MICRO-COMPUTER
CATALOGUE

A Complete Guide to Micros under £2000

Full details and prices of over 70 micros from £40 to £2000 – plus 'Best Buys'

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Front cover: The Sharp MZ80A

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Introduction

Welcome to the world of microcomputing! It seems that suddenly computers are taking over the World. But don't worry about the implications and impact of computers. They are great fun and they're not that complicated. Computing is a fascinating hobby. This is your chance to get in on the act.

This guide is written to help you choose and buy your microcomputer. There are sections introducing computers, explaining the jargon and giving advice on what to look for and how to choose and buy.

The main part of the guide is the catalogue itself.

This is divided into five price bands and covers micros under £2000. Each machine is listed with its details, a picture and some helpful comments. At the end of the catalogue there's a quick reference chart to help you compare the machines you like at-a-glance.

Max Phillips, the author, has worked both as a computer programmer and as a journalist for magazines such as What Micro? and Personal Computer News. The Catalogue draws on both his experience of the market and the machines in it and his own views as a computer user.
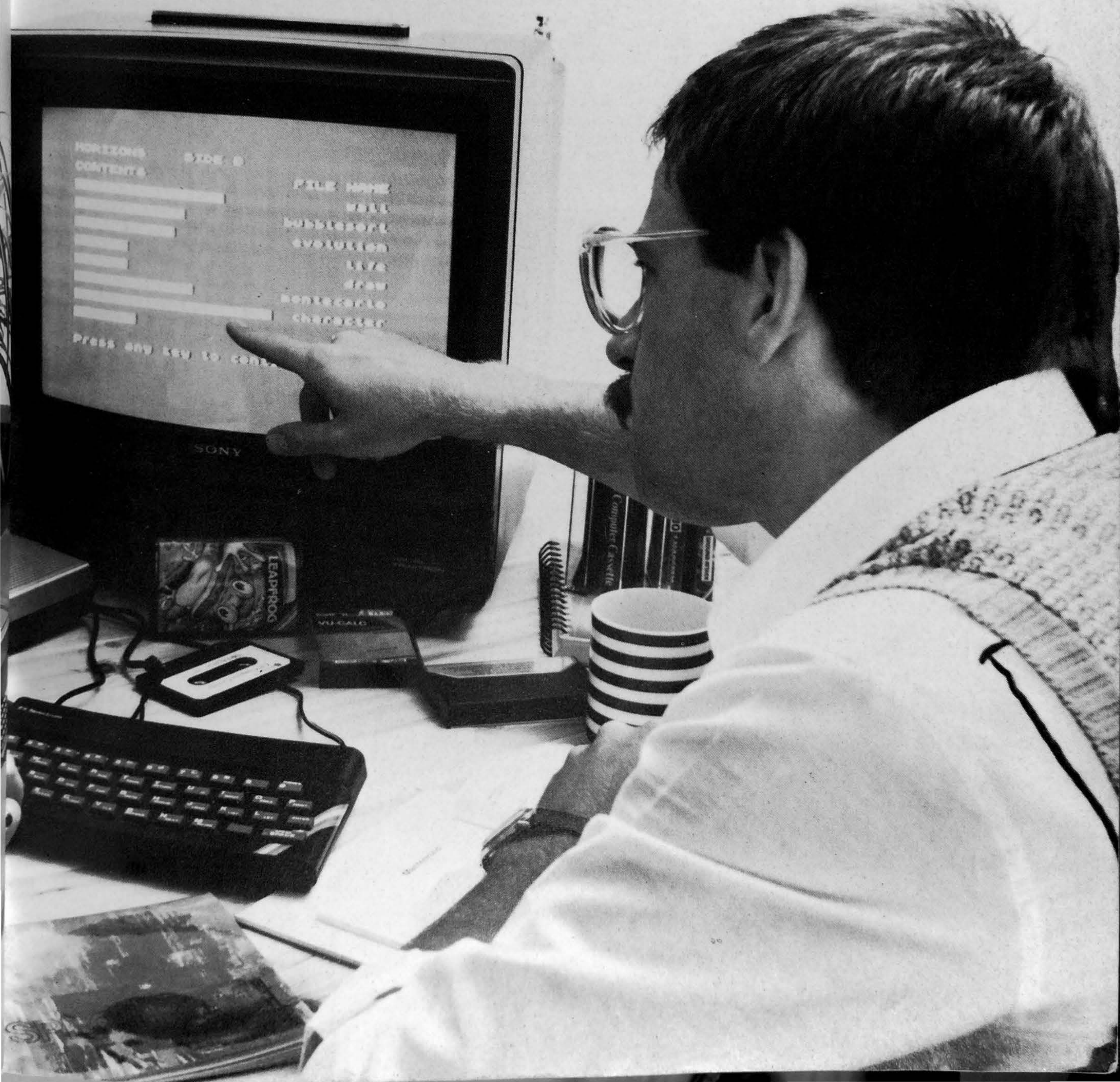
Introducing Microcomputers

Computers may look complicated. They may be surrounded by a strange jargon, and, of course, they can do an amazing variety of difficult and useful jobs. But that doesn't make them clever — in fact, computers really are stupid! It's people, like you and I, that make them do useful things.

Computers are just mindless machines. All they do is follow a series of simple instructions called a program. Each simple step is carried out in turn, albeit at a high speed.

Programs: Programs are written by people. They are a long recipe or guide, telling the machine what to do at every step. It's only with great care that the simple things a computer can do such as adding together two numbers or putting a letter on the screen, are turned into useful programs that do real jobs.

But computers are versatile. Change the program and the computer changes from a machine to do your budgets into a space invader game. Or from a formidable Chess opponent to a machine to catalogue your stamp collection.

The silicon chip: So how does a computer work? The brain of the computer is its microprocessor, a silicon chip that looks at and obeys the instructions in a program. It can only manage simple little things but it can do millions of them every second. So, with a lot of work, microprocessors can be persuaded to do almost anything.

Of course, you need somewhere to keep the program. It's no use having it on a piece of paper and typing in the instructions one at a time, like you do with a calculator. The computer would spend most of its time waiting for its next instruction.

So a computer has a memory.

In it, it keeps the programs that tell it what to do and any information it needs to work on. So if you are keeping a diary on a computer, all your information, such as appointments, birthdays and so on, will be kept in the computer's memory.

Keyboards and displays: You need a way of getting information into the computer for it to work on. So computers have keyboards just like those on typewriters. And you need a way of getting information out of the computer. It's no use having the world's greatest thinking machine if you can't tell what it's thought.

So computers display results and information on a screen, usually an ordinary TV set. The information can be words or graphics . . . pictures, drawings and dia-

grams. Computers also connect to printers, so that information can be typed onto paper.

Memory: There's a catch to this. Computers tend to forget what's in their memory everytime they are switched off. So there has to be a way of keeping programs and information between sessions on the computer.

Some computers let you plug in special cartridges with pre-written programs permanently stored on them. Most home computers connect to ordinary cassette recorders so that they can record and read back information into their memory.

On the more expensive computers, flexible disks coated in a magnetic material are used to store information. These floppy disks (as they are called) work a bit like single pop records but the computer can both read and store information on the disk.

DIY Programming: Many people who buy a computer don't write their own programs. Why should they? You can buy high quality programs ready-to-go on a cartridge, cassette or disk. Just load them into the computer's memory and away you go.

But if you're interested in computing as a hobby, there's no reason why you can't learn to program. Most computers come with a language called Basic. This lets you write your own programs in an easy-to-understand way.

You can learn just by sitting at your computer and trying things out. You don't need to know any maths or complicated science. You've just got to be interested. There's nothing like the satisfaction of seeing your own programs 'up and running' for the first time.

You can buy programs — to do most jobs and play most games — for most home computers. Usually, if you want to get a particular job done, it's much better to buy a program than write one yourself. But that doesn't mean there are no original programs left for you to write.

You might have an odd job or an unusual hobby that nobody has even thought of computerising before. Being able to program also lets you dream up and invent your own games.

So if you're just a little bit interested in computing, you ought to have a go. Computers are amazing value. There are very few machines that offer the same level of interest and complexity for the money.

