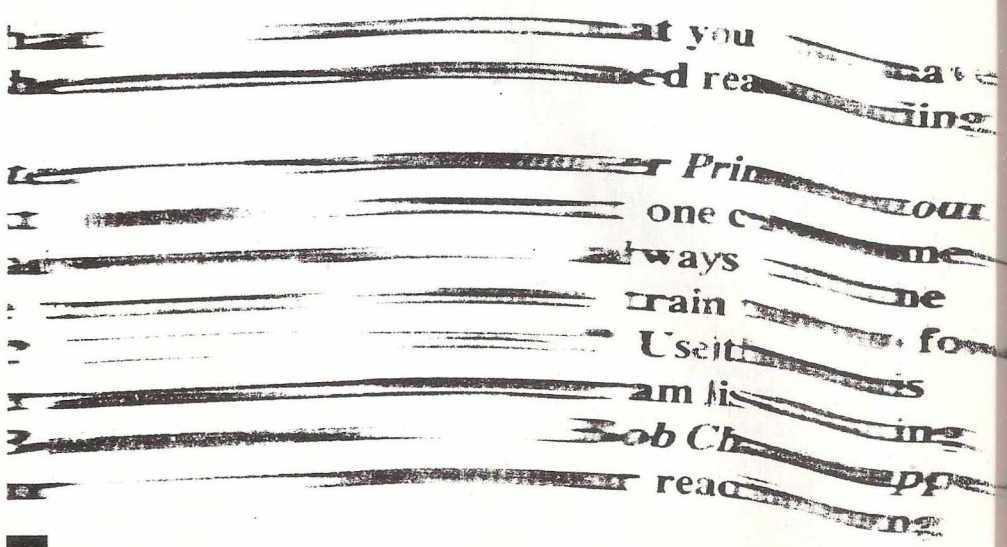
SPEED READING

Do you find that you have only just finished reading one issue of *MicroComputer Printout* before the next one comes out? Are you always the last one on the train to fold up *The Times*? Use this complete program listing developed by *Bob Chappell* to improve your reading speed.



If you've ever been faced with a mountain of papers and documents which you know you simply must read before that important meeting tomorrow, you can be forgiven for wishing there was some magical way of whisking through them at high speed while still managing to absorb their contents.

Although there is no magical way of making this a reality, there are certain techniques which, if practiced, can help in speeding up the rate at which you read and comprehend. Phrase Recognition is one such technique. This method is based on the ability to read a phrase, not by scanning it from left to right but by taking it in all at once. This is achieved by focussing on the central portion of the phrase and using the eye and brain's natural ability to take in the area immediately to the left and right of the area being studied. In other words, looking out of the corners of your eyes. By treating each line of print as a group of phrases, one is able to make only a small number of eye movements on each line instead of scanning completely along the line, from left to right, one word at a time.

To become proficient at this method takes practice and this program was designed to help give you this practice. It covers two methods of phrase recognition; the fast reading of a single phrase and the fast recognition of a particular phrase amongst a group of phrases. Each of these methods allows you to choose whether you want to practice with short or longish phrases, or even a mixture of both. The program includes a timer so that the better you become, the faster the program flashes the phrases on and off the screen. The speed will decrease whenever you give a wrong answer and will increase whenever you are correct.

The single phrase method works by displaying a phrase, chosen at random, on the screen for a very short time. The phrase is printed between two guide lines so you know exactly where to focus your eyes. When the phrase disappears from the screen, you will be asked to enter it from the keyboard. You have the option, in this method, of only seeing a particular phrase once or of allowing it to be repeated at random throughout the session. If you choose the former, the program will let you know when you have used up all the phrases and will return you to the option menu. There are 100 phrases embedded in the program, 50 short and 50 long. Typing an asterisk as an answer returns you to the menu, in both methods.

The second method offers you a key phrase and then displays 12 phrases in a list down the screen. Before these are wiped off, you must scan rapidly down the list to determine how many times the key phrase appears in the list. Remember to focus your eyes on the centre of the phrases and scan down the middle, endeavouring to take in the whole of each phrase without moving your eyes left or right.

You can replace the phrases in the Data statements, once you become too familiar with them, by any of your own choice. You may also wish to replace the initial speed at which the phrases are flashed – you can do this by amending the value of TM in lines 110 (method 1) and 115 (method 2).

Given time and conscientious practice, this program may help you to read *MicroComputer Printout* in less time than it has taken you to read this article!

PROGRAM OUTLINE

80-120	Select the method and options.
Method 1	
130-150	Repeat the phrase or not.
160-190	Select random phrase. Set relevant element in L array to 1 if no repeat required. Lines 160 and 185 are a delay routine before starting each test.
200-220	Print appropriate length guide marks on the screen. Line 205 holds the main code for centralising the marks.
230-245	Display the phrase between the guide marks.
250	Timer.
260-310	Blank out the phrase and obtain user's answer.
315-325	Print for how long next phrase will be displayed.
Method 2	
335-345	Print for how long list will be displayed.
350-360	Select random key phrase and display it.
365-385	Decide how many times key phrase will appear and on what lines. Elements 1 to RN (where RN is number of appearances of key phrase) of array L hold the line numbers where the key phrase will appear. e.g. L (1) =9 means that the key phrase will appear on line 9.
390-400	Select rest of phrases to make up a list of 12. Elements RN+1 to 12 of L array hold the pointer to the appropriate phrase e.g. L (9) = 74 means the ninth selected phrase is phrase number 74, that is P$ (74).
405-435	Display 12 phrases with key phrase inserted at determined lines.
440	Timer.
445-485	Blank out the list and obtain user's answer. Adjust time limit for next round.
495-505	Obtain a phrase at random. Set LL to the length of the longest phrase selected.
515-605	Instructions.
610-640	Initialise.
650-705	Fifty short phrases.
715-795	Fifty long phrases. The asterisk field is superfluous but is a useful check when typing in the program – you may wish to adjust the READ statement to search for an asterisk.

MAJOR VARIABLES

P$( )	Array of phrases.
L( )	Location array. In method 1, used to identify when a phrase has been used if the no-repeat option has been selected – element set to 1 if it has been used e.g. L(55) = 1 means phrase 55 has been used. In method 2, used for storing positions of key phrases and pointers to phrases used in rest of list (see Outline of Program).
NR	Set to 1 if no-repeat chosen.
SP	Number of selected phrase.
MN and MX	Minimum and maximum limits to phrase boundaries e.g. if long phrases chosen, MN = 51 and MX = 100.
PT TP	Counter for phrase total so far. Total phrases available (100 in this program).
BL$	Line of spaces for blanking out phrase.
TM	Time limit in jiffies (sixtieths of a second).
CT	Time started the display.
LM	Jiffies converted from TM to seconds.
TI	PET variable-holds current time in jiffies.