Don't be put off by people who insist on talking 'in code' and trying to make computers seem special. With a little bit of patience and a lot of fun, you'll be your own expert soon enough. Don't worry about picking a computer. Get one and get computing!
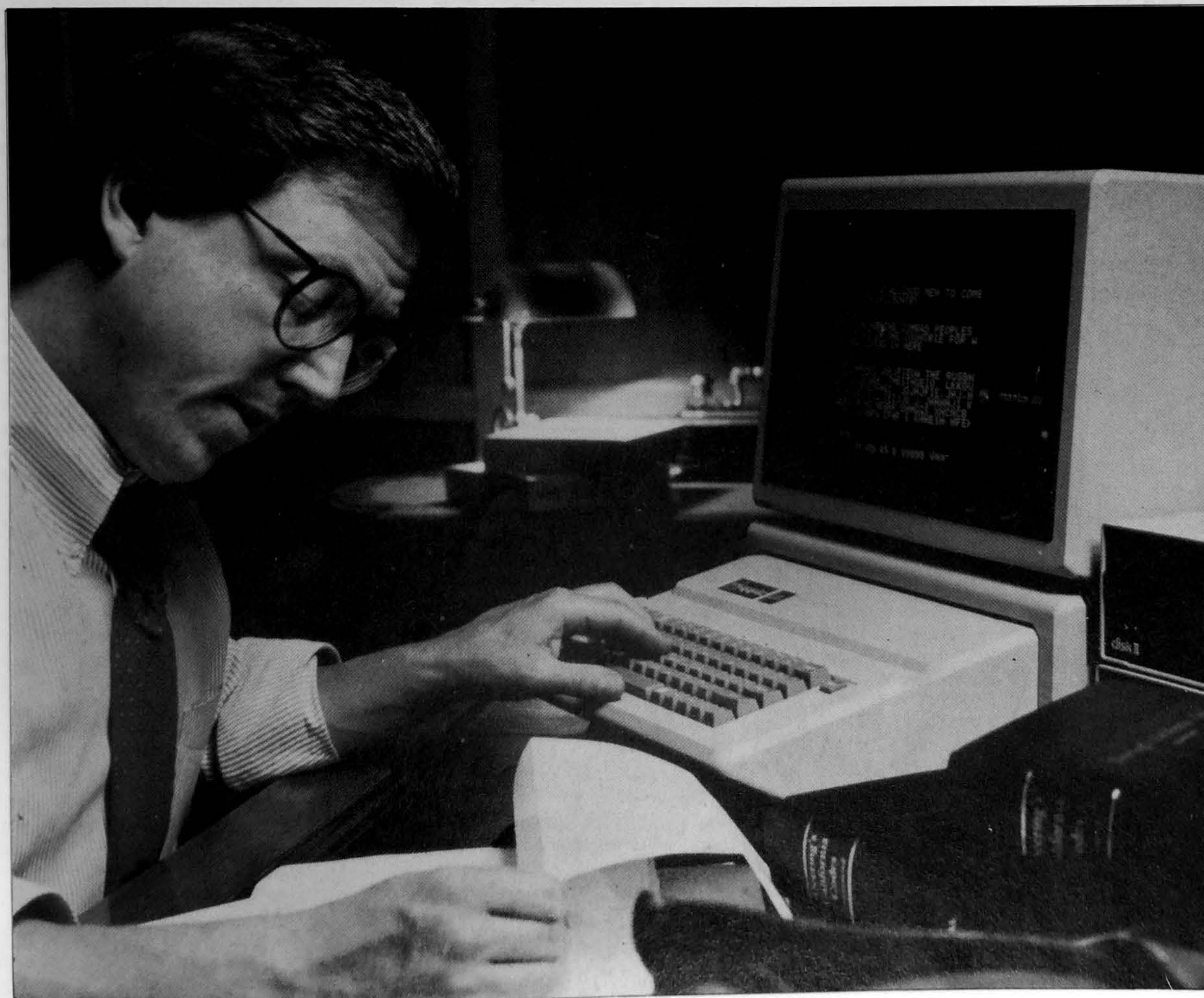
Choosing and buying

It's frightening. Choosing and buying a microcomputer doesn't look easy. There's a bewildering array of machines from £40 to £2000 surrounded by a strange and alien language.

But it's really not that hard. In fact there's so many machines and most of them are excellent designs, that it's hard to go wrong. Provided you know what you're looking for and you are prepared to do a little 'homework', you can make a confident purchase.

Half the fun of computers is learning to use and understand them. But you don't need to know that much before you buy one. Buying a computer is like buying a car or camera. Looks and 'feel' count just as much as the murky technical depths.

Even so, there are a few pointers that can be a great help when you start out.

What do you want it for?

The first is to know exactly what you want the computer for. Do you want a games machine? Do you want a computer to help with your writing or a fancy calculator to help with your homework?

Computers themselves are general purpose machines. It's the programs that run on them that decide what they do. So you work out what you want the computer for, find out which programs do the job and consider the computers that run those programs.

If you're looking for a home machine to play games, file a few oddments — household bills, say, or recipes, record collections and telephone numbers — and to learn to program, then look for a machine which has the sort of games you want to play and the biggest choice of programs available.

There's no substitute for research here. Look at machines in shops, read adverts, see games running and talk to people who know and can use machines. You'll soon have a shortlist of machines to look at.

It's a good idea to concentrate on the older more popular machines. The machines that have sold most (in the jargon, those with the biggest 'user base') have the largest range of programs to choose from. They have more dealers and there are more people who know about them should you need advice and help.

There will always be newer and fancier super machines just around the corner. But even when they arrive, there will be a shortage of programs, a lack of expertise to turn to and, more often than not, teething troubles with the machine itself. Stick with the machines that are selling well and you can be confident of a good buy.
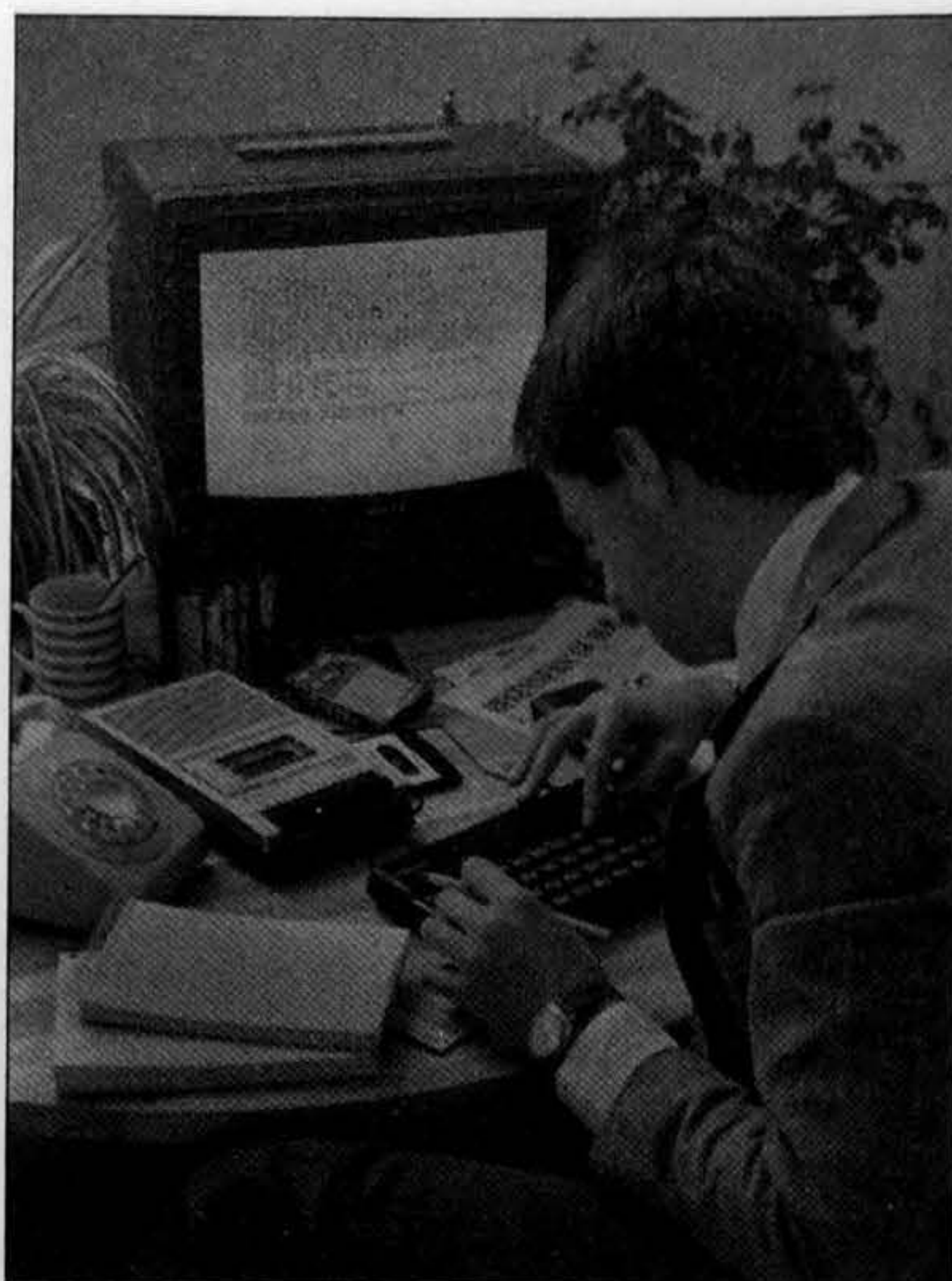
Will it do the job?

But how do you know that a particular machine will do your job? If it's a popular application, such as wordprocessing or home accounts, then it's easy. Go to a shop and see it do it. Try it out . . . on your data in your own time.

If you've got a unique application that can't be done by off-the-shelf programs, then listen carefully to the advice that's given. You may need to write your own program or have one specially written for you. Even so, try and find computers that can do similar jobs.

There's too many misconceptions about how much computer it takes to do a particular job. Many £90 machines are billed as great for the home, office or school. Don't believe any such claims until you've seen it yourself.

There are limits to what particular computers can do. And these divide neatly into the sort of computer and roughly into price bands.

Micro-types

Micros can be divided into several groups: handheld computers, briefcase computers, home computers and business machines. It's a crude system but it does help to give a guide.

Handheld machines are like big calculators. They're not really as good as some of the top scientific calculators and they make very weak computers. So they are really for special jobs that require a mix of calculation and computing. The only exception to this is that their portability makes them into handy diary and alarm clock

systems. They are great fun to have along on a trip as a sort of high technology executive toy.

Briefcase computers are a strange new middle ground between the pocket handhelds and real full-size systems. Some combine full size keyboards, miniature printers, cassette storage and Modems. All in a package that fits in a briefcase.

There's no arguing that they are not powerful machines. But there is still a shortage of work for them to do. Briefcase machines get used by salesmen and builders, researchers and scientists. But they're not yet powerful enough to be of general use to everyone.

Home computers are the biggest and most confusing market — they are best divided by price. First timers naturally tend to go for the cheapest systems, often costing less than £100. These are a great introduction but they tend not to be able to grow with your own interest.

Such low priced computers come with 4K or less Ram — which is too small if you are going to write your own programs. The computer might be great at running plug-in cartridges, because these come with the extra memory they need. But you'll need to buy more memory yourself if you start to program.

The best first time machines cost between £100 and £200. They combine all the features of the cheap machines with decent memories such as 16K, 32K and even 48K. Many are much better at playing games than the cheaper 'games' machines. The Atari range, for example, starts at £150 and is specially designed to give arcade style action.

Above £200, you start to get computers that can grow into genuine systems. They still play games remarkably well and are certainly recommended for the confident first time buyer. But they are intended for people with real interest in computing or a genuine need for a serious computer.

These are the most difficult decisions. Fully expanded they might be able to do a serious job such as word processing or spreadsheet calculations. So you could perhaps save yourself the extra money needed to buy a real business system.

The best way to avoid this dilemma is again to see such machines in action. If it can do it, all well and good. If it shows weaknesses, you'll probably be better off going for a more expensive system. If you want to be sure of getting a serious job done, again it's a good idea to buy a more expensive system from the start.

Business computers: Which brings us onto so-called 'business systems'. These are machines priced from £1000 upwards. They have the things you need for business such as disk drives, 80

column screens, 64K memories and so on as standard.

Don't dismiss them just because they are so-called 'business' systems. It's true that only a few of them play games at all well, the Apple and the Advance 86 being the best examples. But they can still be excellent home computers.

If you're doing some serious work, such as word processing or electronic filing, then you should consider buying such a machine from the start. If you have a mobile hobby, you could find a portable, such as the Osborne 1 or Pied Piper, immensely useful.

These machines aren't as much fun as the top home computers such as the BBC Micro and Commodore 64 but they are worth looking at.

Where to buy one

There are plenty of places to buy computers from. These vary from Mail Order, big chain stores like Dixons, Boots and W H Smiths to specialist computer shops.

Just like buying most electrical equipment, you're probably better off with a specialist. You'll get good advice and a proper after sales service.

However, you may pay a bit more for the privilege. If you're buying a simple home computer for playing games then there's

no reason why you couldn't buy from Smiths or Boots. Many of these stores have trained computer staff and will willingly exchange faulty equipment.

Mail Order is an awkward situation. Often, new computers are only sold Mail Order to start with. Because they're new, there tends to be delays and faulty equipment. So buying Mail Order often leads to trouble.

If you do buy a computer Mail Order then you may find problems if the equipment goes wrong or you need some advice. It's much better to start with a shop. You can try before you buy and you can go back if you have any problems.

Once you're down to a shortlist, the best thing to do is go round to your local dealer and try the machines out. Read their manuals, run some programs and talk to the salesmen. Feel free to make a personal choice . . . go for an attractive-looking machine that feels well made and comfortable. After all, it's you that's going to be using it.

And remember to make it a reasonably local dealer that's friendly and helpful. You may need service and help once you've bought the machine.

So buying a machine needn't be the nightmare most people think it is. It's a good chance to see what's on the market and try out lots of different computers.

Don't think it's a chore and a problem. It's the first round in what could be a long, happy relationship. With a computer!

Finding out more

Finding out more about computers isn't too difficult. There are plenty of books and magazines available. There's even the occasional series about computers on the television.

Computer owners tend to form clubs and 'user groups' just like other hobbies. A visit to your local club will give you advice and first hand experience of what it's all about. You'll probably even get a chance to try some of the machines you're thinking about buying.

Once you've bought a computer, you should join a club. Meetings and newsletters are a great help in suggesting ideas and coming to your rescue when you get stuck. Besides local clubs, there are plenty of national groups with postal newsletters to consider.

Computers are very popular in education. If you want to learn more about them, you could look for a course at your local borough evening school or college. Taking a course will help you use a computer at home. But it also works the other way round. If you want to take an exam, having a computer at home is a great help.

What to look for

The entries in the catalogue cover microcomputers under £2000. They are divided into five price bands: under £200, £200-£500, £500-£1000, £1000-£1500 and over £1500. These are based on the prices you would expect to pay to start your system. It often happens that a cheap system will be expanded (by adding disk drives, printers and other accessories) to put it into a different price and performance category altogether.

Each entry has a photograph, a short comment to tell you something about that particular system and a specification. Some of the things to look for are: —

CPU: The type of microprocessor used at the heart of the computer. This might be a traditional 8-bit microprocessor such as the 6502, Z80 or 6809 or one of the newer, more sophisticated, 16 bit models such as the 8088 and 8086.

The entry also tells you the clock speed at which the processor is used. This is the heartbeat that regulates the computer and is given in MHz... so many millions of beats per second.

The clock speed and processor won't concern many users but an unusually fast clock speed for a particular processor hints at a fast machine and a 16 bit processor tends to offer more memory and processing power.

Ram: This is the amount of Random Access Memory in the system. Ram is the memory used for your own programs and data and the more there is the merrier you are. Like all memory systems, Ram is measured in K, roughly a thousand characters (letters, digits or symbols) of information. So a page of typing takes up about 4K of Ram.

Once you've got a shortlist of machines, investigate how much Ram they have free for you to use. Many machines need some of their Ram for their own use, such as providing graphics displays. So just because two machines have 16K Ram doesn't mean to say that they have the same amount of usable memory.

Rom: This is fixed, permanent memory, full of information that the computer needs everytime it is switched on. On a cassette based machine, Rom is usually used to store a language such as Basic so that it's there when you switch on. On larger machines, there's just a tiny bit of Rom, enough to get the machine going and load in its programs from its floppy disk.

Keyboard: This is the type of keyboard supplied with the computer. For simplicity, the catalogue defines three types.

A Full keyboard has proper moving keys, like those you'd find on an electric typewriter. A Calculator keyboard has moving keys but they are probably made from soft rubber or plastic and do not have the same feel as a real keyboard. Flat keyboards are the touch-sensitive nonmoving designs still used on some budget machines. However space-age and novel they look, they are awful to work with.

Keyboards are important and personal things. You should try the system you're thinking of buying. After all, it's you that has to use the thing. So go for a keyboard that feels right to you... some calculator keyboards are actually preferable to some full ones.

Display type: This is how the computer gets information back to you. Some plug into an ordinary TV, others plug into, or come with, a special Monitor. These are more expensive than TVs but do offer a much better picture.

Many computers have colour displays but some still are limited to monochrome (black and white) displays. Remember that, if you are working with a monitor, a 'black-and-white' display could easily be green on black or amber on black. These tinted screens reduce eyestrain and are more pleasant to use for long periods.

Display ability: This is the basic capabilities of the micro's display. The number of characters across the screen by the number down is given. For business programs such as word processors, at least 80 columns is preferable.

The home user who does his own programming or mostly plays games will be content with 40 or even 32.

Graphics resolution works in a similar way. It's the number of dots across the screen by the number down that the computer can control. So the higher the number, the more detailed pictures it can draw.

There are lots of ways of producing graphics so resolution isn't the be all and end all in choosing a system. Some machines are better at moving shapes quickly than others... useful for arcade games. Others offer subtle colour variations and so on.

But you don't need to go into the complex details of graphics to pick the best system though. Just have a look at some sample programs running on the various machines. You'll soon get a feel for the 'style' of graphics a particular system produces.

Sound: This gives you an idea of what sort of sounds a micro produces. These range from systems that have just a beeper to grab your attention or signal an error, through those which can play notes and sounds to complex synthesisers that can mimic different instruments and play chords using several 'voices'.

Micros either make their noise through a built in internal speaker or they connect to some external device. This can be your television set or it can be a Hi-Fi unit. Having external sound is great if you like that sort of thing. You get a convenient volume control and a decent volume.

If you're interested in sound, the things to look for are an external output for larger speakers, multiple 'voices' to play chords and special effects to imitate different instruments.

Look through magazines for adverts and articles. Often, it's special add-ons and programs that transform the most mute computers into magical music machines.

Storage: The first thing to realise about storage is that all your work is in Ram and everything in Ram disappears when you switch the computer off. So you need a way of keeping both programs and information.