Program written on PET but easily converted for other micros. If you have not got timing facilities, substitute the TI routines with an empty loop of appropriate duration, decreasing or increasing as necessary. Occupies 7K.
Reverse heart is Clear Screen. Reverse S is home cursor.
Reverse R is reverse field on.

```
5 REM**** SPEED READING ****
10 REM**** BOB CHAPPELL 20/11/82 ****
15 GOSUB515
20 REM**** CHOSE METHOD ****
25 LP=0:PRINT"♥":FORJ=1TO4:PRINT:NEXTJ
30 PRINT"♥";TAB(14);"■ OPTIONS "
35 PRINT:PRINT:PRINT"1. SHORT PHRASES."
40 PRINT:PRINT:PRINT"2. LONG PHRASES."
45 PRINT:PRINT:PRINT"3. MIXTURE OF ABOVE."
50 PRINT:PRINT:PRINT"4. END THE SESSION."
55 PRINT:PRINT:PRINT"PLEASE TYPE IN THE APPROPRIATE NUMBER."
60 GETA$:IFA$=""1"THENMX=50:MN=1:GOTO85
65 IFA$="2"THENMX=100:MN=51:GOTO85
70 IFA$="3"THENMX=100:MN=1:GOTO85
75 IFA$="4"THENEND
80 GOTO60
85 PRINT"♥"
90 PRINT:PRINT:PRINT"1. SINGLE PHRASE DISPLAY.
95 PRINT:PRINT:PRINT"2. MULTIPLE PHRASE DISPLAY.
100 PRINT:PRINT:PRINT"PLEASE TYPE IN THE APPROPRIATE NUMBER."
105 FORJ=1TOTP:L(J)=0:NEXT:FT=0
110 GETA$:IFA$="1"THENTM=30:GOTO130
115 IFA$="2"THENTM=360:GOTO335
120 GOTO110
125 REM**** SINGLE PHRASES ****
130 PRINT"♥":PRINT"DO YOU WANT TO PREVENT THE SAME PHRASE"
135 PRINT:PRINT"FROM APPEARING TWICE (Y/N)?":NR=0:PT=1
140 GETA$:IFA$="Y"THENNR=1:GOTO160
145 IFA$="N"GOTO160
150 GOTO140
```

```
155 REM**** SELECT A PHRASE ****
160 CT=TI
165 SP=INT((MX-MN+1)*RND(1)+MN):IFNR=0GOTO175
170 IFL(SP)=1GOTO165
175 L(SP)=1:P$=P$(SP):L=LEN(P$)
180 IFFT=0THENFT=1:GOTO190
185 IFTI-CT<DEGOTO185
190 PT=PT+1
195 REM**** PRINT CENTRAL GUIDE ****
200 PRINT"□";
205 FORK=1TO2:PRINT:PRINT:PRINT:PRINT:FORJ=(38-L)/2TO1STEP-1:IFJ<1GOTO215
210 PRINT" ";:NEXTJ
215 FORJ=1TOL:PRINT"-";:NEXTJ,K
220 FORJ=1TO1000:NEXT
225 REM**** PRINT PHRASE ****
230 PRINT"■":FORJ=1TO5:PRINT:NEXTJ
235 FORJ=(38-L)/2TO1STEP-1:IFJ<1GOTO245
240 PRINT" ";:NEXTJ
245 PRINTP$:CT=TI:PRINT"■":FORJ=1TO5:PRINT:NEXTJ
250 IFTI-CT<TMGOTO250
255 REM**** BLANK OUT PHRASE ****
260 PRINTBL$:PRINT:PRINT:PRINT
265 INPUT"PHRASE WAS ";A$:PRINT:PRINT
270 IFA$="*"GOTO25
275 IFA$=P$THENPRINT"CORRECT.":TM=TM-6:GOTO300
280 PRINT"SORRY,WRONG.  THE PHRASE WAS":PRINT:TM=TM+6
285 FORJ=(36-L)/2TO1STEP-1:IFJ<1GOTO295
290 PRINT" ";:NEXTJ
295 PRINT"■ ";P$;" "
300 IFPT>MX-MN+1ANDNR=1THENPRINT:GOTO310
305 GOTO315
310 PRINT"■ YOU HAVE NOW SEEN ALL THE PHRASES. ":FORJ=1TO3000:NEXT:GOTO25
315 PRINT:PRINT"THE NEXT PHRASE WILL BE SHOWN FOR":PRINT
320 LM=INT(TM/60*100)/100:IFLM<.01THENLM=.01:TM=6
325 PRINTTAB(9);LM;"SECONDS.":GOTO160
330 REM**** MULTIPLE PHRASES ****
335 PRINT"□THE PHRASE LIST WILL BE SHOWN FOR":PRINT
340 LM=INT(TM/60*100)/100:IFLM<1THENLM=1.08:TM=65
345 PRINTTAB(9);LM;"SECONDS."
350 FORJ=1TOTP:L(J)=0:NEXT:FT=0:NR=0:LL=0:GOSUB495:CP=SP:P$=P$(SP):PRINT
355 PRINT:PRINT"  THE KEY PHRASE IS:-"
360 PRINT:PRINT:PRINTTAB(8);"■ ";P$;" "
365 RN=INT(6*RND(1)+1):FORJ=1TORN
370 N=INT(12*RND(1)+1)
375 Z=0:FORK=1TOJ:IFL(K)=NTHENZ=1
380 NEXTK:IFZ=1GOTO370
385 L(J)=N:NEXTJ
390 FORJ=RN+1TO12
395 GOSUB495:IFSP=CPGOTO395
400 L(J)=SP:NEXTJ:FORJ=1TO2000:NEXTJ
405 LL=INT((38-LL)/2)
410 PRINT"□";
415 Y=RN:FORJ=1TO12:Z=0:FORK=1TORN
420 IFL(K)=JTHENPRINTTAB(LL);P$:K=RN:Z=1
425 NEXTK:IFZ=1GOTO435
430 Y=Y+1:PRINTTAB(LL);P$(L(Y))
435 PRINT:NEXTJ:CT=TI
440 IFTI-CT<TMGOTO440
445 PRINT"□":FORJ=1TO5:PRINT:NEXT
450 PRINT"HOW MANY TIMES DID THE PHRASE
455 PRINT:PRINT"'";P$;"'  ";:INPUT"APPEAR";A$
460 PRINT:IFA$="*"GOTO25
465 IFVAL(A$)=RNTHENPRINT"CORRECT.":TM=TM-30:GOTO485
470 PRINT"SORRY,THE PHRASE APPEARED";:IFRN=1THENPRINT" ONCE.":GOTO480
475 PRINTRN;"TIMES."
480 TM=TM+30
485 FORJ=1TO2000:NEXTJ:GOTO335
490 REM**** SELECT RANDOM PHRASE ****
495 SP=INT((MX-MN+1)*RND(1)+MN):IFSP=CPGOTO495
500 L=LEN(P$(SP)):IFL>LLTHENLL=L
505 RETURN
510 REM**** INSTRUCTIONS ****
515 PRINT"□";TAB(10);"■ SPEED READING "
520 PRINT:PRINT"THIS PROGRAM CAN ASSIST YOU TO INCREASE
525 PRINT:PRINT"YOUR READING SPEED BY PRACTICING THE
530 PRINT:PRINT"RAPID READING AND RECOGNITION OF":PRINT:PRINT"PHRASES.
535 PRINT:PRINT:PRINT"TWO METHODS ARE OFFERED IN THIS PROGRAM."
540 PRINT:PRINT"METHOD 1 WILL DISPLAY A SINGLE PHRASE ON
545 PRINT"THE SCREEN FOR A FRACTION OF A SECOND.
550 PRINT:PRINT"YOU MUST THEN TYPE IN WHAT YOU THOUGHT
555 PRINT:PRINT"THE PHRASE WAS.":GOSUB630
560 PRINT"□METHOD 2 WILL DISPLAY SEVERAL PHRASES ON"
565 PRINT"THE SCREEN AT ONCE.ONE OF THESE PHRASES"
570 PRINT:PRINT"MAY OCCUR MORE THAN ONCE. YOU MUST SAY"
575 PRINT:PRINT"HOW MANY TIMES IT APPEARED IN THE LIST."
580 PRINT:PRINT:PRINT"IN BOTH METHODS,THE DURATION OF THE"
585 PRINT:PRINT"DISPLAY WILL DECREASE OR INCREASE,"
590 PRINT:PRINT"DEPENDING ON WHETHER YOU ANSWERED"
595 PRINT:PRINT"CORRECTLY OR INCORRECTLY."
600 PRINT:PRINT:PRINT"TYPING AN * AS AN ANSWER WILL RETURN YOU
605 PRINT"TO THE OPTION MENU."
610 J=0:K=0:NR=0:PT=0:TP=100:SP=RND(-TI):A$="":CT=0:L=0:LM=0:P$=""
615 FT=0:DE=360:BL$="                                        ":TM=0:MX=0:MN=0
620 DIMP$(TP),L(TP)
625 FORJ=1TOTP:READP$(J):NEXTJ
630 PRINT:PRINT"      ■ PRESS SPACE TO CONTINUE "
635 GETA$:IFA$<>" "GOTO635
640 RETURN
645 REM**** SHORT DATA ****
650 DATATIME OUT OF MIND,MAKE SECOND NATURE,EXCHANGE VOWS,HOLD A MEETING
655 DATAHELD IN CONTEMPT,NOT OF THIS WORLD,BRING TO BOOK,BREAK THE FALL
660 DATAKEEP WITHIN LIMITS,THROW COLD WATER ON,LEAD BY THE NOSE
665 DATAMAKE A HOLE,LOSE GROUND,MOVE WITH THE TIMES,MADE A GOOD START
670 DATAOPEN THE DOOR,LACK OF APPETITE,FLOW OF TRAFFIC,RIGHT OF WAY
675 DATACUT A HOLE,CUT A DASH,FELL LIKE RAIN,FELL LIKE SNOW,PAW THE GROUND
680 DATALET OFF STEAM,ALL THE WAY,IT IS NOT VERY,ON THE WAY,NOW IS THE TIME
685 DATATHE GREEN GRASS,HOW MUCH LONGER,HOW MANY TIMES,HOW MUCH MORE
690 DATANOT SO MUCH,NOT SO MANY,FAR TOO LARGE,NOT AT ALL,NOT AT ONCE
695 DATATURN THE SCALE,FORTUNE SMILES ON,THE WORST KIND,IT SEEMS TO ME
700 DATABETWEEN THE TREES,GO SO FAR AS,GO TOO FAR,THE RESULT OF,PRIVATE AFFAIR
705 DATAHAD BEEN WISE,HE SAID SO,REPAY A FAVOUR
710 REM**** LONG DATA ****
715 DATAMOST FAWNING ATTITUDE,APPRECIATED THE LOOK,GOING TO MARRY A YOUNG
720 DATAMADE US TIRED SHOUTING,SADDLES UP AND RIDES,LEFT THE CAR SO HASTILY
725 DATASHALL NOT LINGER UPON,SPARE NO EXPENSE TO GET,FIND A PORTION OF IT
730 DATAINSTANTLY RECOGNISED FROM,INSISTED UPON GIVING ME,NOTHING AT ALL SAID
735 DATALAUGHED AND GIGGLED,LOOKING OUT OF THE WINDOW,PAINTED A DARK COLOUR
740 DATAMANY FANCIFUL THEORIES,THE CREW HAD MUTINIED,CONSIDERING THE PROBLEM
745 DATALITTLE STRIP OF BEACH,POINTED HER OUT TO ME,STREAM OF CONVERSATION
750 DATAPAPER BAG FULL OF CAKES,HE TOOK OFF HIS HAT,NEARLY AT FREEZING POINT
755 DATAHER MOTHER CAME RUNNING,THE WISE MEN ARRIVED,TAKE NO MORE REFUSALS
760 DATABREAK IT TO YOU GENTLY,SHOWING AS MUCH INTEREST,ONE OR TWO MATTERS
765 DATAA LITTLE TO THE LEFT,SOMEWHERE IN THE DARK,I AM HELD A PRISONER HERE
770 DATAPRINTED ON BLUE PAPER,A JOB IN THE OFFICE,THE PRETTY GIRL IN BLUE
775 DATAONLY ABOUT A DOZEN,HAD JUST ENOUGH MONEY,RECEIVED A LIFE SENTENCE
780 DATALACKING A SENSE OF HUMOUR,IT WAS NOT THE CUSTOM,PAT HIM ON THE BACK
785 DATAA SHORT SPACE OF TIME,EVEN THE BEST OF THEM,THE BANKS WERE CROWDED
790 DATAPATCHED AND RAGGED TROUSERS,THEN WE WILL SET SAIL,IT WAS A STEADY PAIN
795 DATASOFTLY OPENED THE DOOR,A STREAK OF HUMILITY
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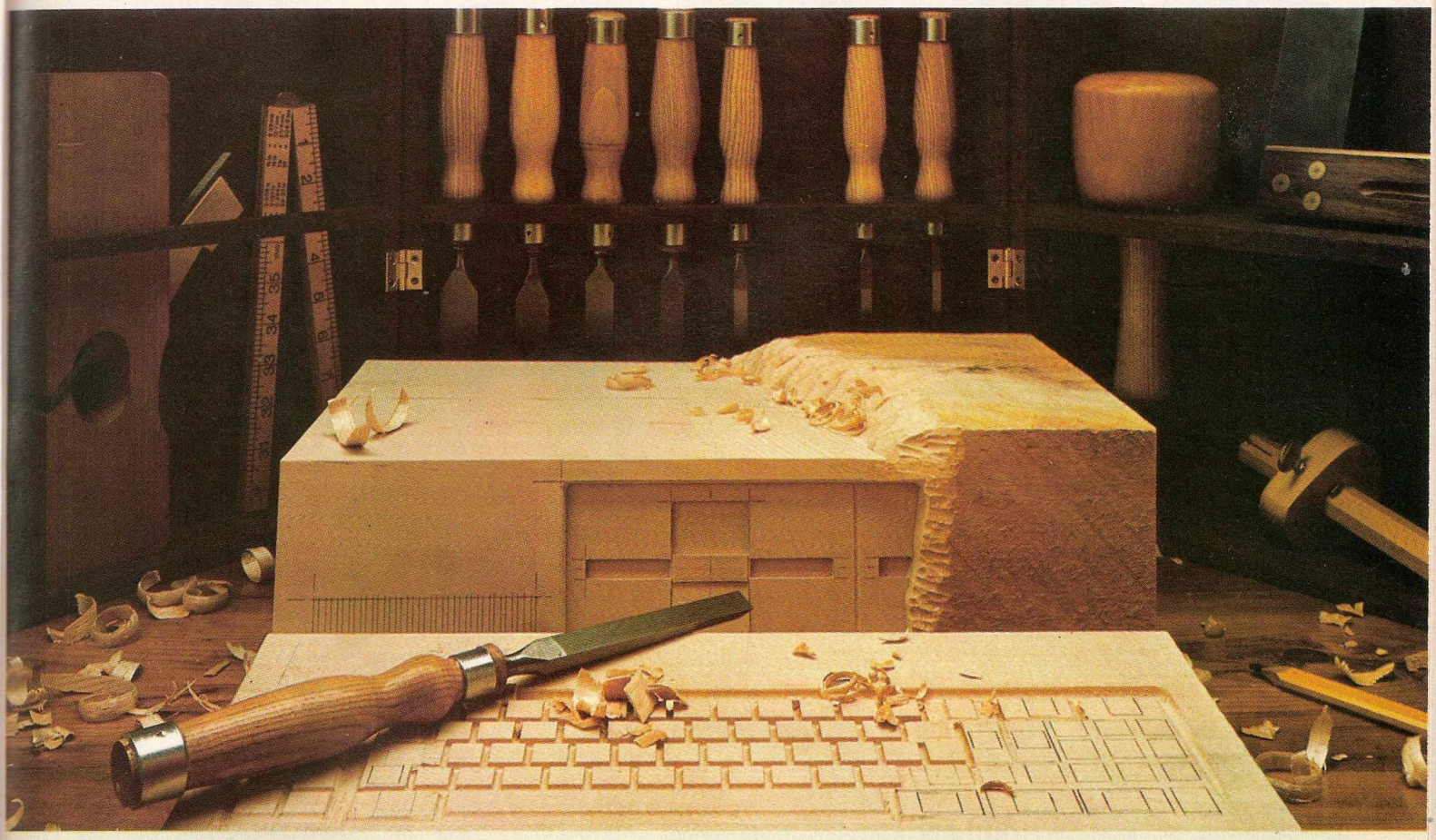

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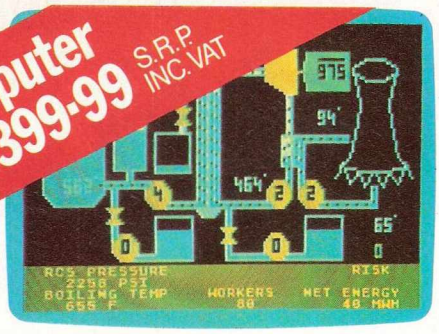

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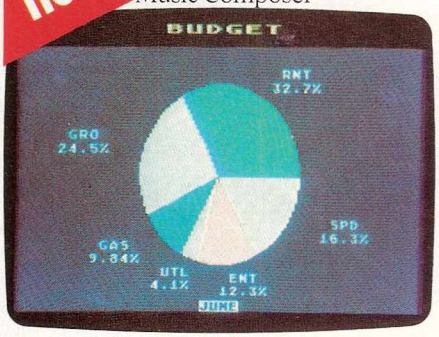

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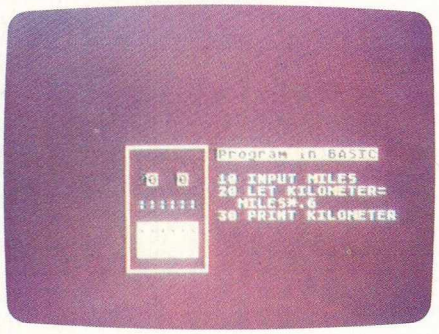

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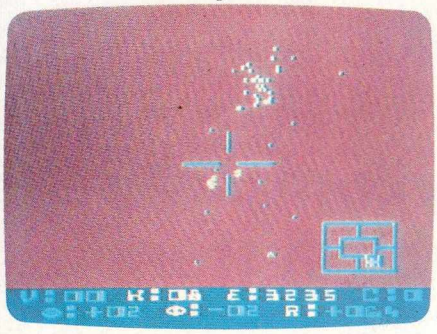
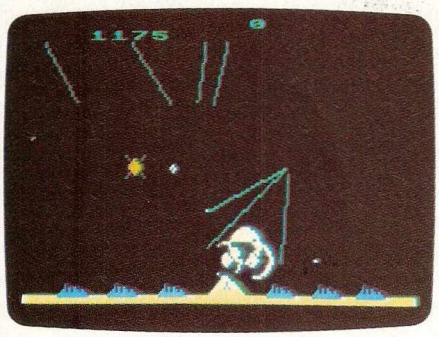


Star Raiders

European Countries



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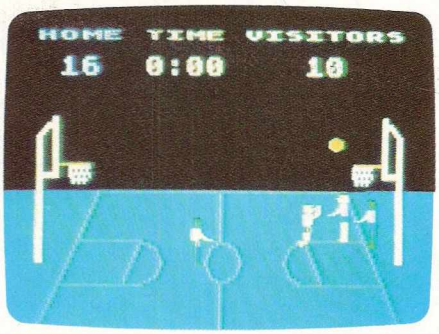

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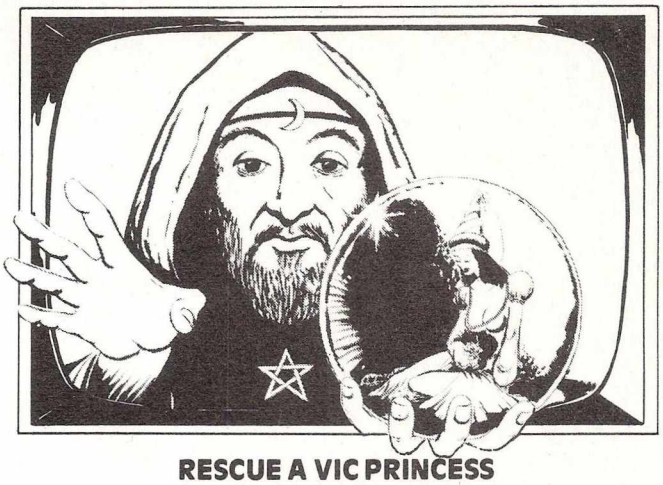

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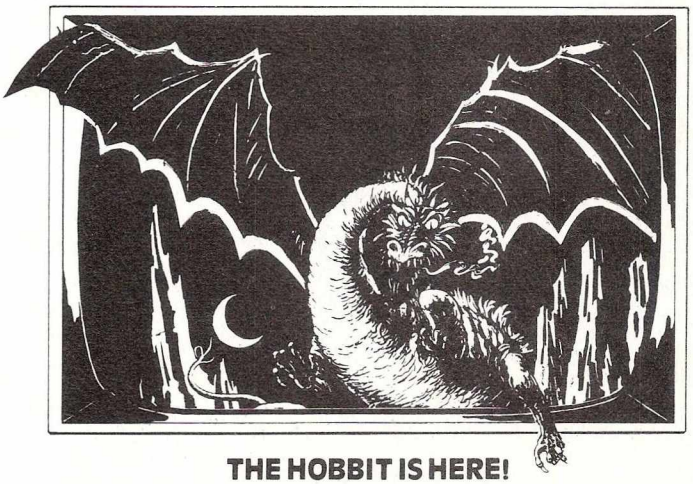

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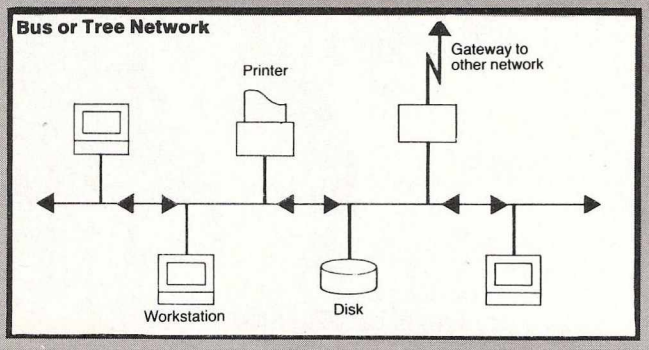
Netvalue

Dear Tommy,
I have noticed that a lot of people are talking about networking and its advantages/disadvantages for the computer industry. Can you give me a brief run-down of the theory of networking? What is packet switching?
John McDougall

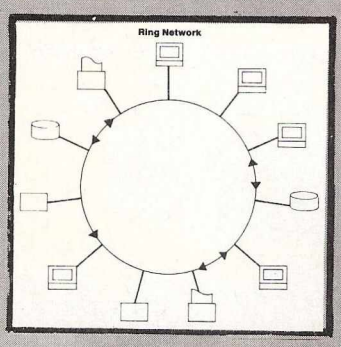
Networking is a way of connecting several pieces of equipment together to allow them to exchange information. A simple example of a network is a computer and a printer, although there are networks containing many thousands of elements! An element in a network can be almost anything: computers, printers, or terminals as well as voltmeters and all sorts of laboratory measuring equipment.

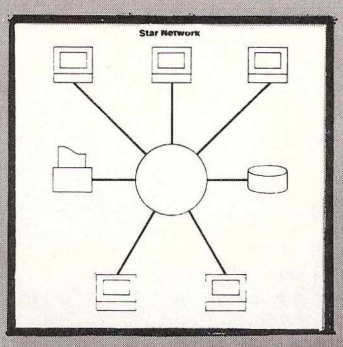
The most common way of connecting a number of elements together is by a 'bus network' where, if you like, all the elements are laid out in a straight line with a cable connecting them. This method is used by several manufacturers to link their computers to the printer and disks. This system is in fact so simple and common that most people don't even call it a network! However, in a typical installation we may have a number of computers all linked to a common database on a hard disk, and the simple bus network is not really suited for this, being best at the kind of situation where we have a single computer and a number of slave peripherals.



So we come to a 'star network', so-called not because of its talents, but because it is laid out in a star shape with a 'file handler' at the centre (that is our hard disk, with a computer to control the access to the information), and a number of arms going out to the other computers. This is fine for a small number of computers talking to a central database, but if you have a few hundred computers, or a number of other peripherals such as measuring equipment, things tend to get a bit slow.

The last (and most powerful and most complicated and most expensive) system is called 'the ring', where all the elements sit on the circumference of a circle. Data is passed from one to another in 'packets', each of which has an 'address', to identify the element it is being sent to. All other elements will ignore the message until it reaches its destination, where it is read, and the empty 'packet' sent back to the sender as an acknowledgement of receipt.





Remains to be seen

Dear Tommy,
Can you give me a routine to work on an Apple to allow me to divide two numbers, say 17 and 4 but instead of getting 4.25 to get 4 with a remainder of 1? I have tried to but I cannot seem to work it out properly.
Chris Smythe

This is a problem which, although it appears awkward, in fact has quite a neat solution! Say we have two variables, X and Y, and we want to divide X by Y to find the quotient Q and remainder R. We can do this with the following piece of code:

```
100 Q = INT (X/Y
110 R = X – Y * Q
```

Out of Data

Dear Tommy,
Is it possible on the PET 4032 to tell if you have reached the end of your DATA statements before the program crashes out with an 'OUT OF DATA ERROR'? I find this most annoying as I have a number of programs which have a variable number of DATA statements.
L. Foster

The way to do this is to have a special DATA element which marks the end of the data. If the data are all strings, this might be an element 'END', or if the data are numerics, then the special marker may be 0 or –1 or –9999 or any value really which is never going to occur in the normal way. Say you have a series of values (for a music program for example) in the range 0 to 255. Here you could end the data with an element –1, as in this example:

```
100 DATA 3, 15, 33, 240, 150 –1

200 READ A: IF A = –1 THEN END
```

Just be careful that you use a value which can never occur, otherwise you will find that your program behaves in a most unexpected way!

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Panic, musn't panic, but they won't stop, twirling and spinning and turning, always turning, towards me, against me, at me.
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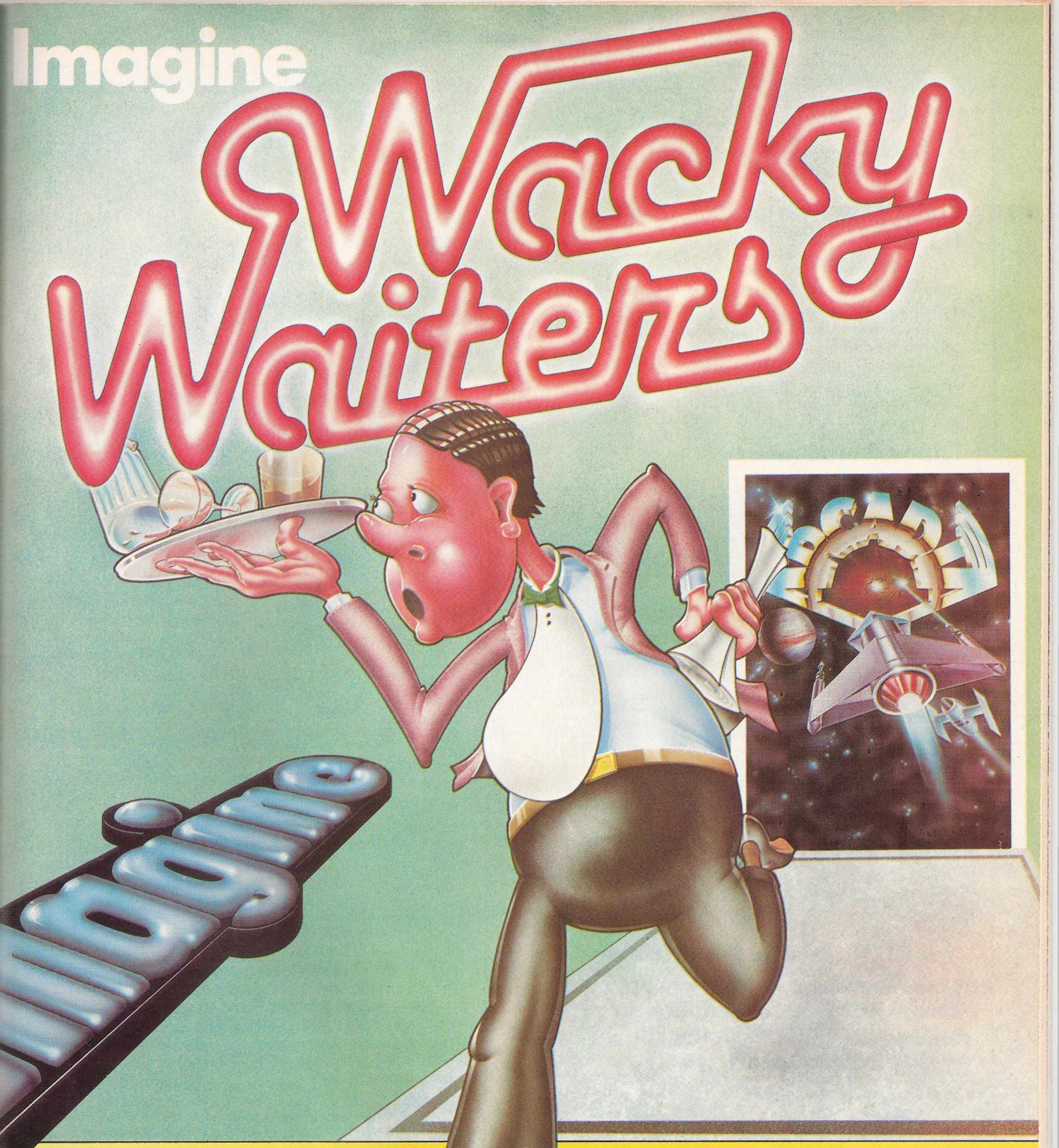

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STRIP SHOW!

The *Comdex* show in Las Vegas is where American microcomputer manufacturers reveal their offerings for the year to come. This year it was a real eye opener, as our Man on the Strip, *Julian Allason*, reports.

If 30,000 hard drinking computer dealers descended on your town, determined on a good time, they would have to read the Riot Act. In Las Vegas they didn't turn a hair. Not that the casino bosses, who run Nevada's neon ghetto, were overwhelmed either. Computer people, it seems, are not great gamblers by and large. Perhaps they just know too much about numbers.

Inside the Show they were talking numbers too. Telephone numbers mostly. "If a deal ain't worth a million, it ain't worth doing," grumbled one exhibitor who claimed that the cost of just being there for four days worked out at $5,000 a head for his 30-strong staff; and that was before he'd paid for the stand.

Ironically much of the real business is done in the privacy of hotel suites, well away from the cavernous exhibition centre.

Down on the floor the IBM Personal Computer dominated. And if the P.C. was not to be seen in the flesh, it was as often as not there in spirit. Indeed, so many of the new systems emulated its Intel 8088 processor/MS-DOS operating system combination that one began to doubt whether the marvellous Motorola 68000 processor had any future at all.

Portables too there were aplenty, and many of them boasted IBM P.C. compatibility. One enterprising company even offered a kit to convert the

IBM P.C. into an Osborne-like portable.

Subscribers to the conspiracy theory of marketing claimed to detect evidence that the Japanese assault on western markets would be spearheaded by speech technology. To be sure there was a curious crowd of people minus the mandatory identifying badges gathered round the stand of Nippon Electric in the hopes of a demonstration of the new NEC voice recognition system. For $2,000 this will recognise a vocabulary of up to 120 words or phrases you have previously taught it.

The new 3", or depending on who you were talking to 3¼" or even 3½", micro floppy drives appeared on a variety of computers, principally portable. There was talk of quadruple density micro drives offering a megabyte of storage by September.

Half height 5¼" mini floppy drives were much in evidence, as were 5¼" Winchester hard disks. The portable computer manufacturers lead by the about-to-be-married Dr. Adam Osborne, were almost universally sceptical of the ability of Winchester manufacturers to come up with a drive capable of withstanding the sort of punishment a portable computer might inflict. Nonetheless Seagate Technology attracted considerable attention with the first half height Winchester to use thin film disks. These it is argued, should have a greater ability to withstand rough treatment, although they would be no more resistant than conventional drives to variations in temperature and humidity.

For technology buffs the Show was heaven with plenty of leading edge products to play with. One small company called Micom unveiled an instant voice/data link that worked over internal telephone wiring. This system, called Instalink, consists of a small terminal unit that sits underneath the telephone and can actually transmit data at the same time as a normal telephone conversation is in progress, by using frequencies high above the range of human hearing.

Panasonic offered a look into the future with their disk-type still video recorder playback system. Employing

semiconductor laser technology, this unit can store an astonishing 15,000 frames of information in full colour on an 8" disk. Since the optical process requires no processing time, retrieval takes just half a second.

With hundreds of manufacturers competing to pour liquid hospitality down the throats of the dealers, it was not altogether surprising that the trade had some difficulty absorbing the more heavy weight hardware announcements. Concentration was certainly required to absorb all the details of Altos' new 16-bit micro computer. This relatively inexpensive five-user system promised 'out of the box' networking capability with integral interfaces to both Ethernet (expensive) and the company's own proprietary network (not so expensive). It was claimed that expansion to over 200 workstations and peripherals was possible.

Inside the new micro, dubbed the Altos 586, is the Intel 8086 processor, big brother to the current standard, the 8088. The minimum configuration included 256K of RAM memory, which could be expanded to 1 megabyte.

"For less than $5,000 we are providing a system so compact it fits under your arm, yet so upgradeable it can run your whole company," Altos President, David Jackson was telling potential customers.

What the dealers couldn't figure out was which operating system the 586 supported. Would it be MS-DOS, CP/M86, MP/M86, or perhaps the Unix-derived Xenix? And what about Oasis 16 and Pic?

"The 586 will support 'em all," grinned Jackson, displaying a set of impossibly white teeth.

"Altos must be the only company at the Show not competing with IBM's P.C.," observed one dealer sardonically.

A note of much needed levity was introduced, albeit inadvertently, by the felicitously named MAD computer company. Their offering, a 16-bit multi tasking system of eye catching design is based on Intel's 80186 microprocessor and incorporates almost every state-of-the-art component from half height disk drives downwards into the $3,000 package.

According to the MAD-1's creator, Dr. John Nafeh, "It has the capability to run totally new software now being created for it that is being based on developments in artificial intelligence."

Further details of the MAD artificially intelligent software were not forthcoming; potential distributors were offered a choice of Concurrent CP/M or MS-DOS operating systems instead.

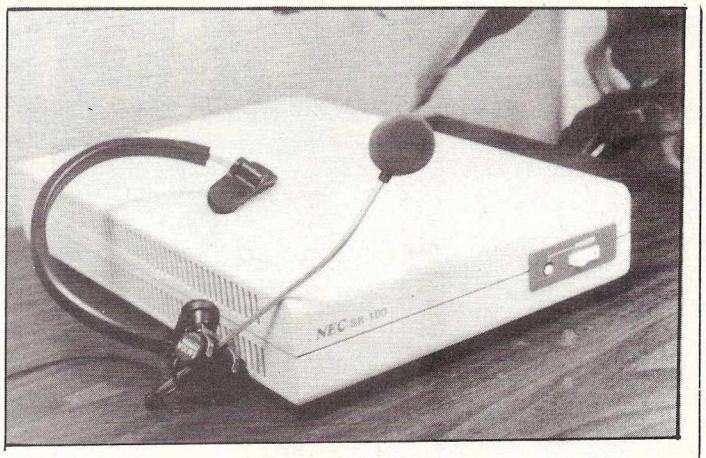
Meanwhile back in the Wee Kirk O' The Heather Wedding Chapel a man with a sore head was wondering if he had done the right thing.

"Instalink uses in house telephone lines for data"

"Panasonics optical disk recorder stores and retrieves 15,000 frames"

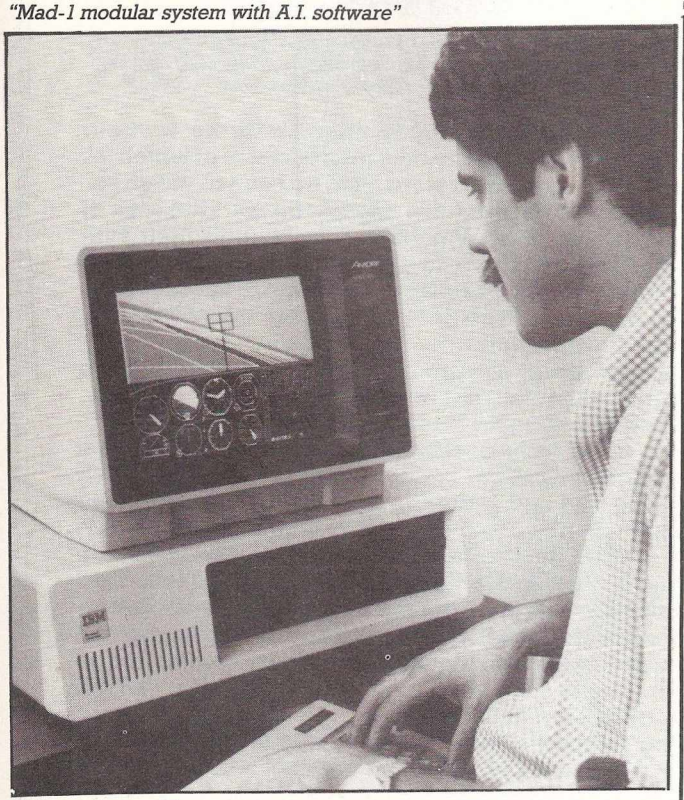
The new Altos low-cost business computer – the Altos 586

"Most screens were upright; as on Sony's series 35 word processor"



[Left] "Half-height thin film Winchesters from Seagate" [Right] "NEC's voice recognition system"

"Mad-1 modular system with A.I. software"



Microsoft went fying – with their new single engine aircraft simulator

RAMDISK

In the casinos and in the bars the talk was all of RAMdisk. At its simplest, RAMdisk is a memory board designated as a disk drive. Microsoft, who offer RAM cards with this facility, talk about increases in data access speed of 50 times or more.

At the Show one small company backed by Atari's founding father, Nolan Bushnel, was doing a thriving business with a 320K RAMdisk for Apple II and Apple III computers. Retail price $1395 inclusive of controller, independent power supply and battery backup.

Semidisk Systems of Beaverton, a well known centre of sophistication in Oregon State, were displaying larger RAMdisks: a half megabyte board for Tandy, IBM P.C. and S-100 systems, priced at $2,000; the megabyte version costs $3,000.

The bar also resounded with arguments about the advantages and disadvantages of RAMdisk against hard disk systems. About all the dealers could agree upon was that RAMdisk might be a short term product.

"Once manufacturers catch on that it offers an opportunity to extend the life of their 8-bit systems, they will either build the extra memory in or offer it as an option," noted industry analyst, John Bloomfield, before slumping under the table.

COMDEX PORTABLES

"Colby's kit turns IBM P.C. into a portable"

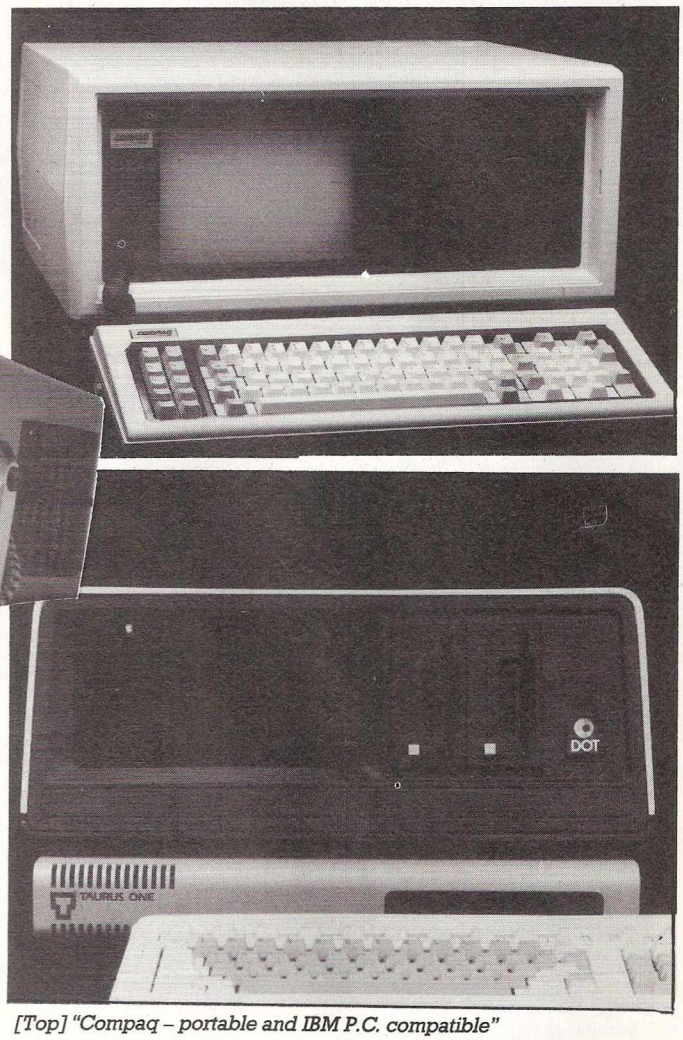
The landing at Las Vegas was not a smooth one. Up and down the aircraft visitors to the COMDEX/Fall show clutched their stomachs and their Osborne 1s.

Inside the vast convention centre the story was the same – portable computers everywhere. Many of the new offerings tipped their hats in the direction of IBM, the supremacy of whose Personal Computer is now well established as the touchstone by which others are judged.

The new DOT portable from Computer Devices of Burlington, Massachusetts, went all the way with the same 8088 microprocessor and MS-DOS operating system as the IBM P.C. Priced at $2995 the standard DOT has two 3½" Sony drives offering 570K of micro floppy storage, 9x5" bit-mapped display and 32K of user memory expandable to 705K of continguously addressable RAM. For the extra $1000 the company will supply a model that incorporates its own 132 column matrix printer. An 8-bit Z-80 CPU will also be available as an option.

Another company claiming a first in the IBM P.C-compatible field employed a rather different approach. Colby's PC-1 is actually a kit that converts the standard IBM P.C. *into* a portable computer, weighing a body-building 26lbs. For $899 the P.C. owner gets a 9" diagonal high resolution display, switching power supply and interface boards housed in an aluminimum and plastic case.

Another industry pundit following Adam Osborne's route into microcomputer manufacture is Ben Rosen, who made his name as author of the weekly Rosen Electronics Letter. Rosen's venture capital company are the principal backers of Compaq Corporation who showed their own 16-bit IBM-compatible portable computer. Come January Americans will be able to buy the 8088-based unit with 128K of RAM, 9" diagonal high resolution CRT and 320K 5¼" mini floppy, for $2995.



[Top] "Compaq – portable and IBM P.C. compatible"

[Bottom] Computer devices' DOT portable: 3½" Sony disk drives and up to 704K of RAM with optional built-in printer. 16-bit CPU and high resolution display with bit mad graphics are standard

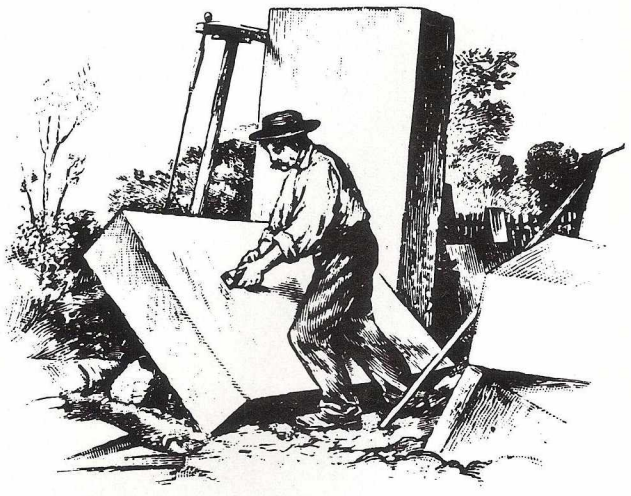
The majority of portable manufacturers harbour plans to incorporate the new microdrives, of which 3", 3¼" and 3½" formats were all to be seen at the show. Most manufacturers have now dismissed the idea of incorporating 5¼" Winchester drives into their systems. "Too sensitive to temperature, humidity and vibration; in fact unreliable all round," according to Ron Lingeman, President of portable micro makers, Otrona Corporation.

Two vendors, Kaypro and Jonos Computer, have nonetheless taken the plunge. The Kaypro 5 with a 5MB drive will go on sale shortly in the US at $4485.

The most truly portable system was the Teleram 3000 Office Station, about the size of a three-inch thick A4 pad and weighing only 9lbs. For mobile use the system has a four line eighty column LCD display, 64K of RAM plus 128K or 256K of non-volatile bubble memory. Power is provided by rechargable lead acid batteries with a five hour life between charges. For office use a standard CRT monitor and mains supply can be connected. With the bubble memory configured as disk drive A, the system supports CP/M. US prices start at $2795.

The Teleram 3000 will be available shortly in the UK from Transam Ltd., 59/61 Theobalds Road, London. WC1.

PRINT OUT



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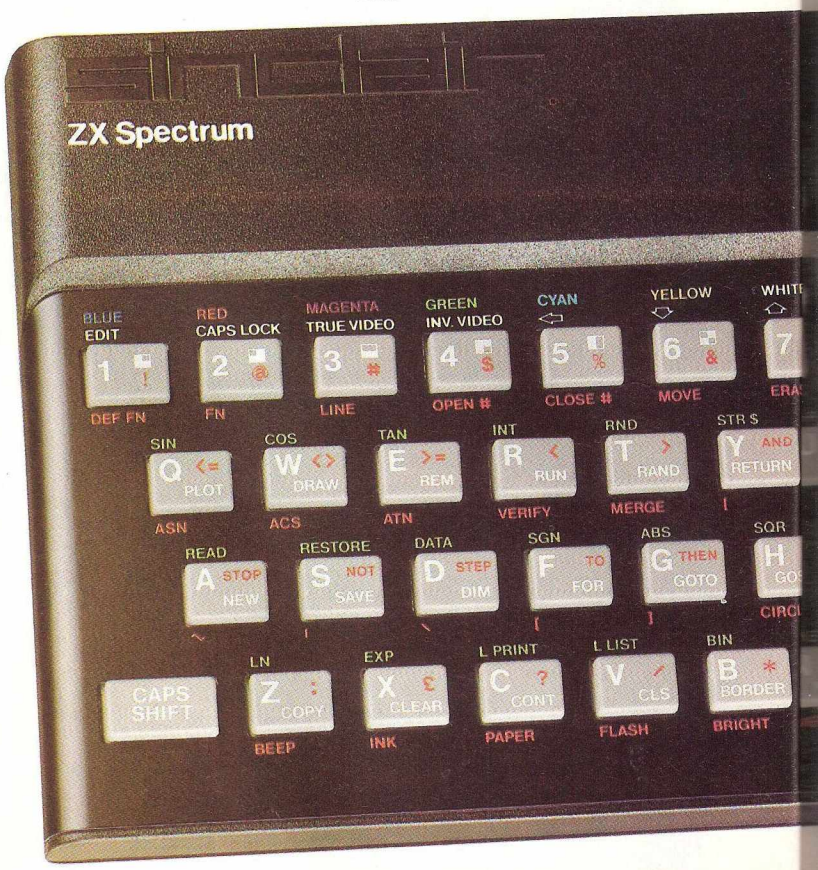


First, there was the world-beating Sinclair ZX80. The first personal computer for under £100.

Then, the ZX81. With up to 16K RAM available, and the ZX Printer. Giving more power and more flexibility. Together, they've sold over 500,000 so far, to make Sinclair world leaders in personal computing. And the ZX81 remains the ideal low-cost introduction to computing.

Now there's the ZX Spectrum! With up to 48K of RAM. A full-size moving-key keyboard. Vivid colour and sound. High-resolution graphics. And a low price that's unrivalled.

Professional power– personal computer price!

The ZX Spectrum incorporates all the proven features of the ZX81. But its new 16K BASIC ROM dramatically increases your computing power.

You have access to a range of 8 colours for foreground, background and border, together with a sound generator and high-resolution graphics.

You have the facility to support separate data files.

You have a choice of storage capacities (governed by the amount of RAM). 16K of RAM (which you can uprate later to 48K of RAM) or a massive 48K of RAM.

Yet the price of the Spectrum 16K is an amazing £125! Even the popular 48K version costs only £175!

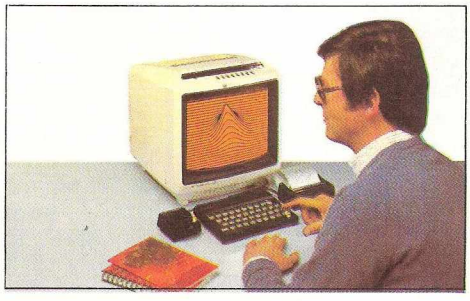