The cheapest and most unreliable way is to use **ordinary cassette tape** in an ordinary recorder. Some machines are better at this than others. Some get their reliability from using specially made cassette recorders that must be used with a particular machine. These cost more but are worth it in added reliability.

At the low end of the market, you'll meet computers that use a **plug in cartridge system**. These have a program permanently recorded on them and can't be used for storing your own programs or data. Cartridges are expensive to produce so they cost more. But that does ensure that the programs are of a high quality.

Some companies sell plug in **Rom chips** to achieve a similar effect on machines which don't have a cartridge socket. These work in a similar way but have the disadvantage that they are hard to change and easier to damage.

Next up, most micros rely on **floppy disks**. These are flexible disks coated in a magnetic recording surface. There are three common sizes... the traditional 8 inch disk, the 5.25 inch floppy and the newer Sony microfloppies based on a 3.5 inch disk.

The thing to watch for with disks is the number of disk drives and the capacity of the disk in each drive. Standard floppies vary from around 80K to 1.2Mb in the amount of data they can store. Consider anything less than 200K a bit small. Estimate the size of your data, for example your record collection or an address list. It may make life much easier if you can get it all on one disk.

The catalogue just quotes the minimum and maximum drive capacities. Most companies offer 'in-between' drives and you can frequently buy drives in ones as you need them. Even if the manufacturer doesn't personally make a range of drives, some independent company somewhere will.

Many low cost systems start life with only one disk drive. This is alright for low volume personal work but is a distinct disadvantage if you're using the computer a lot or for serious business work.

Disks should be frequently copied to protect programs and information from accidental damage. Copying on a one drive system involves sitting there swapping disks over while the computer reads a little bit from this one and writes a little bit to that one. It gets worse with higher capacity disks.

So be prepared to expand to a second disk drive soon after you buy the machine. When you're choosing, check the price of a second drive . . . this is usually the point where prices start to differ dramatically.

The best storage medium for micros is the **hard or winchester disk**. These are fast, reliable, high capacity systems. But they are often too expensive to be used just in the home. So they tend to be bought by business users.

Just like floppies, you'll find people sell hard disks for most machines. So have a look at what is available for the systems you are considering.

If possible, go for one of the new interchangeable hard disk systems as these combine the best of hard disks with the advantages of floppies.

Interfaces: These are the plugs and sockets used to expand and connect computers to additional equipment. Some of these are common standards such as the RS232 serial port, for linking modems and printers, an IEEE interface for scientific equipment or a Centronics port for a printer.

Others are specific to each particular machine or manufacturer, such as a joystick or lightpen port.

Many systems are easily expanded through a general purpose expansion connector or 'bus'. These can be specific to just one machine or well known standards such as 'S100 bus' or Apple or IBM 'slots'.

It's always worth choosing a machine that has some expansion potential. And look carefully at the interfaces section if you've already got some equipment you want to work with the computer.

Languages: This is the system of instructions through which you can write your own programs. Most systems come

with at least one . . . probably the easy-to-learn Basic. But don't think you need to learn a language. If you just want to get on with computing, then you can play games or learn a wordprocessor or data base system without bothering with a language.

If you're interested in learning, then Basic is a good way to start. Most disk based systems let you choose from all the popular languages and some of the more obscure ones.

Operating System: This is the program that controls the running of a large disk based computer. The operating system looks after all the hardware but it also determines which programs will run on a particular machine.

Many machines have their own specific operating systems. But it's best to look out for the widespread and successful ones as these have the largest range of readily available software to work with them.

On 8 bit machines, the system to be with is CP/M, giving you access to thousands of tried and tested programs. On 16 bit systems, MSDOS is enjoying a similar success.

Software included: This lists any programs that are included in the price of the machine. It doesn't count the operating system and any languages because they are already mentioned elsewhere.

What you might get with your machine ranges from a demonstration program via a few games to complete business packages. Many cheap business systems are real bargains because they come with top quality programs such as Wordstar and Supercalc. So you save money and get a system you can start using the moment you get it out of the box. And they tend to be good packages so that you don't have to worry about making costly mistakes.

Some companies sell their computers only as part of a complete package, with software, to do accounting or word pro-

cessing and so on. For anyone wanting to be computerised with the minimum of fuss, this can be a very good idea.

Software availability: This assesses how much software is available for a particular machine. Go for a popular machine because it gives you more to choose from, the competitive market makes the programs better and you'll be able to get software and support months later.

Only break this rule if you need to buy a particular machine because you can't get a package anywhere else or you are certain that the software available is right for your job, both now and in the future.

Special features: This section lists any major special features of the system. All micros have their insignificant little features and quirks . . . you'll get a list of them if you talk to a salesman.

Guide Price: This really is a starting price. Don't compare on this alone . . . think about printers, screens, disk drives and above all software. Even cheap games machines can conceal expensive cartridges whereas a more expensive system might be surrounded by £5 cassettes.

Where possible, cost exactly what you are going to get, not just a basic system.

Suggestions: Throughout the catalogue, you'll find a few hints such as Best Buy, Recommended or simply Value for Money. As far as computers are concerned, these can only be taken as guidelines. Which computer is best depends on who you are and what you want to do with it.

By all means consider the systems suggested. But don't take it as gospel. Follow the other advice in the catalogue . . . look for software and support. Lastly, don't feel that you can't let your own preferences creep into it. It's your micro and you're going to use it. So buy one you're happy with.

BEST BUY = **Best Buy**

R = **Recommended**
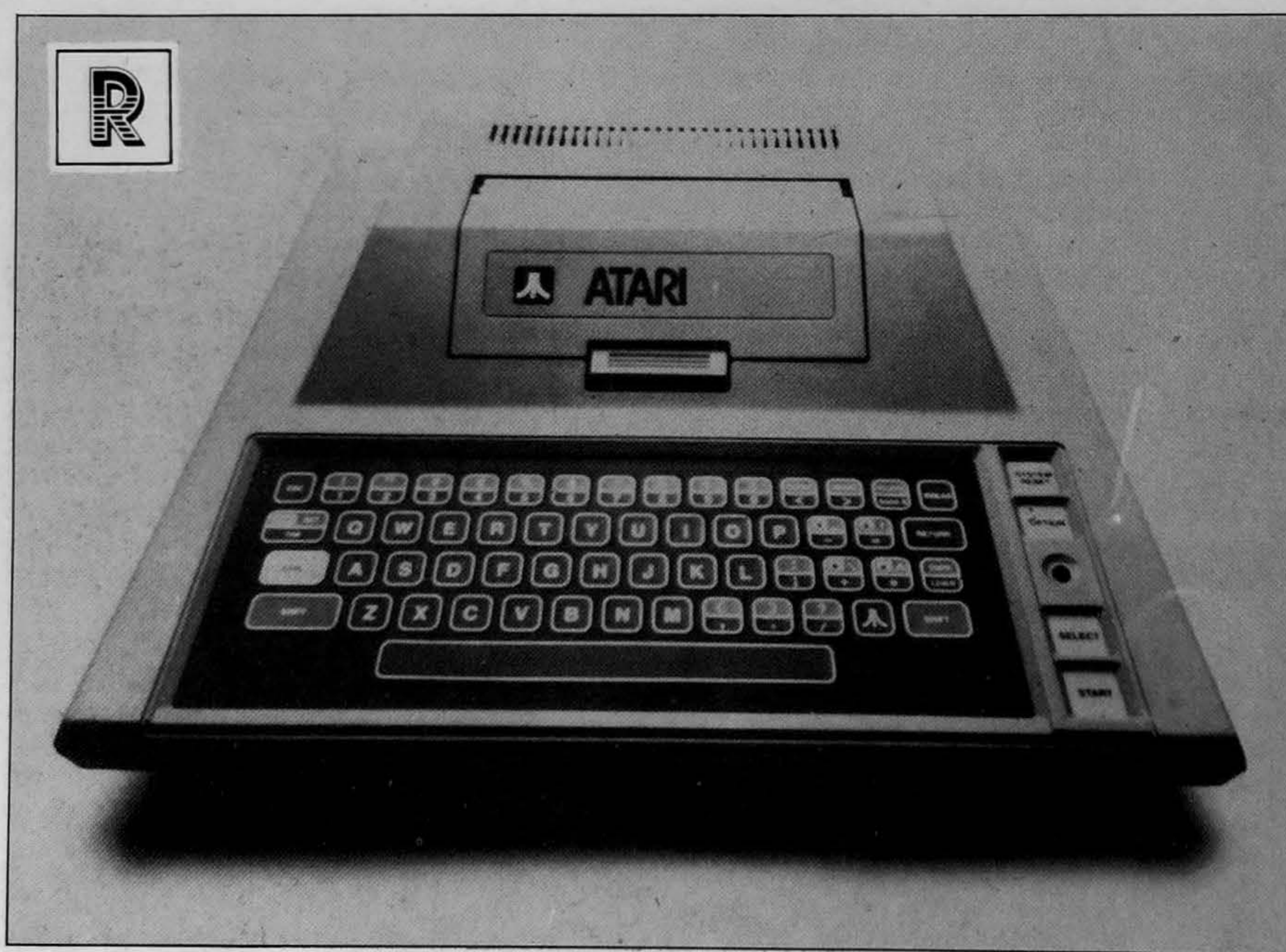
£ = **Value for money**

ACORN ATOM

Acorn's first big seller, the Atom is nearing the end of its days. Its design has made it very much a machine for hobbyists and electronics engineers. It's an ideal system to use as a controller for other equipment. Acornsoft has produced an impressive range of programs to support the machine.

CPU: 6502, 1MHz
Ram: 2K-40K
Rom: 8-16K
Keyboard: Full, 62 keys
Display type: TV or monitor, colour optional
Display ability: 32x16 text, up to 256x192 graphics
Sound: notes, internal speaker
Storage: cassette tape, optional 2x100K floppy
Interfaces: Expansion port
Languages: Basic, Assembler, optional Pascal, Lisp
Software included: None
Software availability: Good
Guide price: £170

The new **ACORN ELECTRON** features on **STOP PRESS** page 18.

COMMODORE VIC 20

The best selling Vic 20 is something of a bargain now that it's selling for around £140. It's basically a games computer, relying on fairly expensive cartridges, reasonable graphics and excellent sound for its popularity.

It comes with a miserly 5K Ram and Commodore's elderly and crude Microsoft Basic. This doesn't support the Vic's graphics or sound, so you have to resort to a mass of fiddly POKE instructions to do any impressive programs of your own. Even so, a proper keyboard and a vast range of utilities and add ons do help the programming enthusiast.

CPU: 6502, 1MHz
Ram: 5-29K
Rom: 20K
Keyboard: Full, 66 keys
Display type: TV or Monitor, colour
Display ability: 22x23 text, up to 176x158 graphics, 8 colours
Sound: 3 voices, external
Storage: Cartridge socket, Own cassette recorder, optional 1x170K floppy
Interfaces: Joystick, Serial port for printer, disk or modem, expansion port
Languages: Basic, Forth, assembler
Software included: None
Software availability: Good
Guide price: £140

ATARI 400

The 400 is a top games computer. Its superb sound and graphics are designed to imitate real arcade action. Its made easy to use by a system of plug in cartridges, one of which gives you access to the Basic language.

It's also an impressive serious computer (though Atari itself tends to view it as just a games machine). You can get unofficial upgrades to give it 48K of memory. The high price of cartridges and the lack of a proper keyboard are disadvantages.

CPU: 6502, 1.8MHz
Ram: 16K
Rom: 10K
Keyboard: Flat, 61 keys
Display type: TV, colour
Display ability: up to 40x24 text, up to 320x192 graphics, choice from 256 shades and intensities
Sound: 4 voices with special effects
Storage: Cartridge socket, own cassette recorder £50, optional 4x88K floppy
Interfaces: 4x joystick, disk drive, printer, cassette, optional RS232 and Centronics
Languages: Basic, optional Assembler, Pilot, Forth, Pascal
Software included: None
Software availability: Good
Guide price: £150

DRAGON 32

The Dragon succeeded by being the right product at the right time. It was the first machine to offer that attractive £175 performance and to be easily available off the shelves. It's designed from standard components and is a close derivative of Tandy's somewhat overpriced Colour Computer.

The result is that a vast number of people own and use the Dragon. So there's plenty of software and add ons available. But the Dragon doesn't really have the performance of some of its rivals. Its graphics are weak and awkward to use. Sound is crude. Its big advantage, a genuine 32K Ram, has been superseded by machines such as the 48K Oric and Spectrum. There's nothing wrong with the Dragon but do make sure you try its rivals before buying.
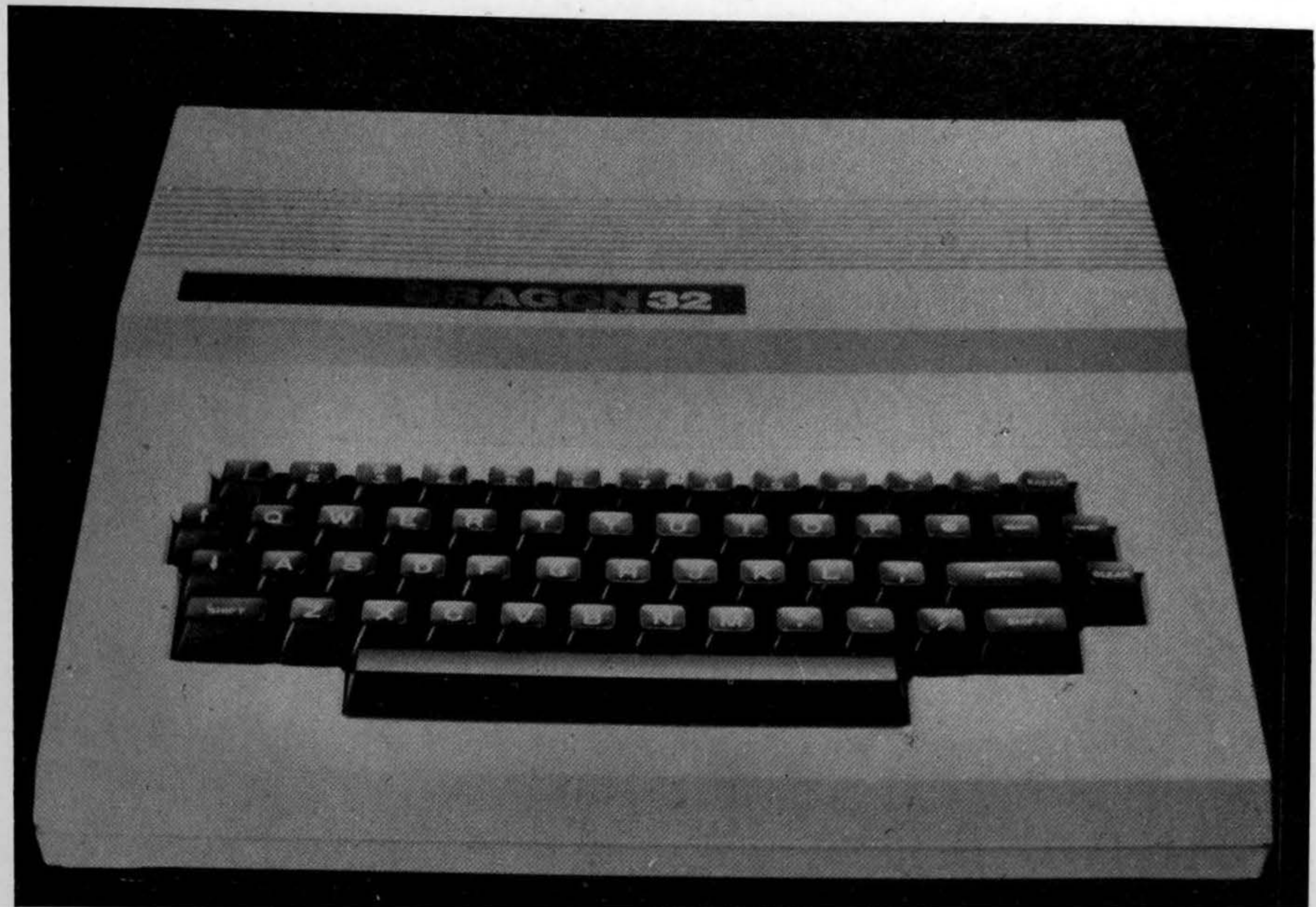
CPU: 6809, 1Mhz
Ram: 32-64K
Rom: 16K
Keyboard: Full, 53 keys
Display type: TV or Monitor, colour
Display ability: 32x16 text, upper case only, up to 256x192 graphics, choice from 8 colours
Sound: notes, external
Storage: Cartridge, cassette tape
Interfaces: 2xJoystick, Centronics, Expansion port
Languages: Basic, Forth, Assembler
Software included: None
Software availability: Good
Guide price: £175

JUPITER ACE

The Ace is one of the oddities of home computing. It's the first micro ever to be based on the Forth language rather than the Basic used on most other systems. Forth is a fast, compact language ideal for writing games programs. It's not that hard to learn either.

But the Ace, despite its superb implementation of Forth, is not a beginner's computer. It hasn't got a very modern specification ... black and white, low resolution graphics, crude engineering and a tiny standard memory make it a bad idea for newcomers. It has a hobbyist appeal in that it can be expanded to 51K Ram and can easily be used to control all sorts of equipment — the sort of work Forth was originally intended for. If you are interested in that side of computing then the Ace is certainly worth looking at.

CPU: Z80, 3.25MHz
Ram: 3-51K
Rom: 8K
Keyboard: Calculator, 40 keys
Display type: TV, monochrome
Display ability: 32x24 text, user definable characters, 64x48 graphics
Sound: Notes, internal speaker
Storage: Cassette tape
Interfaces: Expansion port
Languages: Forth
Software included: None
Software availability: Poor
Guide price: £90

ORIC 1

A superb home computer! The Oric is the result of careful design by the experienced Tangerine Computers and sound financial backing from Oric products. After a worryingly long period of teething troubles and faulty machines, the Oric has lived up to its promise.

It comes with 16K or 48K Ram and features high resolution graphics, excellent sound and an 8K Microsoft Basic interpreter. It doesn't have a proper keyboard but the slope of the case and the type of keys used make it possible to touch type.