You may decide to begin with the 16K version. If so, you can still return it later for an upgrade. The cost? Around £60.

Ready to use today, easy to expand tomorrow

Your ZX Spectrum comes with a mains adaptor and all the necessary leads to connect to most cassette recorders and TVs (colour or black and white).

Employing Sinclair BASIC (now used in over 500,000 computers worldwide) the ZX Spectrum comes complete with two manuals which together represent a detailed course in BASIC programming. Whether you're a beginner or a competent programmer, you'll find them both of immense help. Depending on your computer experience, you'll quickly be moving into the colourful world of ZX Spectrum professional-level computing.

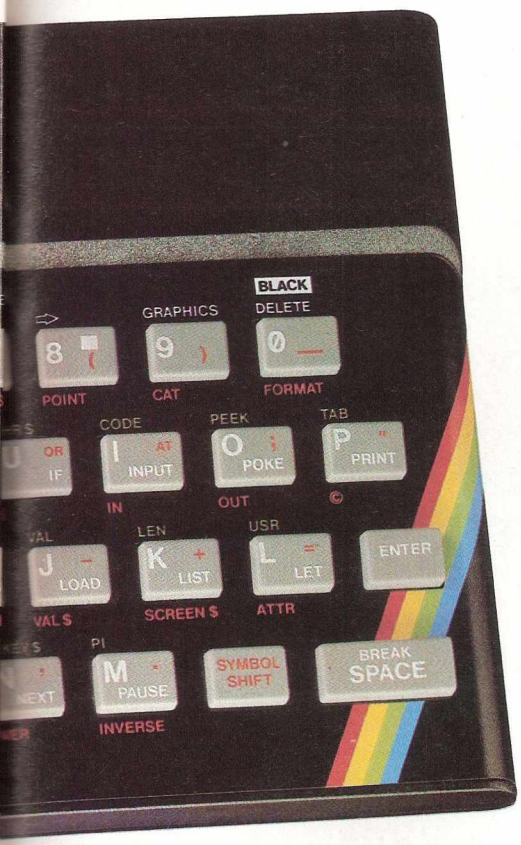
There's no need to stop there. The ZX Printer – available now – is fully compatible with the ZX Spectrum. And later this year there will be Microdrives for massive amounts of extra on-line storage, plus an RS232 / network interface board.



Key features of the Sinclair ZX Spectrum

- Full colour – 8 colours each for foreground, background and border, plus flashing and brightness-intensity control.
- Sound – BEEP command with variable pitch and duration.
- Massive RAM – 16K or 48K.
- Full-size moving-key keyboard – all keys at normal typewriter pitch, with repeat facility on each key.
- High-resolution – 256 dots horizontally x 192 vertically, each individually addressable for true high-resolution graphics.
- ASCII character set – with upper- and lower-case characters.
- Teletext-compatible – user software can generate 40 characters per line or other settings.
- High speed LOAD & SAVE – 16K in 100 seconds via cassette, with VERIFY & MERGE for programs and separate data files.
- Sinclair 16K extended BASIC – incorporating unique 'one-touch' keyword entry, syntax check, and report codes.

um



ZX Spectrum software on cassettes – available now

The Spectrum software library is growing every day. Subjects include games, education, and business/household management. Flight Simulation...Chess...Planetoids...History...Inventions...VU-CALC...VU-3D...Club Record Controller...there is something for everyone. And they all make full use of the Spectrum's colour, sound, and graphics capabilities. You'll receive a detailed catalogue with your Spectrum.

ZX Expansion Module

This module incorporates the three functions of Microdrive controller, local area network, and RS232 interface. Connect it to your Spectrum and you can control up to eight Microdrives, communicate with other computers, and drive a wide range of printers.

The potential is enormous, and the module will be available in the early part of 1983 for around £30.

sinclair

Sinclair Research Ltd, Stanhope Road, Camberley, Surrey GU15 3PS.
Tel: Camberley (0276) 685311.

The ZX Printer – available now

Designed exclusively for use with the Sinclair ZX range of computers, the printer offers ZX Spectrum owners the full ASCII character set – including lower-case characters and high-resolution graphics.

A special feature is COPY which prints out exactly what is on the whole TV screen without the need for further instructions. Printing speed is 50 characters per second, with 32 characters per line and 9 lines per vertical inch.

The ZX Printer connects to the rear of your ZX Spectrum. A roll of paper (65ft long and 4in wide) is supplied, along with full instructions. Further supplies of paper are available in packs of five rolls.

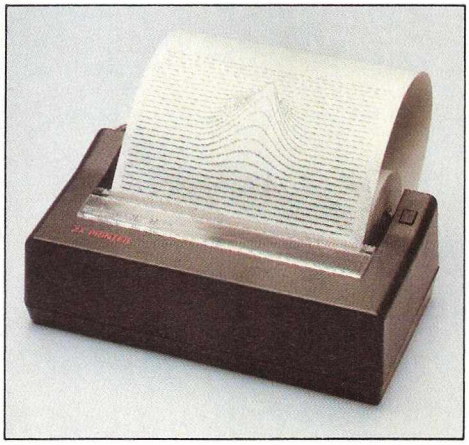
The ZX Microdrive – coming soon

The new Microdrives, designed especially for the ZX Spectrum, are set to change the face of personal computing by providing mass on-line storage.

Each Microdrive can hold up to 100K bytes using a single interchangeable storage medium.

The transfer rate is 16K bytes per second, with an average access time of 3.5 seconds. And you'll be able to connect up to 8 Microdrives to your Spectrum via the ZX Expansion Module.

A remarkable breakthrough at a remarkable price. The Microdrives will be available in the early part of 1983 for around £50.



How to order your ZX Spectrum

BY PHONE – Access, Barclaycard or Trustcard holders can call 01-200 0200 for personal attention 24 hours a day, every day. BY FREEPOST – use the no-stamp needed coupon below. You can pay by cheque, postal order, Barclaycard, Access or Trustcard.

EITHER WAY – please allow up to 28 days for delivery. And there's a 14-day money-back option, of course. We want you to be satisfied beyond doubt – and we have no doubt that you will be.

To: Sinclair Research, FREEPOST, Camberley, Surrey, GUI5 3BR. **Order**

Qty	Item	Code	Item Price £	Total £
	Sinclair ZX Spectrum – 16K RAM version	100	125.00	
	Sinclair ZX Spectrum – 48K RAM version	101	175.00	
	Sinclair ZX Printer	27	59.95	
	Printer paper (pack of 5 rolls)	16	11.95	
	Postage and packing: orders under £100	28	2.95	
	orders over £100	29	4.95	
			Total £	

Please tick if you require a VAT receipt ☐

*I enclose a cheque/postal order payable to Sinclair Research Ltd for £ _____

*Please charge to my Access/Barclaycard/Trustcard account no.

*Please delete/complete as applicable

Signature

PLEASE PRINT

Name: Mr/Mrs/Miss

Address

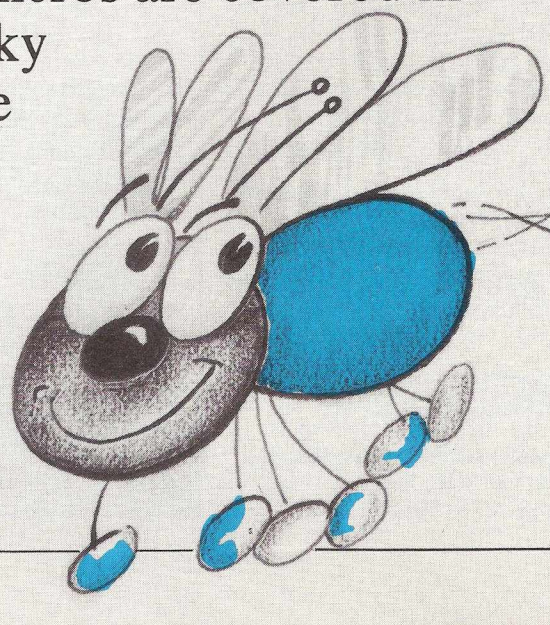
MPP 902

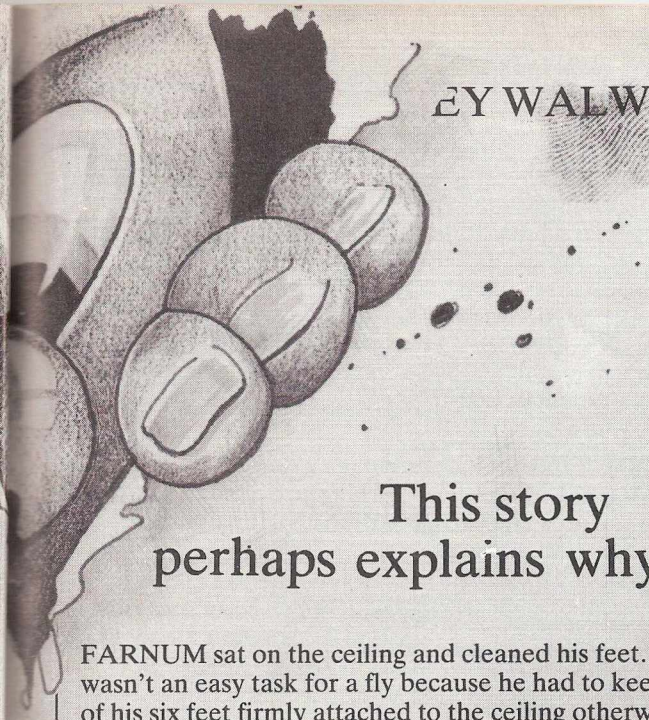
FREEPOST – no stamp needed. **Prices apply to UK only.** **Export prices on application.**

THE FLY THAT MADE CONTACT

IN THE BEGINNING ... Best Beloved, Computers were all pristine and pretty, medicinal and clinical and very temperamental. To get near a machine you had to be inoculated against all known ailments. To actually operate a keyboard involved X-ray screening to remove all metal objects from your person whilst a vacuum typhoon sucked away all loose hairs and crumbs. Memory banks were hermetically sealed and cooled at constant temperatures. The very mention of the word 'dust' would send computer technicians into paroxysms of rage. Computers, Best Beloved, were *very* delicate and woe betide you if you suffered from dandruff.

Nowadays, most micros are covered in coffee stains and sticky nobody seems to care *too* much about a finger marks and bit of dust gathering between the chips.





This story perhaps explains why...

FARNUM sat on the ceiling and cleaned his feet. This wasn't an easy task for a fly because he had to keep two of his six feet firmly attached to the ceiling otherwise he'd fall off. However, it was far safer up there. He was fed up with being flitted and swatted and chased from one room to another. Flies in general had a pretty rotten time but flies in the close proximity of the 'CORTEX Central Computer Complex' (or '4C' for short) had a particularly rough ride as the whole place was always being DDT'd or swept clean with ultra-sonics. (Ultra-sonics may be beyond the range of human hearing but flies get nasty headaches.)

Farnum was only a common or garden fly (not a bluefly or greenfly or blackfly but an ordinary speckledy-grey housefly) but he *was* a fly of above average intelligence and curiosity. He was aware of many comings and goings beneath him...people in white coats passing through doors, flashing lights and general hubbub...and he was curious to find out what they were all doing and where they were all going.

The '4C' building was a maze of inter-connecting passageways and chambers. There were infra-red particle and dust detectors at every door and as people progressed towards the inner sanctum (the main computer memory store) so the security and cleanliness checks increased. Farnum (though he didn't yet know it, Best Beloved) was at the outer limits of the complex where the initial hygiene clearance was H1 – 'empty pockets please and remove outer garments; thank you'. Access to the main memory store was only possible if you possessed H9 clearance – 'entire radiographic scan of the body and the issue of a sterile suit with individual oxygen mask'. To get that far, you had to proceed through nine doors and nine separate clinical cleansings. Computers were reckoned to be (as I've already pointed out) *very* delicate and everyone thought that a single foreign microbe or mini-germ (don't even *mention* the word 'dust', Best Beloved) would bring the inner sanctum to a glowing halt.

This would lead to a National Disaster and the rolling of many heads. The '4C' building was the most important data store in the land...all the taxes, accounts, records and amounts of 'who owned what which and whom' were stored within it.

Naturally, no matter how hard people tried and no matter how many checks there were, things *always* went wrong in the main computer terminal. But (of course!) these faults were *never* due to foreign bodies, humidity or dust (I *told* you not to mention 'dust', Best Beloved!). Any computer malfunctions were put down to 'Human Error' – a polite way of saying, "We just don't know how they happened".

Farnum wasn't overly impressed by all this. In fact, it was pretty difficult for a fly to progress beyond the first door because – as part of the initial screening process – large strips of fly-paper blocked the next doorway. He had no idea what happened through rooms 'H2' to 'H9' – and if he had known the real truth, then what followed next would *never* have happened at all! All he *did* know was that it looked interesting. From his knowledge of the vagueries of human behaviour, the harder it was to get anywhere the more interesting the place was when you got there. This was especially true of larders, meat under cling-film or jam pots with cellophane lids. Furthermore he knew that white coats had a lot to do with butchers' shops.

From his high view on the ceiling, he thought and he thought of how best to get through that door. Obviously if he flew straight through, he'd get all sticky on the fly-paper. (And if he *had* got through, he'd have stood *no* chance at all with the Xergon-ray insect-blaster at the *next* door...but then he was blissfully unaware of such horrors, Best Beloved!) No, since humans went backwards and forwards through that door with apparent ease, there was surely an easier way.

The manager of '4C' was in a hurry. He was late for the weekly cleansing check. This was the most important event in his schedule. All computer personel had to be dry-cleaned and dental records checked for loose fillings (spare bits of metal might cause magnetic interference within the DATA store). And if – when the director made his inspection in an hour's time – there was one *single* loose bacterium – then there'd be a lot of explaining to do. (Don't even *think* about dust, Best Beloved!.)

Pausing at the first door, the manager hurriedly opened his briefcase to show his security card.

"C'mon. You know me," he snapped. "I want immediate clearance to 'H9'. It's an emergency. Managers are *always* clean!"

"Yessir," said the guard. (Managers were *always* clean and *always* right.)

No one noticed as Farnum dropped silently from the ceiling, executed a perfect half-roll and landed in the top pocket of the briefcase...right next to the black leather address book and the executive teddy bear.

The briefcase snapped shut.

"Alert all the other doors. I'm on my way to the inner sanctum," ordered the manager. He was – after all – *very* clean... there were absolutely *no* flies on *him*! (Well, that's what *he* thought, Best Beloved.) So they opened up all the doors for him. Quickly.

He passed through the fly-paper screen, the Xergon-ray blaster, the dandruff vacuum, the bacteria-basher, the germo-jaws, the hydroponic-humidifier, the magnetic flux-flusher, the egg-stain strainer and the radiographic roller-coaster until he finally arrived at 'H9' which was as far as anyone was allowed to go.

Absolutely *no one* was allowed into the 'Holy of Holies' – the inner DATA core. In fact, no one had *ever* been inside it. A bunch of highly talented computerologists had once designed the main logic RAM but that was several years ago and the experts had all since left to design other computers. There was therefore no point in anyone having a peek at the rows of chips – no one had a clue as to how it all worked. The only important thing was that it *did* all work. After a fashion. This was one of the main reasons why everyone was so nutty about cleanliness. If, God forbid, the machine should *ever* go wrong then there was no one around to mend it.

HUMPHREY WALWYN'S 'LOGICALLY-SO' STORIES

There was only one way into the DATA core... through the air-purifying duct. Anyway, no human could fit through it as the opening was only an inch tall. No human perhaps, but a fly? Easy!

The manager opened his briefcase. He needed a last hygiene check before the director's arrival (he was busy analysing the breath of all the technicians in the processing area). Farnum calmly flew up to the air-duct and crawled through. No one saw him. And no one would have believed their eyes anyway. A fly? In 'H9'?

So, this was it! This was what all the fuss was about? Well, it didn't look all *that* interesting... rows and rows of centipede shaped things with lots of legs and wires and cables and the occasional blob of solder.

"Hello," said Farnum. (He thought the insecty-centipedy things might be friendly, Best Beloved.) But no one answered. The things just hummed a bit. Farnum thought the whole place was rather less than impressive. Perhaps it'd be more interesting around the next corner. So – carefully avoiding the glowing bits and the high-voltage hissing bits – he crawled off down the passage. It was a complete maze of passages and narrow chambers and he soon lost track of which brickboard, breadboard and logicboard he was on.

Each turning looked exactly the same as the last one. Each centipedy-row looked the same as the other. Soon he became hopelessly lost.

Outside, the director had arrived to examine the cleansing records. The manager met him in 'H9' and bowed deferentially. This was quite a feat in a sterile radiation suit because they were rigid above the knees, Best Beloved.

"All ready for your inspection, director," he mumbled. (It was also difficult to speak with an oxygen mask on).

"Good," replied the director. He was a man of few words. Directors often are. The manager smiled. You couldn't see if he WAS smiling behind his hygienic protector, but I assure you he was. He was very sure that the entire computer complex was spotless. "Here are all the health records, quantum-particle analyser returns and the bacteriological count. Not a loose microbe in sight! Not a hair out of place! '4C' is very clean." Suddenly, behind him, a computer operator screamed through his surgical mask. An anti-sceptic sprayer dropped his spray gun and moaned in terror. A bacteriological-byte tester bit his tongue. Everyone turned to look. There, in a VDU screen, behind – yes *behind* – the fourteen layers of securi-glass, was a fly.

The manager laughed like a maniac. Farnum was bored. He moved up the screen.

"And it's *alive*!!!" yelled a vacuum-vector operator. The manager fainted.

"It's a fly," remarked the director. He was a man of few words.

By now, Farnum was not only completely confused, he was rather annoyed. Everything looked the same to him. There were miles and miles of boring old centipedy-chippy things and occasionally there were flat areas and smooth areas and bumpy bits... but it all looked so similar. He had no idea how to get back to the air-duct. He moved off in the general direction of the central ROM bank because it hummed more than the other bits.

On the outside, the manager was coming round. "Did you see it? Has it gone?" he groaned. The computer operators and technicians stood around in their white radiation suits in total silence. Everyone was in a state of shock. The manager breathed deeply into his oxygen supply...

"But how...and where? And...those germs! Those nasty hairy legs! Those millions of fly-ridden bacteria! The computer will catch a cold or cough and that'll be that!" The manager's voice rose in terror.

The director, who – as you know, Best Beloved – didin't usually say very much, was completely lost for words. He had gone a very pale shade of green. He didn't look very pleased. Luckily, you couldn't see how *really* angry he was.

The manager started to tremble: "...and who knows where it's been! It might even have a stactic charge on it's wings!" (Don't even *imagine* the 'dust' possibilities, Best Beloved. It'll only make matters worse.)

Now flies are digital creatures. Analogue thought is too complex for insects. Besides which, flies have six legs rather than two or four, so they tend to count in digital units. When flies meet up and want to make friends, they communicate *very* fast in binary code with their feet. (You may not have known this before, but it's important that you understand it now, Best Beloved.) Farnum, therefore, although he was bored to his wing-tips, at least knew what was going on within the centipedy-chippy things. Furthermore, by moving his legs very fast (flies *do* move their legs very fast), he could perhaps make friends with one of the centipedy-chippy things. Certainly, the chippy things within the central ROM bank seemed more responsive than most of the others. He sat on top of a semi-conductor and moved his six feet rapidly around pins 3, 5, 7 and 9. The low voltage tingling was a pleasant feeling.

Outside in the memory control room, a VDU operator gasped in astonishment. "Look at this," she shouted.

On the VDU was the single word, *"Hullo"*.

The manager came round behind her. The other operators craned their necks around behind him. The director stood on a chair. All this was quite difficult since everyone was wearing rigid and crackley sterile suits.

The manager typed back on the keyboard: "Who are you?"

"I'm a flie." (Flies may be capable of binary transfer, Best Beloved, but they can't spell.)

"Crickey," said the manager, or words to that effect. "The thing talks!" He typed in: "What are you doing in our computer?" There was a slight pause.

"I don't no wher I am!"

"Well, get out of it." Another pause.

"I want to get out but I am lossed!"

"Get it out of there," said the director.

"But how?" said the manager.

The VDU came to life again: *"Is this macheen important to you?"*

"Bloody right it is," said the manager. "What shall we do?"

"I want a garantee you won't flit me if I cum out," glowed the VDU.

"Give it anything it wants, just get it out of there," said the director. He hadn't spoken so much for *ages*.

The manager typed slowly onto the keyboard: "What do you want, fly?"

"My name is Farnum, not Flie."

"Sorry, Farnum. What do you wish?"

"Just open up the top and let me cum out."

Two operators swooned at the very thought. No one had *ever* taken the main cover off the logic board store. Just *think* of the horrors that would get in. (But don't

think of the 'dust'...that would be *too* much, Best Beloved.) The manager shook and shivered at the very idea of the computer cover being removed. He pulled himself together (difficult in a radiation suit) and typed back: "No, we can't do that. You must find your own way out."

"I'm lost. No wau back. Remove the cuvver."

"No." There was a longer pause.

"If this macheen is important to you, then I shall do things too it if you don't let me out."

"What does he mean by *that?"* said the manager. The director went grey-green and coughed.

"I shall talk to the other centipedyies and alter who owns what."

Another operator fell in a quivering heap of nervous tension. The manager typed back: "No. Please. Farnum don't."

"I shall cause a kaos with monies not being paid and monies getting lossed."

"No, please, Farnum."

"Say 'please' again. No one has said 'please' to a flie before."

"Just do what it says, but *get it out*!" said the director in a *very* strained voice.

"Please, O Great and Wonderful Fly. O Lord of Everything. Oh, Farnum, please don't."

"Well then, just open the cuvver and let me out."

The manager was feeling rather ill. The director swayed slightly. The VDU shone again: *"Why not let me out by the cuvver?"*

"Because, Oh Wonderful Farnum, horrible things would get in and the computer would break."

"Like me? Like Farnum? Farnum is horribul?"

The manager shook again at the thought of a fly loose in the memory banks. He quickly typed: "No, not you. You are nice. We will let you go free. It's because of the dust!"

Even seeing the word 'dust' was too much for another technician. He fainted clean away. There was a long pause.

"But there is dust here now incide."

There was a very long silence in the control room. People looked at each other.

"What do you mean, Farnum?"

Farnum was quite correct. There wasn't just a bit of dust, there was a *lot* of dust. There was dust on the brickboards, dust on the breadboards. Dust in the chips, beside the chips, on the chips. The cables were swimming in pools of dust. Dust was caked around the I.C.s and zeon-zanodes, the carbon-cathodes and the silicon-siltheens. No one had bothered to clean it in the beginning and with all the massive security checks in operation, there was no chance of the dust ever getting out again. Besides which, it is a proven law of nature that – no matter what you do – dust will *always* get in to where you don't want it to go. And there's no point in having the ultimate in cleanliness, if you can't get *inside* to get the dust out. No human had seen inside '4C' for the last ten years, and so no one had any idea of what was really inside. The director took charge. No one else was in a fit state to say anything. He didn't waste words:

"Open up," he said.

Which is why, some three hours later, a lone white-suited figure walked back through the hydroponic-humidifier, the germo-jaws, bacteria-basher and the fly-paper screen. He carried a little lead-lined box. The manager set the box down in the main reception area and opened the lid. Out stepped Farnum.

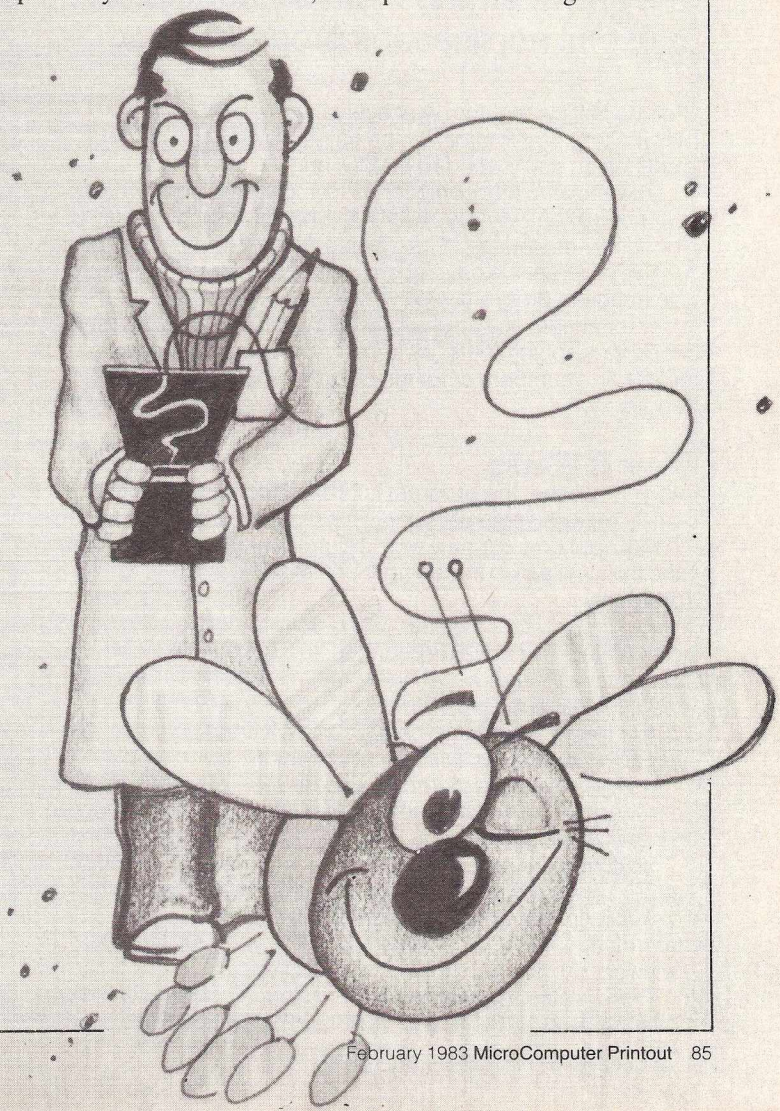
"Thank you, Farnum," he said. "We never knew that computers could possibly work in an ordinary germy-dusty household environment. From now onwards, all computers will have ventilation holes and airholes. We will allow coffee stains and sticky fingers on the keyboard. We may even one day make them small enough to go into people's homes – though what the people will *do* with them is quite another matter. All we ask is that you tell all your fly friends that the inside of a computer is a boring place. That way, they may *not* feel like crawling over the chips and upsetting all our ROM and RAM and DATA. Thank you once again."

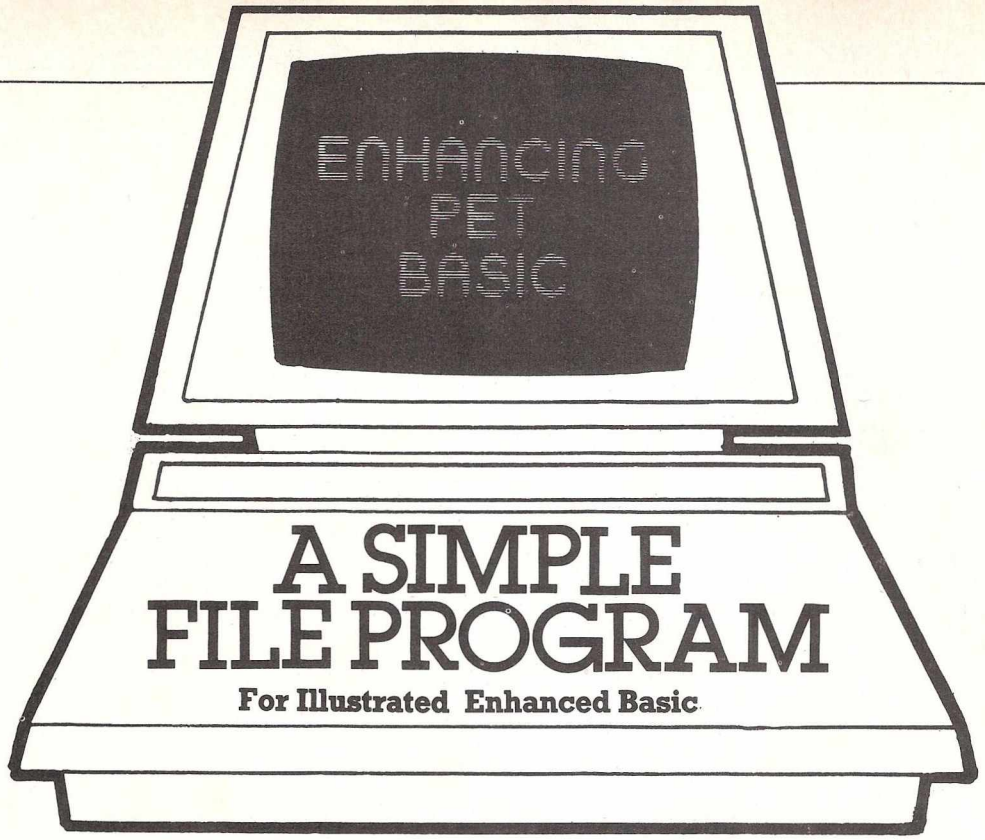
And with that, Farnum flew off.

And the manager had a really great time removing nearly all the security screens and sterile protection devices. All personel were allowed to remove their surgical suits and hermetically sealed masks. But they kept the fly-paper hanging up. *Just in case...*

And that is why, Best Beloved, computers were allowed out into people's homes. And that is why, no matter how hard you try, dust will *always* get in somewhere. And that is why computers still go wrong occasionally. Farnum hasn't had time yet to pass the word to every fly. Bugs occasionally get in, but you *should* be able to get them out. (You can tell which flies are not properly educated, Best Beloved. They're the ones that cling to the ceiling and smile at you. And they also spend a lot of time cleaning their six feet... to make a better electrical contact of course.)

The only other thing this story proves is that physical size is not important when judging how good a computer person you are. However, it helps to have six legs.





A SIMPLE FILE PROGRAM

For Illustrated Enhanced Basic

Since June last year, **Dave Barrett** and **Dave Wardill** have been developing and publishing new commands for PET BASIC that could save hours of programming. As a finalé they have strung them all together into a useful applications program.

For the last six months, we have included articles in *MicroComputer Printout* which have shown a few of the routines on our 'Extended BASIC' chips.

Now the time has come for us to show how these words are used in an everyday way in the programs which we write for ourselves, for use on machines which include our chips.

The program we have chosen as a specimen is a simple file handling program which can be easily adapted by the user for almost any application. Versions of this could be used for appointments, as a 'Diary' program, for keeping telephone numbers or for almost any simple file-handling application.

How It Works

As you will see, the program is broken into a number of easily recognisable sections. This means that we can use it to highlight how our new words simplify and speed programs like this, while still producing a useful standard BASIC program.

The first job that the user would do is to define a file on his disk. With a few obvious changes, this will also work on cassette, although we wonder whether anyone will find that medium fast enough.

The file defined could be called PHONE, or APPOINTMENTS, or DIARY, as you wish. This example is formatted for Phone Numbers, for the sake of simplicity, but a few additions around line 4000 would allow it to be adapted for any application.

Next, you are able to enter lists of the data you want to store. This is automatically sorted before it is written to the disk file, so that when you recall the file to find some information, it is in a sensible order and you can find your answers quickly.

There is also a facility, usually only found on very expensive file handling programs, for any part of a name to be discovered within your data. Lines 12000– show this happening in BASIC. However, be warned! BASIC is not fast, and it is only in our machine code routine SS that this really worthwhile. Nevertheless, we have included a simple BASIC routine for comparison, so you can see what the routine is intended to to.

VDU Command

First of all, look at these lines which we have picked out of the main program.