CPU: 6502, 1MHz
Ram: 16-48K
Rom: 16K
Keyboard: Calculator, 57 keys
Display type: TV or Monitor, colour
Display ability: 40x28 text, up to 240x200 graphics, 8 colours
Sound: 3 voices and special effects, internal speaker
Storage: Cassette tape, 1x150K floppy
Interfaces: Centronics, Expansion port
Languages: Basic, Forth
Software included: None
Software availability: Fair
Special features: optional Prestel adaptor
Guide price: 16K £100, 48K £140.

SINCLAIR ZX81

The mass market computer that really started the micro boom! For only £40, a crude plastic case holds a working computer made out of just four chips. Nearly 750,000 people have bought ZX81s.

It's not a wonderful machine. It's only black and white, low resolution graphics, a flat tiny keyboard, no sound, a slow Basic, it often overheats and so on. It comes with a useless 1K Ram . . . if you buy one, buy a 16K Ram pack as well.

But the ZX81 is cheap and has piles of low cost software and add ons. If you really can't afford anything else, then the ZX81 is still an ideal beginner's machine.

CPU: Z80, 3.25MHz
Ram: 1-16K
Rom: 8K

Keyboard: Flat, 40 keys
Display type: TV, monochrome
Display ability: 32x24 text, upper case only, 64x48 pixel graphics
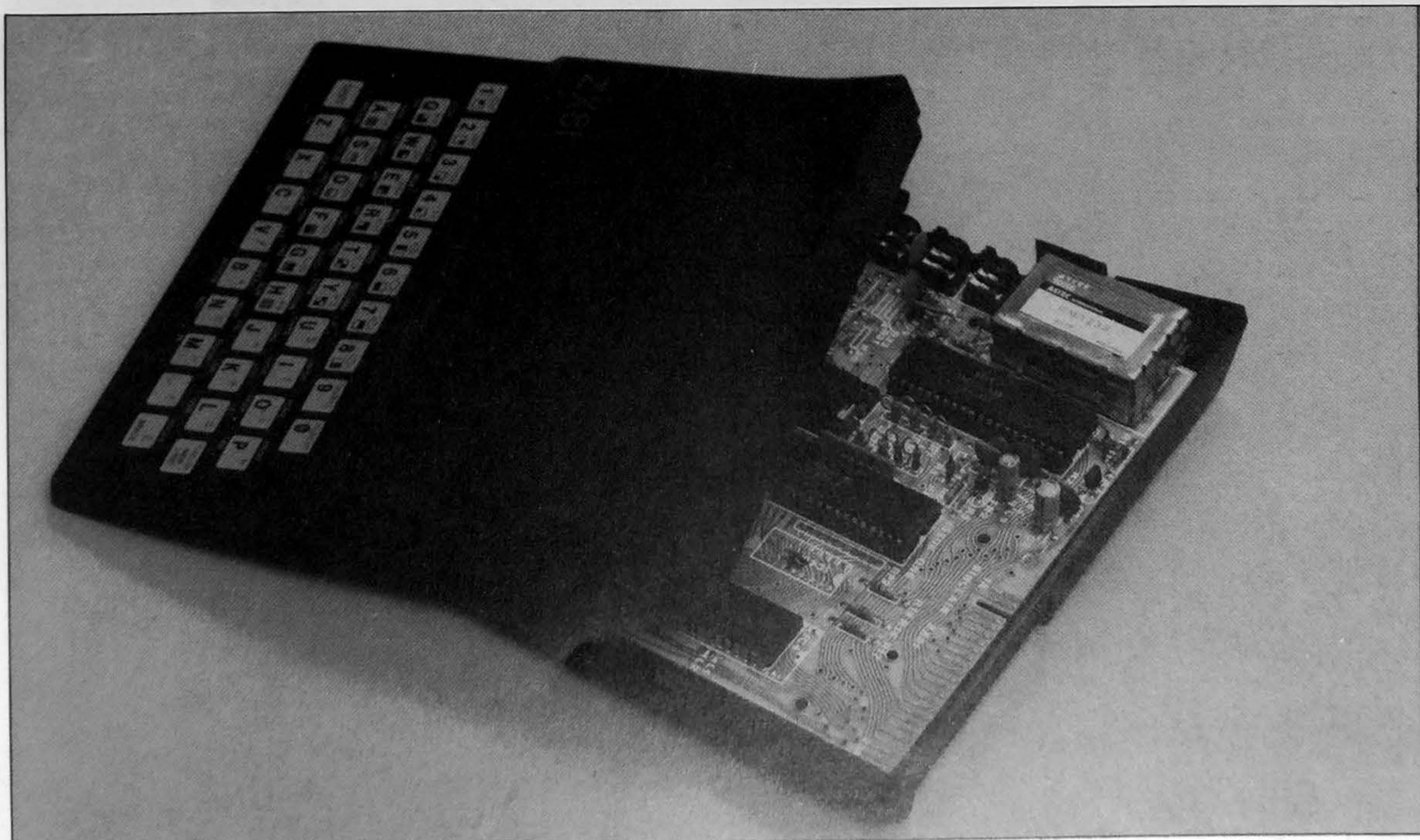
Sound: None
Storage: Cassette tape
Interfaces: Expansion connector
Languages: Basic, optional Forth, Assembler
Software included: None
Software availability: Excellent
Guide price: £40

ZX Spectrum

BEST BUY

SINCLAIR SPECTRUM

An ideal machine for the first time buyer. The Spectrum was the first to offer lots of memory and high resolution colour graphics for under £125.

Despite its crude engineering and soggy rubber keyboard, the Spectrum is still a major rival to the more recent designs such as the Oric 1. Price cuts have made it into even more of a bargain.

Because it's a Sinclair, the Spectrum is surrounded by a vast market of software and add ons making it a worthwhile choice. Sinclair Basic is better than some but still fairly limiting. But it is possible to write in Assembly language, Lisp, Forth and even Pascal!

The Spectrum comes in either a 16K or a 48K version. On both, around 7K is used up for the screen display. So you get around 9K and 41K free for your own use. So it really is a sensible move to go for the 48K version.

CPU: Z80, 3.5MHz
Ram: 16-48K
Rom: 16K
Keyboard: Calculator, 40 keys
Display type: TV, colour
Display ability: 32x16 text, user definable characters, up to 256x192 graphics, 8 colours
Sound: Notes, internal speaker
Storage: Cassette tape, Sinclair Microdrive
Interfaces: Expansion connector
Languages: Basic, optional Forth, Assembler, Lisp, Pascal
Software included: Demonstration
Software availability: Excellent
Guide price: 16K £99, 48K £130

SORD M5

A nice but rather expensive personal computer. The M5 has only 4K Ram and a rubber keyboard for the same sort of price as 48K and 32K machines.

Even so, the Sord has everything you need, options for some very special graphics and a range of very enjoyable and professional programs.

CPU: Z80, 4MHz
Ram: 4-16K
Rom: 8K
Keyboard: Calculator, 55 keys
Display type: TV or Monitor, colour
Display ability: 40x24 text, up to 256x192 graphics, choice from 32 colours/intensities
Sound: 3 voices with special effects, external
Storage: Cartridge socket, cassette tape
Interfaces: 2xJoysticks, Centronics
Languages: Basic
Software included: None
Software availability: Poor
Guide price: £196

TANDY TRS80 MODEL 1

One of the old warhorses of micro-computing. The Model 1 is antique by today's standards — it only came out in 1978! There's no sound or high resolution graphics, a simple Basic and a conservative 4K or 16K memory.

But it does have a proper key-board, a genuine expansion ability as far as a CP/M business system and masses and masses of pro-grams to choose from. The number of Model 1 owners, particularly in America, is enough to ensure that this continues and that there will always be clubs and user groups to visit.

CPU: Z80, 1.7MHz
Ram: 4-32K
Rom: 4K
Keyboard: Full, 65 keys
Display type: TV, Monitor, monochrome
Display ability: 64x16 text, 64x32 graphics
Sound: Notes, external
Storage: Cassette tape, optional 4x87K or 175K floppy
Interfaces: Expansion port, optional Parallel or RS232
Languages: Basic, most optional with disks
Operating system: Optional TRSDOS, LDOS, NewDOS, CP/M
Software included: 2 games
Software availability: Excellent
Guide price: £200

TANDY TRS-80 MC-10

Tandy's new 'Micro Colour Com-puter' plugs a gap in their range and aims directly at the first-time buyer. The £100-or-thereabouts price-tag puts it alongside the Sinclair Spectrum and Oric I, but its performance may lag somewhat behind these better established models.

CPU: 6803
Ram: 4K
Rom: 16K
Keyboard: Calculator, 44 keys
Display type: TV, colour
Display ability: 32x16 text, 64x32 graphics, 9 colours
Sound: 1 voice, external
Storage: Cassette tape
Interfaces: RS232, expansion bus
Languages: Basic included
Software included: Manual
Software availability: Poor
Guide price: £100

TI CC40

One of the most lightweight and portable machines on the market. The CC40 offers 4K Ram, a full size keyboard a 4 line LCD display in a booksize package weighing under 2lbs. The CC40 is really intended as a data recording device for en-gineers and salesmen as it hasn't got the computing power needed for business applications.