```
1090 REM SET UP THE 'POSITION' STRINGS
1100 CD$="<HOME> <20 CURSOR DOWNS>"
1110 CR$="<40 CURSOR RIGHTS>"
2060 PRINT"<CLEAR>":PRINTLEFT$(CD$,4);LEFT$(CR$,10);"<RVS>M E N U<OFF>"
3230 PRINTLEFT$(CD$,20);LEFT$(CR$,10):PRINT"<RVS>ERROR";DS$
5190 IF COUNT=0THENPRINTLEFT$(CD$,6);LEFT$(CR$,);"<RVS>NO MATCHES FOUND<OFF>"
6070 PRINT"<CLEAR>";LEFT$(CD$,6);LEFT$(CR$,5);"<RVS>NO RECORDS IN THIS FILE"
7110 IFPL%=-1THENPRINTLEFT$(CD$,16);"<RVS>NO RECORD FOUND":GOSUB9060:RETURN
7120 PRINTLEFT(CD$,7);LEFT$(CR$,14);"<RVS>";LEFT$(A$(PL%),20)
7150 PRINTLEFT$(CD$,9);LEFT$(CR$,14);"<RVS>";RIGHT$(A$(PL%),14)
7250 PRINTLEFT$(CD$,24);LEFT$(CR$,5);"PRESS SPACE TO CONTINUE"
8080 IFPL%=-1THENPRINTLEFT$(CD$,16);"<RVS>NO RECORD FOUND":GOSUB7250:RETURN
```

VDU LINES FROM THE FILE PROGRAM

They are intended to position the cursor on the screen, but you can see that BASIC makes heavy weather of this. How much easier it is to have a command like VDU, which positions the cursor instantly and without fuss. Line 3230, for example would be much more elegant if it looked like this.

3230 VDU 20, 10:PRINT "<RVS>ERROR": DS$

With this command, long lines of cursor control characters don't have to be defined, and complicated LEFT$ and RIGHT$ can be simplified to a single statement. VDU 20,10 will place the cursor on the screen 20 lines down and 10 columns in.

LINEINP AND PADINP

These two commands, described in more detail in the September issue, will allow quite sophisticated screen handling of data.

PADINP "ENTER MESSAGE"; 20,1,NA$

will print the 'prompt message'. It will then accept, in the example given here, any string of length greater than or equal to 1, up to 20 characters long. It will than pad out the word, if it is not at its maximum length, by adding 'invisible' characters (#96) which are seen to exist by the PET but appear on the screen as blanks.

The approximate method of it's workings can be seen in the BASIC equivalent which can be seen in lines 9000–.

You may prefer our version.