CPU: TMS 9900
Ram: 4-16K
Rom: 8-128K
Keyboard: Calculator, 48 keys
Display type: Built in LCD
Display ability: 20x4 text
Sound: None
Storage: Special tape cartridge
Interfaces: Expansion connector
Languages: Basic
Software included: None
Software availability: Poor
Special features: Portable, battery powered unit
Guide price: £150

STOP PRESS

TI 99/4

An elderly micro that hasn't had the same success here that it has in the States. When it first appeared, the 99/4 was way ahead of its time with a 16 bit processor, special hardware graphics ability, speech synthesis and so on.

The machine received a considerable boost when it was updated to the 99/4A and was later provided with an expansion box allowing it to be used with disks and languages such as Pascal. Even so, its marketing has never given it the support it needed.

So the 99/4A has become something of a hobbyist machine. It's been selling with large discounts recently so it does offer good value for money.

CPU: TMS 9900
Ram: 16-48K
Rom: 26K
Keyboard: Full, 48 keys
Display type: TV or Monitor, colour
Display ability: 32x24 text, upper case only, up to 256x192 graphics, 16 colours
Sound: 3 voices, notes, external
Storage: Cartridges, Cassette tape, optional 3x90K floppy
Interfaces: Joystick port, optional expansion box for RS232, disks etc.
Languages: Basic, optional Pascal, Logo, Assembler
Software included: Games
Software availability: Fair
Special features: Optional plug-in speech synthesiser
Guide price: £150

ACORN ELECTRON

The latest Acorn launch, the Electron is an important contender in this lowest price band (scraping in at £199!). It is basically a less sophisticated version of the Acorn-designed BBC Micro but is also about half the price. Whereas the BBC Micro has a strong school-user bias, the Electron is designed specifically as a home computer. Comes with versatile BBC Basic language.

CPU: 6502, 2MHz
Ram: 32K
Rom: 32K
Keyboard: Full, 52 keys
Display type: TV, or monitor colour
Display ability: 40x24 up to 80x32 text, up to 640x256 graphics. Choice from 8 colours.
Sound: Notes internal loudspeaker
Storage: Rom chip, cassette tape
Interfaces: Multi-way/expansion connector
Languages: Basic
Software included: 2 manuals, introductory cassette
Software availability: 12 Acornsoft tapes at launch date. Potential upwards compatibility to BBC Micro
Guide price: £199

STOP PRESS

ADVANCE 86a

An amazing package for the price. The arrival of the Advance surprised even those who predicted the day when this sort of computing power would be so cheap.

The Advance is, more or less, an IBM Personal Computer, the major force in the £3000 business computer market. It's got a 16 bit 8086 processor, 128K Ram, the IBM's superb GWBasic, an IBM keyboard and IBM graphics. All for the giveaway price of £400!

It isn't a games computer even though the IBM itself runs some of the best games on the market. The Advance is intended for the serious user, either for business or programming. Its expanded version, the 86b, is perhaps even more of bargain.

CPU: 8086, 4.7MHz
Ram: 128K
Rom: 40K

Keyboard: Full, 83 keys
Display type: TV or monitor, monochrome
Display ability: Up to 80x25 text, up to 640x200 graphics
Sound: Notes, internal
Storage: Cassette tape
Interfaces: Expansion port
Languages: Basic
Software included: None
Software availability: Fair
Special features: IBM compatible system
Guide price: £400

ATARI 800

The big brother of the 400 model, the 800 is simply a more serious version of the same computer. Its got a proper keyboard, a monitor socket and a full 48K Ram. It's likely to be discounted when Atari launches its new 1200 model in this country.

So if you want the amazing games that you see on Atari computers and also want to get involved in programming or word processing applications, then the 800 is the obvious choice.

CPU: 6502, 1.8MHz
Ram: 48K
Rom: 10K
Keyboard: Full, 61 keys
Display type: TV or Monitor, colour
Display ability: Up to 40x24 text, up to 320x192 graphics, choice from 256 shades/intensities
Sound: 4 voices with special effects, external
Storage: Cartridges, own cassette recorder £50, up to 4x88K floppy
Interfaces: 4x joystick, interface for disks, printer and cassette recorder, optional RS232 and Centronics
Languages: Basic, optional Assembler, Forth, Pilot, Pascal
Software included: None
Software availability: Good
Guide price: £300

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BBC MICRO

One of the legends of microcomputing. The BBC micro owes some of its success to its support from both the government and the BBC. But a large part is due to Acorn Computer's amazing design.

The BBC was for a long time the top home computer. Its graphics and sound ability were unrivalled and Acorn had the foresight to include a proper keyboard and an 80 column option for business use. Acorn wrote its own BBC Basic specially for the machine and it is a remarkably fast and versatile version of the language.

It's also designed for expansion... disks, printers, joysticks, networks, second processors and so on. You name it and it can probably be added to the BBC system.

There are two versions. The model A lacks many of the interfaces of the B and has only 16K of memory, so it can't utilise all of the BBC's graphics. The model B is a much better bet. Even so, when you are using the graphics, as much as 20K of its 32K is used up.

Besides being a beautiful piece of hardware design, the BBC has attracted some excellent programs. You can buy everything from cheap and cheerful programs, word processors and data base systems to arcade games that rival the Atari machines.

There has been an unpleasant side to the BBC machine, resulting from the failure of Acorn to deliver machines, software and add ons with any speed. In particular, long arguments have been caused because Acorn has continually upgraded the BBC's ROMs and expected users to pay for the privilege.

Apart from this, the BBC micro has received the success it deserves. It's a great computer to own.