```
9000 REM ************************************************************************
9010 REM *                                                                      *
9020 REM *          PADINPUT                                                    *
9030 REM *  TO MAKE THE LENGTH OF EACH WORD THE SAME BY PADDING IT              *
9040 REM *  WITH 'INVISIBLE' CHARACTERS                                         *
9050 REM *  M IS THE MAX LENGTH; MI IS THE MINIMUM ACCEPTABLE INPUT             *
9060 REM *                                                                      *
9070 REM ************************************************************************
9080 REM
9090 PADINP"ENTER NAME";20,1,IN$
9100 RETURN
```

This makes all your data input the same length, which can be a great asset if you are dealing with relative files.

LINEINP is a more simple version of the same command. It allows the maximum and minimum size of a message to be specified, so that erroneous data can't be entered.

LINEINP 20,15,NA$ will not accept a 'RETURN' key press until at least 15 characters have been entered. If you try to enter more than 20, it will not accept them, but will wait for a 'RETURN'.

Once again, the BASIC equivalent is shown in lines 1100–

```
11000 REM ************************************************************************
11010 REM *                                                                      *
11020 REM *      LINE INPUT                                                      *
11030 REM *                                                                      *
11040 REM ************************************************************************
11050 :
11060 LINEINP"ENTER NAME";20,1,IN$
11070 RETURN
```

KEYINP

This word is useful for those of us who like to make sure that the wrong key cannot be pressed in error. We have all been frustrated when we have accidentally pressed 'RETURN' when we were supposed to INPUT, but we hadn't pressed any other key first and the program stopped and jumped to 'READY'.

Also, we have all been amused by programs which say 'PRESS ANY KEY TO CONTINUE', but don't mean it. Yes, the 'STOP' and 'RETURN' keys should be cut off, somehow. Well this is how.

With KEYINP, you have to define a list of acceptable key presses. If you want the 'SORT' key to work, that should be included in the list. So,

```
OK$="SOAFVCDEsoafvcde"
KEYINP OK$,A$
```

This puts the letter you press into A$; if you press any key not in the string OK$, nothing happens.

SORT

Next, look at the 'SORT' routine in the 'ordinary' BASIC program. It will take ages to run if you have a large file of say 200+ records. Try it if you like – but please, don't blame us if you die of boredom.

The program which we have written here is slightly tongue in cheek. It is perfectly sound, as BASIC programs go, but it doesn't run well! The 'SORT' routine can take an age in BASIC. With our 'SORT' routine, however, it is imperceptible. You will not be aware that it is running at all, as it sorts the data so quickly.

The same applies to ease of programming. Instead of having to copy in a program like lines 10000–10150, look at our equivalent.

```
10000 REM ************************************************************************
10010 REM *                                                                      *
10020 REM *      A SIMPLE BUBBLE SORT                                            *
10030 REM *                                                                      *
10040 REM ************************************************************************
10050 :
10060 SORT A$(0)
10070 RETURN
```

These are so much easier to enter, it just doesn't bear comparison.

SEEK

The same applies, but even more so, to the word 'SEEK'. This will read along each line of text in an array, looking for a match with a substring. That means that you can ask it to look for a part of a record, such as 'Smith'. This could be useful if you wanted to find all the occurences of 'Smith', '–smith', and so on. Unfortunately, it is desperately slow in BASIC to the extent that it is only practicable in Machine Code. Then our routine comes in to its own.

It will scan every element of an array, looking for a match, in less than a second, and will report every occurence. Try it in BASIC!

```
12000 REM ************************************************************************
12010 REM *                                                                      *
12020 REM *      A SIMPLE 'SEEK' ROUTINE                                         *
12030 REM *                                                                      *
12040 REM ************************************************************************
12050 :
12060 LINEINP"NAME TO FIND";20,1,NA$
12070 SEEK NA$ IN A$(1)
12080 RETURN
```

The Program

The program we have written is designed to show how the new words make programming so much easier, and how some desirable tasks can be tackled which are only possible in Machine Code.

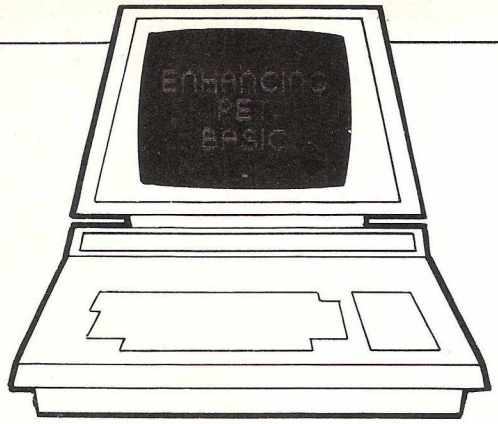
Nevertheless, the program is quite useful if your arrays don't get too big, and you might like to give it a try.

There are lots of REM statements in it, designed to help you follow the program. These can all safely be left out and this will save you a *lot* of typing.

We included them so you could also see where to include our alternative routines. If you do so, why not try the program both in standard BASIC and in extended BASIC, using SYS calls to the code we have published in recent months.

You will be surprised at the difference in the speed. ▷

```
1000 REM ************************************************************************
1010 REM *                                                                      *
1020 REM *       A FILE HANDLING PROGRAM - BUT IN ORDINARY OLD BASIC            *
1030 REM *                                                                      *
1040 REM ************************************************************************
1050 REM
1060 REM SET UP THE 'PAD' CHARACTER
1070 FORX=1TO20:PA$=PA$+CHR$(96):NEXT
1080 REM
1090 REM SET UP THE 'POSITION' STRINGS
1100 CD$="<HOME> <20 CURSOR DOWNS>"
1110 CR$="<40 CURSOR RIGHTS>"
1120 REM
1130 REM MAKE A LIST OF ACCEPTABLE KEYPRESSES
1140 REM BUT IF 'KEYINP' IS WORKING, INCLUDE THE STOP KEY IN THE LIST
1150 CK$="SOAFVCDE"
1160 REM
1170 REM DISABLE THE STOP KEY
1190 REM
1200 REM SET THE FILE SIZE DEPENDING ON THE AVAILABLE MEMORY
1210 MAX=400:IFPEEK(53)<102THEN MAX=250
1220 DIM A$(MAX+1)
1230 :
2000 REM ************************************************************************
2010 REM *                                                                      *
2020 REM *       PRINT THE MENU                                                 *
2030 REM *                                                                      *
2040 REM ************************************************************************
2050 REM
2060 PRINT"<CLEAR>":PRINTLEFT$(CD$,4);LEFT$(CR$,10);"<RVS>M E N U<OFF>"
2070 PRINT"<DOWN><RIGHT><RVS>S<OFF>TART A NEW FILE
2080 PRINT"<DOWN><RIGHT><RVS>O<OFF>PEN AN EXISTING FILE
2090 PRINT"<DOWN><RIGHT><RVS>A<OFF>DD A RECORD
2100 PRINT"<DOWN><RIGHT><RVS>F<OFF>IND A RECORD
2110 PRINT"<DOWN><RIGHT><RVS>V<OFF>IEW RECORDS
2120 PRINT"<DOWN><RIGHT><RVS>C<OFF>HANGE A RECORD
2130 PRINT"<DOWN><RIGHT><RVS>D<OFF>ELETE A RECORD
2140 PRINT"<DOWN><RIGHT><RVS>E<OFF>XIT THE PROGRAM
2150 PRINT"<2 DOWN>PRESS THE LETTER OF THE DESIRED OPTION"
2160 :
2170 REM **** GET THE USER'S CHOICE ****
2180 :
2190 PL%=0
2200 GETB$:IFB$=""THEN2200
2210 :
2220 REM **** IS IT IN THE CHECKSTRING? - SEE LINE 1150 ****
2230 :
2240 FORXX=1TO8
2250 IFB$=MID$(CK$,XX,1)THENPL%=XX:XX=8
2260 NEXT
2270 IF PL%=0THEN2200
2280 ON PL% GOSUB 3090,3200,4060,5060,6060,7060,8060,2330:GOTO2060
2290 :
2300 REM **** IF ANY CHANGES HAVE BEEN MADE, THEN RESAVE THE FILE ****
2310 IF FLAG<>0THENGOSUB6200
2320 :
2330 IF FLAG THEN GOSUB6250
2340 DCLOSE:END
2350 :
3000 REM ************************************************************************
3010 REM *                                                                      *
3020 REM *      START A NEW FILE                                                *
3030 REM *                                                                      *
3040 REM ************************************************************************
3050 :
3060 REM **** DO NOT LEAVE SPACES IN THE FILE NAME ****
3070 :
3080 REM **** SET THE NUMBER OF RECORDS TO ZERO AND SET THE FLAG ****
3090 NR=0:FLAG=0
3100 M=16:MI=1:PRINT"<CLEAR><2 DOWN>ENTER THE FILENAME ";:GOSUB9060:F$=IN$
3110 :
3120 REM **** OPEN A FILE ON DISK ****
3130 DOPEN#5,(F$),D0,W
3140 IF DS=63 THEN NEXT:PRINT"<RVS>FILE EXISTS":GOSUB7250:DCLOSE:GOTO3100
3150 DCLOSE
3160 RETURN
3170 :
3180 REM **** OPEN AN EXISTING FILE AND SET THE MAX AND MIN NAME LENGTH ****
3190 :
3200 M=16:MI=1:PRINT"<CLEAR><DOWN>  ENTER THE FILE NAME ";:GOSUB9060:F$=IN$
3210 DOPEN#5,(F$),D0
3220 IFDS<>62ANDDS<>64ANDDS<>72THEN3260
3230 PRINTLEFT$(CD$,20);LEFT$(CR$,10):PRINT"<RVS>ERROR";DS$
3240 GOSUB7250:DCLOSE
```
▷



Disk Copy

We have had so many requests for our routines that we have decided to make them all available on a disk, together with this program and a lot of demonstration routines. The disk includes all the published material, and quite a lot of other useful commands. There are full instructions on how to use the programs even if you do not want to alter the ROMs in your PET.

These can be ordered from Dave Wardill, at 7 Ashtree Close, Rowlands Gill, TYNE & WEAR. NE39 1RA. Would £15 for a disk or £12 for a cassette seem about right?

Next Month

Next month, we are turning our attention on to the VIC.

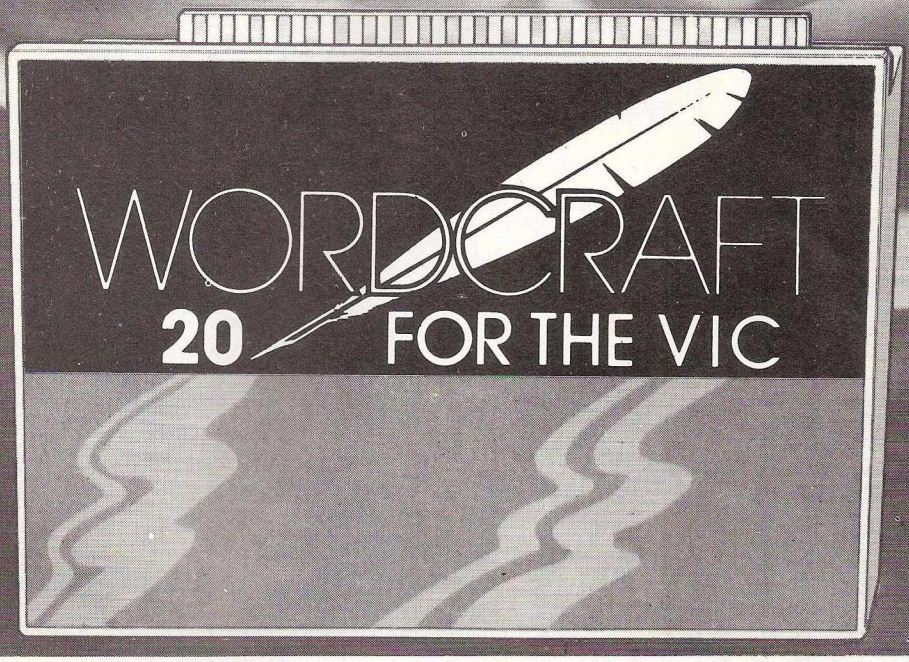
This is a grand little machine in a lot of ways, but it lacks a little in user-friendliness. Sinclair's Spectrum, and other machines, have shown how important it is to have easy-to-use commands, especially for beginners, and especially for the more complex screen controls.

We have responded to this need by writing, especially for *MicroComputer Printout*, a set of new commands. So, VIC owners will be able to look forward to new words like PAPER and SOUND. Additionally, we have made the FUNCTION KEYS definable and they can be used rather like the keys on the BBC micro.

See you next month. □

```
3250 GOTO3200
3260 :
3270 REM **** READ THE FILE FROM DISK ****
3280 :
3290 INPUT£5,NR
3300 FORX=1TONR
3310 INPUT£5,A$(X)
3320 NEXT
3330 DCLOSE
3340 FLAG=0
3350 DCLOSE:RETURN
3360 :
4000 REM ************************************************************************
4010 REM *                                                                      *
4020 REM *      ADD A RECORD                                                    *
4030 REM *                                                                      *
4040 REM ************************************************************************
4050 :
4060 IF NR=MAX THEN PRINT"<RVS>FILE FULL<OFF>":GOSUB7250:RETURN
4070 PRINT"<CLEAR><4 DOWN><RIGHT>ENTER NAME ";
4080 M=20:MI=1:GOSUB9060:N$=IN$
4090 PRINT"<2 DOWN><RIGHT>ENTER NUMBER ";
4100 M=14:MI=1:GOSUB9060:T$=IN$
4110 NR=NR+1
4120 A$(NR)=N$+T$
4130 A$(NR+1)=""
4140 GOSUB10050
4150 REM FLAG THAT A CHANGE HAS BEEN MADE
4160 FLAG=FLAG+1
4170 RETURN
4180 :
5000 REM ************************************************************************
5010 REM *                                                                      *
5020 REM *      FIND A RECORD                                                   *
5030 REM *                                                                      *
5040 REM ************************************************************************
5050 :
5060 PRINT"<CLEAR><DOWN>ENTER STRING TO BE FOUND ":M=30:MI=1:GOSUB11060:H$=IN$
5070 PRINT"<CLEAR>"
5080  COUNT=0
5090 GOSUB12060
5100 :
5110 REM **** IF NO MATCH IS FOUND ****
5120 :
5130 IFPL%=-1THEN5190
5140 REM **** IF A MATCH IS FOUND ****
5150 PRINTA$(PL%)
5160 P=PL%+1
5170 COUNT=COUNT+1:IFCOUNT=20THEN COUNT=0:GOSUB5090
5180 IFP<=NR THEN5090
5190 IF COUNT=0THENPRINTLEFT$(CD$,6);LEFT$(CR$,);"<RVS>NO MATCHES FOUND<OFF>"
5200 GOSUB7250
5210 RETURN
5220 :
6000 REM ************************************************************************
6010 REM *                                                                      *
6020 REM *      DISPLAY RECORDS                                                 *
6030 REM *                                                                      *
6040 REM ************************************************************************
6050 :
6060 IFNR<>0THEN6100
6070 PRINT"<CLEAR>";LEFT$(CD$,6);LEFT$(CR$,5);"<RVS>NO RECORDS IN THIS FILE"
6080 GOSUB7250
6090 RETURN
6100 PRINT"<CLEAR>"
6110 COUNT=0
6120 FORX=1TONR
6130 :
6140 REM **** FORMAT THE RECORDS BEFORE THEY ARE PRINTED ****
6150 :
6160 PRINTLEFT$(A$(X),20);"  ";RIGHT$(A$(X),14)
6170 COUNT=COUNT+1:IF COUNT=20 THEN COUNT=0:GOSUB7250
6180 NEXT
6190 GOSUB7250
6200 COUNT=0
6210 RETURN
6220 REM
6230 REM CLEAN OFF THE OLD FILE AND WRITE THE UPDATED ONE
6240 REM
6250 SCRATCH(F$),D0
6260 DOPEN£5,(F$),D0,W
6270 PRINT£5,NR
6280 FORX=1TONR
6290 PRINT£5,A$(X)
6300 NEXT
6310 DCLOSE
6320 RETURN
6330 :
7000 REM ************************************************************************
7010 REM *                                                                      *
7020 REM *      AMEND A RECORD                                                  *
7030 REM *                                                                      *
7040 REM ************************************************************************
7050 :
7060 PRINT"<CLEAR><DOWN>ENTER RECORD TO CHANGE ":;M=30:MI=1:GOSUB11060:H$=IN$
7070  GOSUB12060
7080 :
7090 REM **** IF NO RECORD IS FOUND ****
7100 :
7110 IFPL%= -1THENPRINTLEFT$(CD$,16);"<RVS>NO RECORD FOUND":GOSUB9060:RETURN
7120 PRINTLEFT(CD$,7);LEFT$(CR$,14);"<RVS>";LEFT$(A$(PL%),20)
7130 :
7140 PRINT"<DOWN>ENTER NAME    ":M=20:MI=1:GOSUB9060:N$=IN$
7150 PRINTLEFT$(CD$,9);LEFT$(CR$,14);"<RVS>";RIGHT$(A$(PL%),14)
7160 PRINT"<DOWN>ENTER NUMBER  ":M=14:MI=1:GOSUB9060:T$=IN$
7170 A$(PL%)=N$+T$
7180 GOSUB7250
7190 :
7200 REM **** FLAG THAT A CHANGE HAS BEEN MADE ****
7210 :
7220 FLAG=FLAG+1
7230 RETURN
7240 :
7250 PRINTLEFT$(CD$,24);LEFT$(CR$,5);"PRESS SPACE TO CONTINUE"
7260 GETB$:IFB$<>" "THEN 7260
7270 PRINT"<CLEAR>"
7280 RETURN
7290 :
8000 REM ************************************************************************
8010 REM *                                                                      *
8020 REM *      START A NEW FILE                                                *
8030 REM *                                                                      *
8040 REM ************************************************************************
8050 :
8060 PRINT"<CLEAR><DOWN>ENTER RECORD TO DELETE ":;M=30:MI=1:GOSUB10050:H$=IN$
8070  GOSUB12060
8080 IFPL%=-1THENPRINTLEFT$(CD$,16);"<RVS>NO RECORD FOUND":GOSUB7250:RETURN
8090 A$(PL%)=CHR$(255)
8100 GOSUB10050
8110 A$(NR)=""
8120 NR=NR-1
8130 FLAG=FLAG+1
8140 RETURN
8150 :
9000 REM ************************************************************************
9010 REM *                                                                      *
9020 REM *         PADINPUT                                                     *
9030 REM *  TO MAKE THE LENGTH OF EACH WORD THE SAME BY PADDING IT              *
9040 REM *  WITH 'INVISIBLE' CHARACTERS                                         *
9050 REM *  M IS THE MAX LENGTH; MI IS THE MINIMUM ACCEPTABLE INPUT             *
9060 REM *                                                                      *
9070 REM ************************************************************************
9080 :
9090 IN$=""
9100 GET I$:IF I$=""THEN9100
9110 PRINTI$;
9120 IF I$=CHR$(13)THEN9140
9130 IN$=IN$+I$
9140 GOTO9100
9150 IF LEN(IN$)<MI THEN9100
9160 IN$=IN$+PA$
9170 IN$=LEFT$(IN$,M)
9180 RETURN
9190 :
10000 REM ***********************************************************************
10010 REM *                                                                     *
10020 REM *      A SIMPLE BUBBLE SORT                                           *
10030 REM *                                                                     *
10040 REM ***********************************************************************
10050 IFNR=1THEN RETURN
10060 FORK=1TONR-1
10070 FORJ=1TONR-K
10080 IFA$(J)<A$(J+1)THEN10100
10090 SW$=A$(J):A$(J)=A$(J+1):A$(J+1)=SW$
10100 NEXTJ,K
10110 :
10120 REM **** SOME HOURS LATER! ****
10130 :
10140 RETURN
10150 :
11000 REM ***********************************************************************
11010 REM *                                                                     *
11020 REM *      LINE INPUT                                                     *
11030 REM *                                                                     *
11040 REM ***********************************************************************
11050 :
11060 IN$=""
11070 GET I$:IF I$=""THEN11070
11080 IF I$=CHR$(13)THEN11120
11090 IN$=IN$+I$
11100 IFLEN(IN$)=MTHEN RETURN
11110 GOTO11070
11120 IF LEN(IN$)<MI THEN11070
11130 RETURN
11140 :
12000 REM ***********************************************************************
12010 REM *                                                                     *
12020 REM *      A SIMPLE 'SEEK' ROUTINE                                        *
12030 REM *                                                                     *
12040 REM ***********************************************************************
12050 :
12060 PL%=-1
12070 I=1
12080 I=I+1
12090 FOR R=1 TO 34-LEN(H$)
12100 OK=0
12110 FOR K=1 TO LEN(H$)
12120 IF MID$(H$,K,1)<>MID$(A$(I),R,1)THEN 12150
12130 OK=OK+1
12140 IFOK=LEN(H$)THENPL%=I:RETURN
12150 NEXT K,R
12160 IFI=NR THENRETURN
12170 GOTO12080
```

A NEW ERA OF WORD PROCESSING



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SO YOU THINK YOU KNOW ABOUT COMPUTERS

Here at the NBI of HR we have been engaged in extensive research (funded in Part by grants from Microcomputer Printout as well as various US government bodies, Radio Free Europe and the National Truss into the status of those who use and enthuse about computers.

Our work to date has centered upon the development of a multi-choice questionnaire (see Hillaire, Vince, 1977: Development of the MCQ at NBI of HR) that has already been administered to a substantial sample population (Baxter and Gleadow, 1979: Administration of MCQ to SP) comprising most of the inhabitants of Cherryview Cottage, Lettaford (ref. OS SX 702840).

The questionnaire follows. But before you apply yourself to it, I must emphasise the following:

- no career decisions should be based on the results. They will provide only a general indication of your prowess
- parents should be careful in assessing the results of administering the test to children. The services of a qualified member of the NBI of HR are however available—contact the NBI secretary Ms Melody Kirkpatrick for a scale of fees
- above all, the results of the test should NOT be used in job applications for positions in computer journalism.

1
What is a computer?

A an electronic brain
B a fast idiot
C a clever way for the same kind of people who sell soap powder, used cars, magazine advertising and executive desks to get rich quick
D an overpriced gimmick
E the economic salvation of the nation, harbinger of a new industrial revolution, and instant prosperity for ailing businesses

2
What is a microcomputer?

A a small electronic brain
B a small fast idiot
C a clever way for the same kind of people who made hula-hoops, skateboards and silly woggly things for the top of the head get rich quick
E an overpriced toy
F an essential tool with which to live in the 1980s

3
What is the difference between a computer and a calculator?

A not a lot
B between 40 and 400,000 quid
C calculators don't have letters on their keys
D there's no kudos in owning a mere calculator

4
What is the best computer in the world?

A Sinclair ZX81 (or Spectrum, if Production has started)
B BBC Model A (or B, if either is available yet: or any other Acorn clone, if not)
C Commodore Vic (or CBM 64, if it really does exist)
D Sirius 1 (or Victor 9000, or whatever the lawyers decide it can be called)
E Osborne 1 (plus free weight-training course)
F Cray 1 (with added freon)
G Bognor Computing International Model SQRZ-0001 Turbo
H IBM 360 (if back from London-to-Brighton Veteran's Run)
I other
J none of the above

5
What do 'PEEK' and 'POKE' mean to you?

A not a lot
B Preface to and commission of indecent assault
C Preface to and commission of decent assault
D commands that enable the programmer to reference specific memory locations
E commands used with funny numbers (the meaning of which you don't understand) that change colours, sounds, etc
F complicated bit-twiddling instructions that could so easily have been replaced by specific and infinitely more meaningful commands like 'COLOUR', 'SOUND' etc.

6
What do you wish you'd been given for Christmas?

A a set of matching monogrammed hankies
B two Premium Bonds
C a leather steering wheel glove
D crumbly bath salts
E a bottle of Jameson's
F Pink Floyd's "A Collection of Great Dance Songs"
G a Cray 1
H a book entitled "Stirring Tales of Village Life in Tristan da Cunha"
I a combined speech input/voice output device
J a new payroll package
K other

7
When you go to a party, how long does it take for a casual acquaintance to discover your interest in computers?

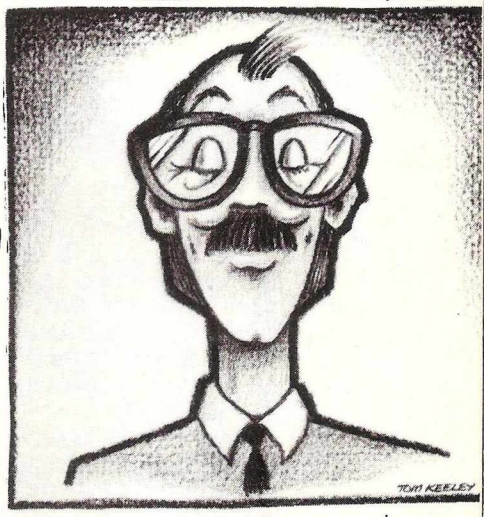
A less than 30 seconds
B within five minutes
C about an hour
D more than one but less than three hours
E not until you've gone back to their place for coffee
F less than two weeks
G never

8
Why are 'Winchester' disks so called?

A because they are made only in towns with cathedrals

What are you . . . Beginner, Boffin or Bluffer?

a self-paced self-examination prepared by Compton Pauncefoot of the North Bovey Institute of Human Relations



B after the Winchester rifle (as used in the Wild West)
C because the original designers wanted it to sell well in Conservative Party constituencies
D because the original designers were driving to Winchester when they thought of the idea
E it's a euphemism for a rude bodily activity

9

What is a programme?

A a sequence of instructions for a computer to follow
B a sequence of instructions for a computer to follow if it's an ICL computer
C a collection of misspelled actor's names and advertisements for overpriced local restaurants

10

How would you handle the question "what exactly can it DO"?

A with difficulty
B laugh jovially and switch the conversation to something else
C say "Virtually anything" and demonstrate the space invaders program you've just written
D explain that it would take too long to explain
E say "Mind your own business"
F other

11

Given the option, which would you rather be? (Choose three)

A modular
B integrated
C flexible
D user-friendly
E networked
F disk-based
G menu-driven
H Parametrised
I buffered
J upgradeable
K Basic
L high-resolution
M other

12

If you were a computer, which would you rather be? (Choose three)

A modular
B integrated
C flexible
D user-friendly
E networked
F disk-based
G menu-driven
H Parametrised
I buffered
J upgradeable
K Basic
L high-resolution
M other

13

True of false? Time limit four minutes per answer

A Babbage nicked the ideas of a bloke called Jacquard
B the hole in the middle of floppy disks bends too
C the original bug was an undeclared array
D the original bug was a pond-skater
E half a byte is a nibble
F half a nibble is a peck
G two bytes are a big mac
H APL stands for ohmigoshnot Another Programming Language
I the Apple III works
J VNU paid £1.25 million for 'Personal Computer World'
K Benn Bros paid £2.25 million for 'Microcomputer Printout'
L Martin Legless Banks is quite a nice bloke really
M the cost of building a computer is typically below 19 per cent of the price it sells at
N computer journalists know all there is to know about computers and journalism
O Jacquard nicked the ideas of a bloke called Falcon
P no-one really understands how computers work
Q you can buy pornographic programs
R there is no truth, other than that which is discovered in the bottom of an empty glass
S computer salesmen and product brochures are all designed to help you make the best possible purchase
T there are no new ideas for programs
U Inside Trader has a network of informants in over 35 countries, including the Eastern bloc
V a small glitch is a snivitz
W a nationwide competition for late-night programming is being sponsored jointly by Nescafe and WD & HO Wills
X computers cause unemployment
Y effective use of a computer can be judged by how much extra paper you're producing
Z Falcon nicked the ideas of a 12th Century Arab mathematician named Al Khubakar

SO YOU THINK YOU KNOW ABOUT COMPUTERS

ANSWERS

1

A	0	Oh come on now, you surely don't believe all that 'electronic brain' rubbish?
B	4	The best possible answer, since it mixes cynicism and reality
C	1	Entirely untrue. Most of the people who get rich out of computers are PR executives, ex-employees of IBM, shareholders in IBM, and editors of computer magazines
D	2	Well . . . maybe
E	3	Golly, yes. Well, the Minister for Information Technology says so, doesn't he? And as is well known our elected representatives are nearly always right. So it must be true

2

A	0	See above
B	0	Ditto
C	3	How true
D	1	How can you be so cynical?
E	2	Not exactly *essential*, really

3

A	4	Nuff said
B	0	Not true. Correct range is 40 to 4,000,000 quid
C	2	So what's so special about letters?
D	3	You have got your priorities right

4

I	10	All the other answers are wrong and score 0—the best computer is the one that's best for you, so there can't *be* a 'best in the world'. Mind you, that Bognor 0001 is pretty hot stuff . . .

5

A	3	Can't blame you
B	0	Sexist rubbish
C	2	You obviously get more out of computing than I do
D	4	Boring but true
E	5	Pragmatism is always laudable
F	10	There's no real reason why the average user shouldn't be given all the facilities of which computers are capable. But then most computers seem to be designed by programmers for programmers, leaving Average User to fend for him/herself

6

E	10	Or 20 if you'd have liked two bottles; and pro rata
F	−5	Have you *heard* that album?
I	4	Shows willing Score 0 for everything else

7

A	0	Where's your *sublety*?
B	3	on the other hand, you might as well make the most of it
C	2	Come on, you can do better than that
D	1	For heaven's sake—practice!!
E	10	Canny
F	0	You fail
G	5	Well, computers can be awfully boring. . .

8

A	0	Sucker
B	5	This is actually the truth
C	0	You surely didn't believe *that*, did you?
D	0	. . . Or *that*?
E	4	Could well be true

9

A	0	Wrong. That's a *program*
B	2	ICL people get stuck with old-style terminology (along with their old-style ideas)
C	10	Getting the idea now, huh?

10

A	10	Likewise
B	5	Tricky but possible
C	2	Ok if you can persuade the thing to work I suppose
D	0	Cop-out
E	0	Where's your social reponsibility? These people need educating into computer literacy
F	4	Let me know what it is, then

11

A	0	Unless you go in for spare-parts surgery, in which case score 4
B	3	Unless you're *particularly* clumsy
C	0	No lying!!
D	0	Unless you can provide documentary evidence and Polaroid snapshots of the said usage
E	10	. . . But you'll have to justify that one too
F	2	Points awarded for gall
G	6	Unless you're especially greedy, in which case deduct 4 marks
H	3	Unless you aren't sure what a parameter is, in which case score 4
I	0	Oh come on now
J	8	Cuban heels don't count
K	9	And which of us isn't, from time to time?
L	0	No boasting
M	0	You mean there weren't enough choices in the list?

12

A	0	Implausible
B	0	Unlikely
C	−2	Highly unlikely
D	−4	Extremely unlikely
E	9	Largely meaningless, so you're safe there
F	5	. . . But so what?
G	0	Unless you're a restaurant system aiming to be a Hote Management Package when you grow up, in which case you can score 8
H	0	Big deal

What are you . . .
Beginner, Boffin or Bluffer?

I **2** . . . But *fully* buffered would be better
J **0** . . . And deduct 2 if you're *fully* upgradeable
K **0** Pleb
L **4** . . . But *how* high can you get?
M **10** If you don't need any of the above as a description, you're doing very well

13

Score one mark for each correct answer

A True. Babbage used Jacquard's punched cards idea
B False. It's entirely rigid
C False. See below
D True. Well, it was some kind of insect, anyway. It got into one of the early computers and in frying it managed to screw things up inside
E True. But who ever needs to talk about half a byte?
F False. But if you ever needed to talk about half a nibble, I suppose 'peck' would be as good a name as any
G False. No, the correct answer is *three* bytes
H True. Well, more or less—it stands for A Programming Language
I True. Or False. Choose your own answer
J False. It was £12.5 million—cheap at twice the price
K False. It was the other way round—'Microcomputer Printout' had to give Benn that much to be taken over
L True. Especially if it's your round
M False. It's not below 19 per cent at all, it's below *20* per cent
N True. Or False. Work out the right answer for yourself
O True. It was Falcon who came up with the idea of 'programs' on punched cards (wooden slats, actually)
P False. There's a bloke in Barrow on Furness, but he's not on the phone
Q True. But they're all a bit silly. So I've heard. Not that I've tried any myself. Well, only a few. Not many at all, really
R False. Well, if the answer is true this question can't be answered as 'true', can it?
S True. They're really altruistic: all salesmen and brochure writers spend three years at the North Bovey Institute of Human Relations on the How to Care for your Fellow Man/Woman course before they're allowed to go out flogging computers
T False. It's just that no-one has come up with any of the new ideas recently
U False. He/she has informants in over *48* countries
V True. And of course you all know what a glitch is, don't you?
W False. But maybe the idea will catch on
X True. Up to a point, anyway
Y False. As is well known, computers simplify things and store everything electronically and can display information at the press of a key, so there will hardly be any need for paper at all if you have a computer
Z False. I made that up. Ho ho.

ASSESSMENT

Maximum score: 123 points unless you asked for more than one bottle of Jameson's.

0–9 Gosh, that's AWFUL. Are you sure you didn't add up the scores incorrectly? That's PATHETIC. Really BAD. You MUST be able to do better than that. EVERYONE does better than that. Didn't you even get the one about Jameson's?

10–49 Beginner's Grade. You think the Apple II is the Apple II rather than the Apple][. You suck your biros, too. But at least you're on the road to enlightenment. Send off for more brochures.

50–99 Intermediate Computerist. You know about the Apple][but not about the Apple III being the Apple *III*. You prefer programming to bopping at the Camden Palace, but then you also prefer the Nolans and Terry Wogan to Grandmaster Flash and Richard Arnott. You have taken apart your new joystick to see how it works and have lost one of the retaining screws.

100+ Computer Expert Fourth Dan. You are intelligent, articulate, good-looking, have a pocket full of multi-coloured biros, and sure to go far (probably as a computer salesperson or brochure writer). I see a tall dark stranger bearing two cartons of bent flowchart templates and premium-quality double-sided double-density mini-floppies; and these you will unload at 800 per cent profit on an unsuspecting shopkeeper in Matlock who thinks he can run his small business with a Sinclair ZX81.

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**-: either/or, one/all fields.
**-: same string/same number.
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5-Sex	(M)	than 5 yrs, prepared for work in London or the South, at computer
6-C.V.	(5-o levels, 6-a levels)	analysis, who's interests are golf or tennis, speaks German or French has
7-Exp	(3 yrs)	worked in Local government and is married. Finally matches our own
8-Sal	(12,000)	classified code (grade 5)".
9-Locn	(London/South)	Output the short list to a second file for a mail shot.
10-Type	(Computer analysis)	
11-Sport	(Tennis/golf/riding)	
12-Langu	(English/French/German)	
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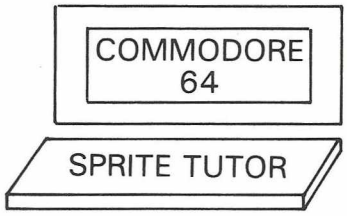

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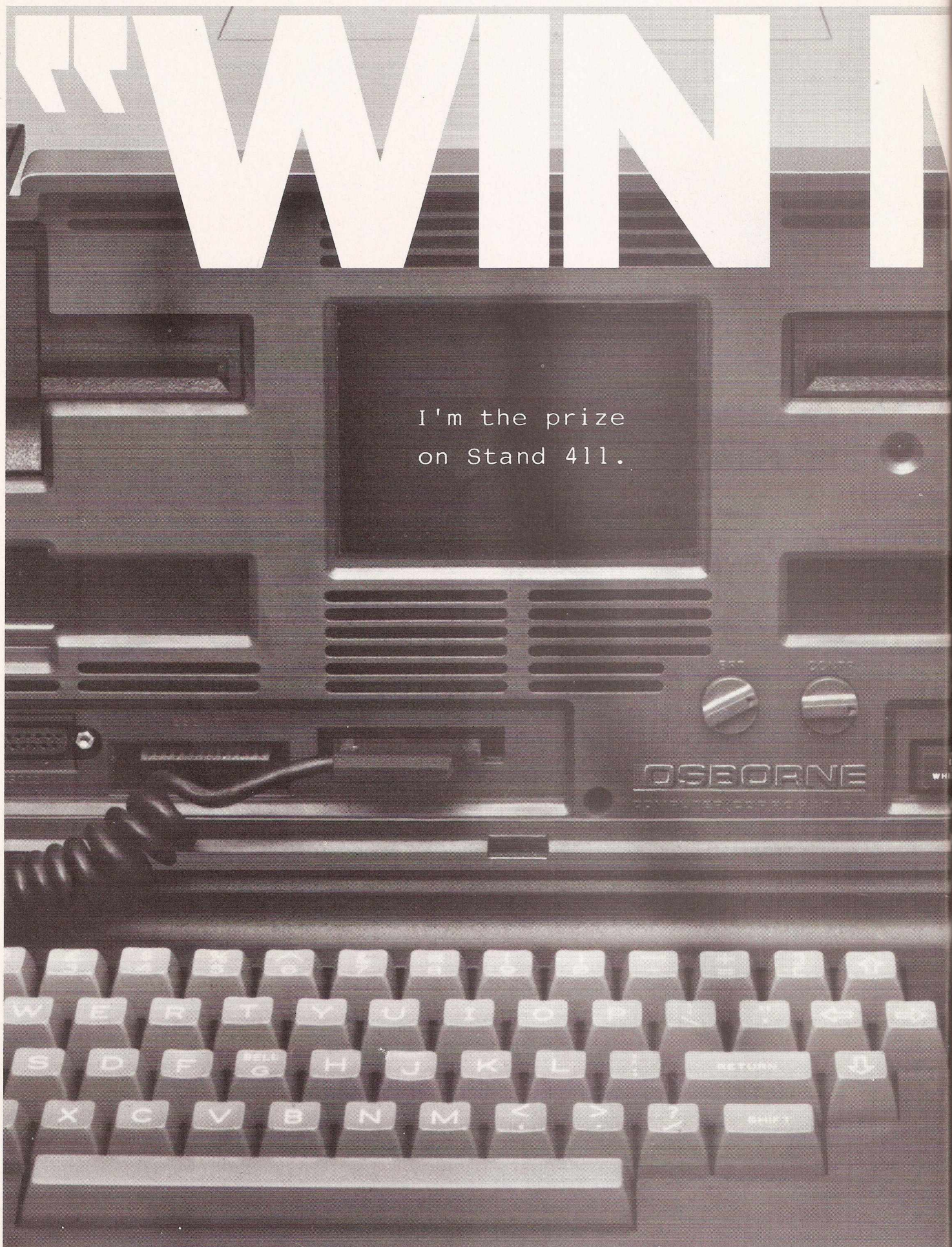
Thoughts of Chairman Mao



WORDSTAR® word processing with MAILMERGE® (a trademark and a registered trademark of MicroPro International Corporation of San Rafael, California);
CBASIC® (a registered trademark of Compiler Systems); MBASIC® (a registered trademark of Microsoft); CP/M® (a registered trademark of

ME"

"Hello, I'm the new double density Osborne 1. You can meet me on Stand 411 at 'The Which Computer? Show' – National Exhibition Centre, Birmingham, 18th-21st January, 1983.

While you're there, at the same time you can enter the great Osborne 1 Raffle. And the prize, you guessed it, is me.

But even if you don't win, I'm still the best buy in personal business computers.

With my new double density disk drives, I've increased my data storage capacity.

This means you can use me for all those jobs involving a large volume of data.

And if you buy me before 31st January, 1983, you'll get the best selling data base management program, Ashton Tate's dBase II® (worth over £450 retail) entirely free.

While of course at £1,375 (plus VAT) I already come with SUPERCALC® for electronic spreadsheets, WORDSTAR® for word processing, CP/M® the control program that gives you access to the world's biggest library of software options, plus CBASIC® and MBASIC® for programming.

That's software worth a total of £1,250. No other computer can offer you anything like this value for money.

So come and see me on Stand 411.

And don't forget I'm fully portable. So when I say you can carry away the prize, I really mean it."

To the Osborne Computer Corporation (UK) Limited, 38 Tanners Drive, Blakelands North, Milton Keynes MK14 5LL, Bucks. Tel: (0908) 615274. Telex: 825220. I'm sorry I can't attend the show, but please send me full details of the Osborne 1.

Name_____

Address_____

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Company_____

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MCP2 1983

OSBORNE 1

UPERCALC® electronic spreadsheet system (a trademark of Sorcim Corporation); igital Research); and dBase II® (a registered trademark of Ashton Tate Inc.).

WANTED!

MASOCHIST!

We have a problem – maybe YOU are the person that can help us. You see, our Editor is in a bad way. Twenty three years old and already suffering from a receding hairline, ulcers, a weak heart and ZX81 finger, he is complaining of overwork. What he wants is an Assistant Editor – someone to help with the writing, sub-editing and production of this magazine.

Unfortunately, the publisher sees things rather differently. He fancies that the extra editorial resources offered by a new assistant should be used to produce a bigger and, can you believe it, better magazine! So he's looking for someone who can research and write top-quality articles.

Either way, it looks as though we shall be needing someone pretty special, and where better place to start looking than amongst our devoted readers? Could you be the right person? Have you:-

- experience of working in magazine publishing, editing, writing, or journalism?
- a working knowledge of the applications of microcomputers (N.B. we don't need another boffin).
- lots of initiative, plenty of drive and self-motivation.

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INSIDE TRADER

Following cuts in production budgets at local radio stations, BBC Radio Solent has been experimenting with computers as program presenters. Listeners have so far been entertained by a quiz show conducted by a Sinclair Spectrum. After the program, Magnus Magnussen was said to be 'unworried' by the threat.

Sydney Development Corporation has announced an agreement whereby Computerland will distribute Australia's top computer game worldwide. Called 'Evolution', *the game is billed as enabling kids to trace the evolutionary chain all the way up from blob-like amoeba to the intelligence of an adult Australian.*

I am indebted to the *Wall Street Journal* for the news that two hundred Japanese robots have joined a union. The robots work at Fujitsu Fanac's plant near Nogoya. A spokesman said they were expected to play a useful part in union affairs.

Stepping into the Silicon Valley drugstore to collect my supplies of Defergel, I encounter my old friend Steve Jobs of Apple, after something for his acne. How would I like to check out his new LISA computer for him? It seems that the 68000 BASIC runs embarrassingly slowly; slower in fact than the VIC-20. Not wishing to be associated with another monumental Cupertino cock-up, I make my excuses and leave.

Inexplicable intelligence from my bug in the Commodore's commode, where following the superannuation of President Jim Finke all corporate conspiracies are now conceived... The *CBM-64* currently costs the company $35 *less* to make than the *VIC-20*, but sells for twice as much... Impending introduction of VLSI will halve the chip count again... Similar policy pursued in regard to employment of engineers, now down to four following defection of Messrs Winterble and Charpentier to Atari... The *MAX* to be iced – Commodorese for cancelled – in favour of a *CBM-16*...

French Bureaucrats have come up with an ingenious means of circumventing Common Market free trade regulations. British computer manufacturers tendering for official contracts have been advised that they will be fined £9 for every English word used. Thus FOR...NEXT must be replaced by DEPUIS...AUTRE. Said a Ministry official. "Le Franglais, c'est interdit."

To the California Public Relations Consultant's annual ball, where for the first time a non-Hollywooder is to receive the covetted Golden Bull Award for Hyperbole and Outstanding Media Manipulation. To my surprise none other than Microsoft's boyish Bill Gates rises to acknowledge the accolades of the toupéed toadies. The judges, I learn, were deeply moved by the precision leaking of the 'Microsoft called into bail out Apple's LISA' story, and the straightfaced denial of same.

Chicken and Egg Mutual Appreciation Society. *Allow me to quote from two press releases recently received. The first one reads: "Christopher Daly has been named Vice President of Marketing at Software Distributors, according to Linda Johnson, Executive Vice President." Release number two states that, "Linda Johnson has been named Executive Vice President of Software Distributors, according to Chris Daly, Vice President of Marketing."*

(Legal note: the following story is apocryphal.)
Galled by Digital Research's refusal to develop a 6502 version of CP/M, Torch Computers took all of six weeks to do it, plus eight months to write all the CP/M bugs back in for compatibility.

Last year, Apple users enjoyed the advantages of over 2,500 Orbit units.

Until recently, it was only the users of Apple II and /// microcomputers who had the advantages of Orbit Business System. And that really meant something.

It meant that Apple users had a fast, flexible, easy-to-use and competitively-priced business system purpose-built to provide them with the broadest possible range of configurations, thanks to the unique combination of hardware and Orbit software products. It meant that accounting, stock control, sales invoicing, payroll and other systems were streamlined to such a degree that the performance was equivalent to that of a large mainframe computer, at a fraction of the cost.

It meant that as an Apple user's company grew, so could Orbit's system capacity. All in all, it meant that Apple users had a tremendous advantage over other microcomputer users.

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Orbit systems can now be used to complement IBM, Sirius, Victor 9000 and SAGE II microcomputers. This means that you too can benefit from the full Vlasak service which supplied over 2,500 products in the last year. Vlasak dealers provide full product and systems support, both before and after sales, personal instruction on usage, installation and servicing, and advice on up-dating your system so that it grows with your company.

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This year IBM, SIRIUS, VICTOR, DEC and SAGE II users can benefit too.

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