CPU: 6502, 2MHz
Ram: 16K-32K
Rom: 32K
Keyboard: Full, 72 keys
Display type: TV or Monitor, colour
Display ability: Up to 80x24 text, up to 640x256 graphics, choice from 8 colours
Sound: 4 voices with special effects, internal speaker
Storage: Rom chips, Cassette tape, up to 2x400K floppy
Interfaces: RS423, Centronics, 4 A/D ports, Expansion bus, Tube interface for second processor, optional network interface
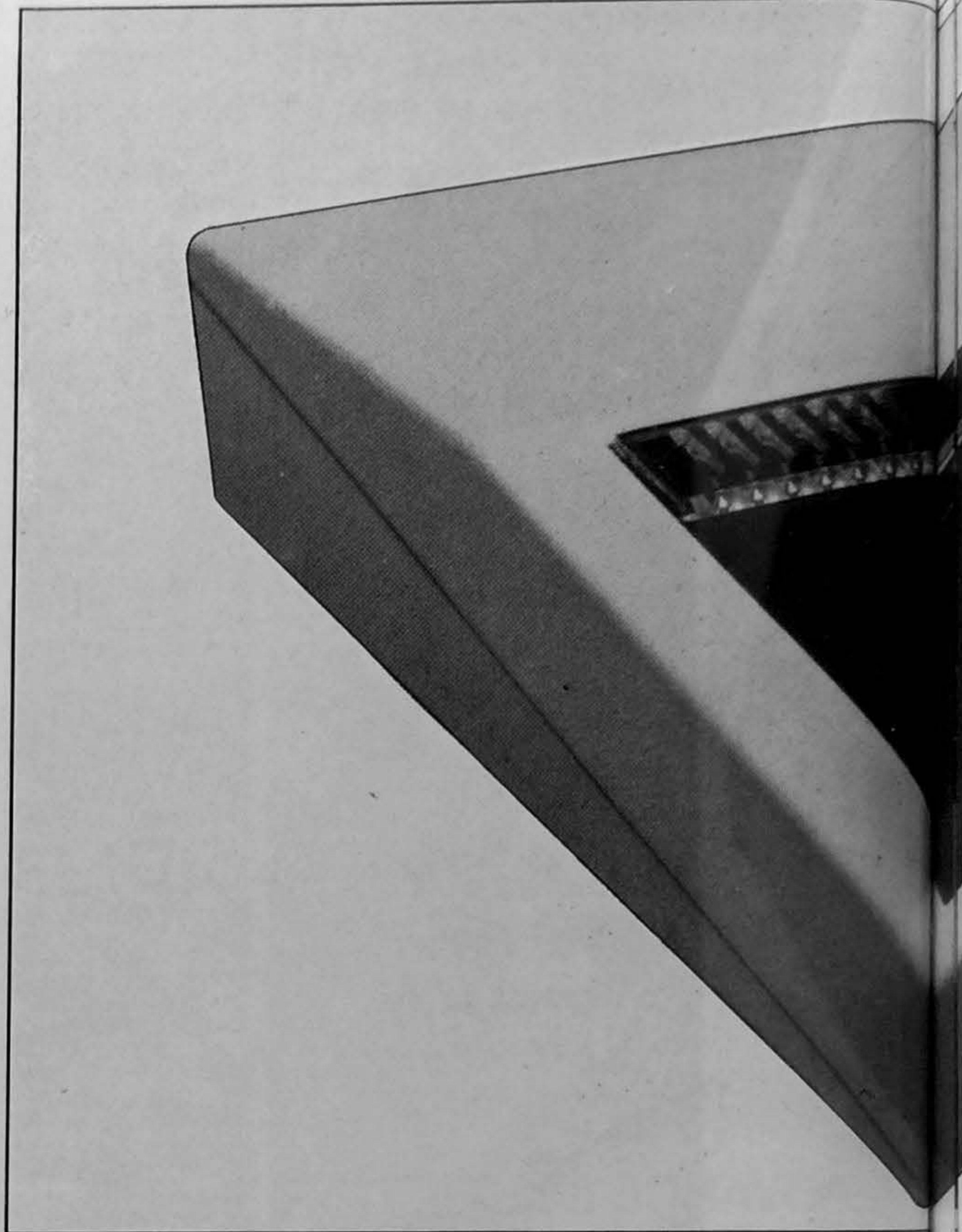**Languages:** Basic, Assembler, optional Forth
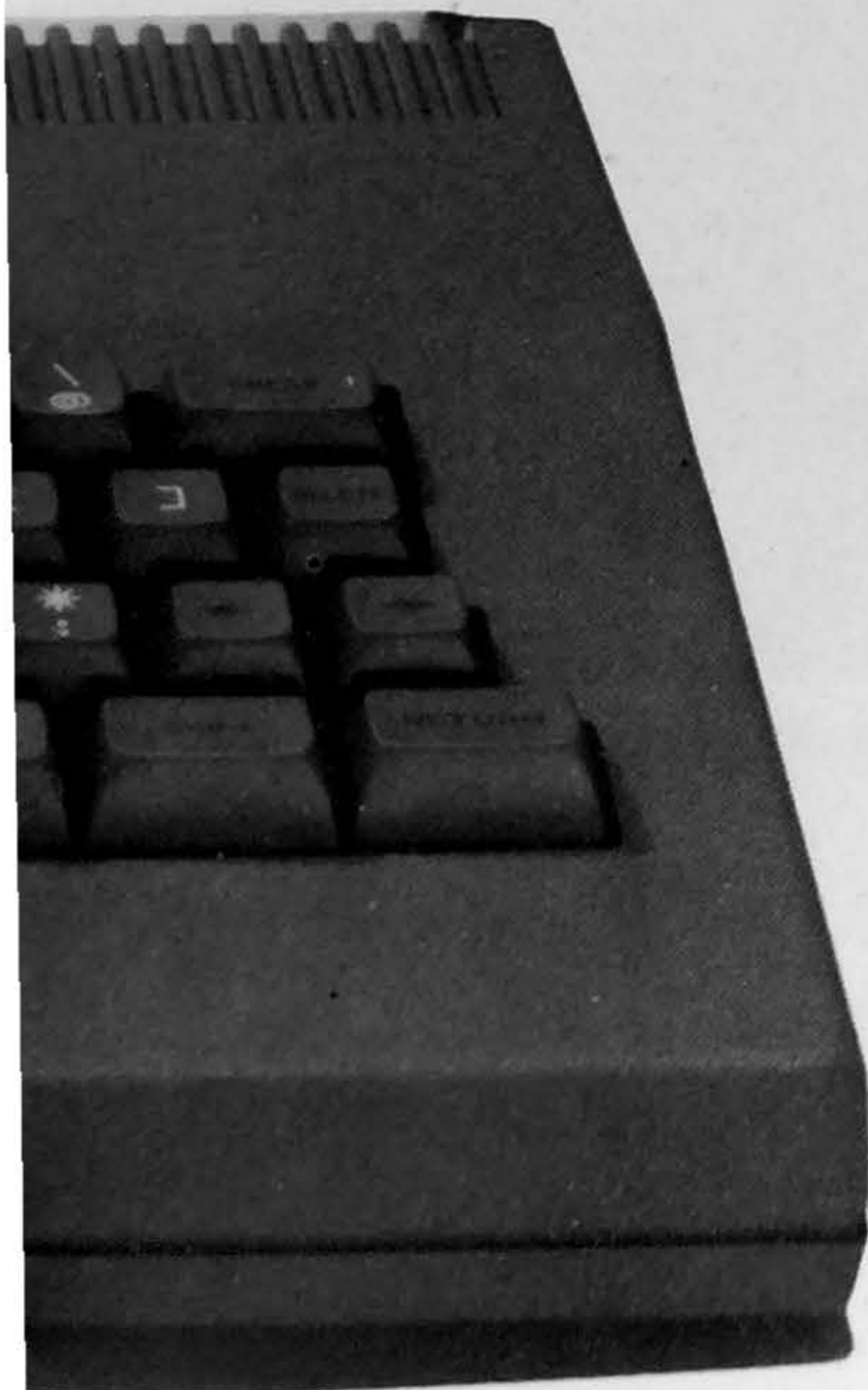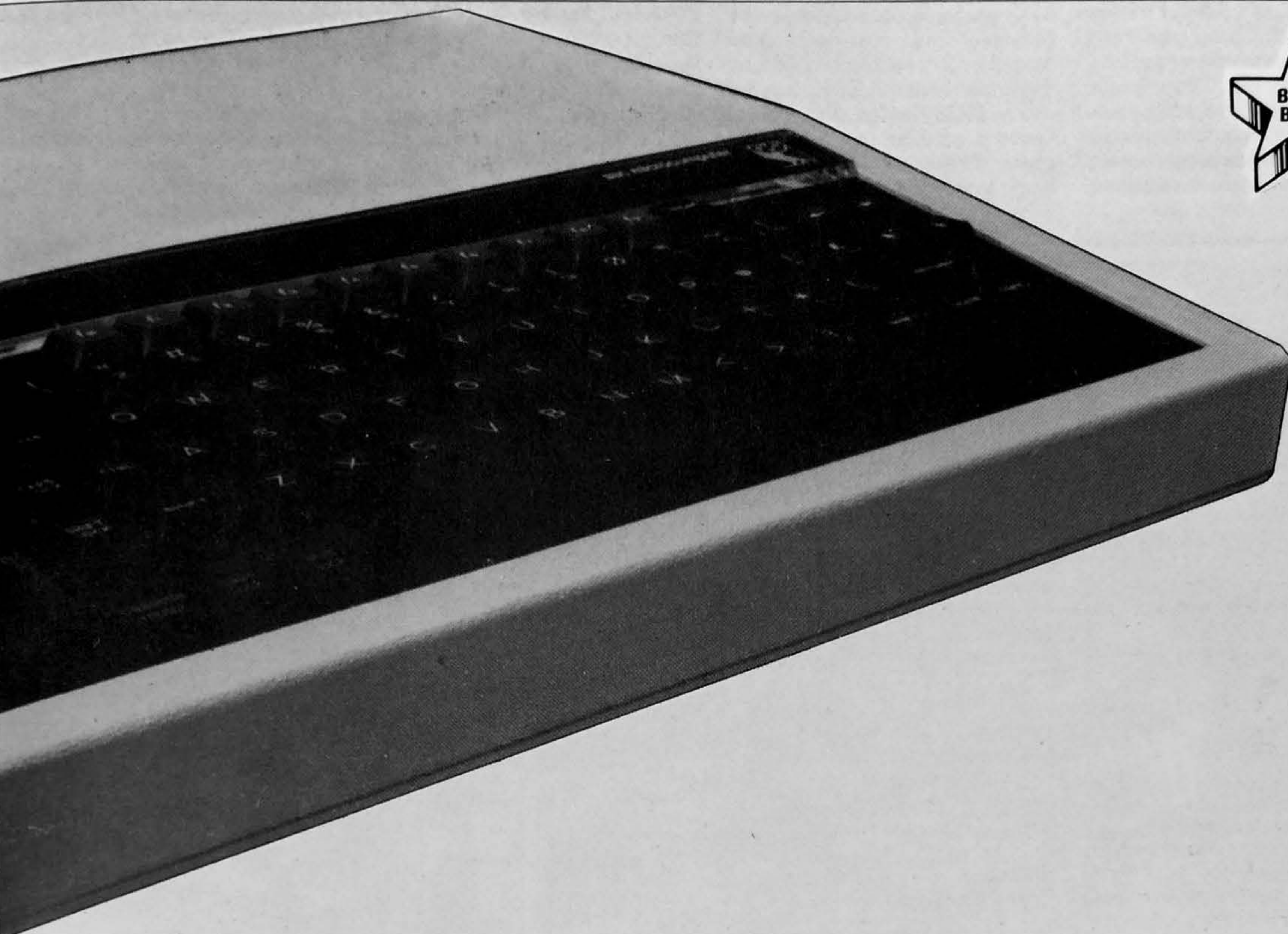**Operating system:** Acorn DOS
Software included: Demonstration
Software availability: Excellent
Special features: Teletext adapter for Prestel
Guide price: Model A (16K) £300, Model B (32K) £400

CAMPUTERS LYNX

A serious little computer system aimed at the enthusiast rather than the games player. The Lynx sports exceptional high resolution colour graphics and a memory expansion ability way beyond the normal 64K limit for Z80 machines.

The basic model has 48K Ram, of which less than 16K is directly available to programmers. A fully expanded system offers an 80 column display, 64K of user Ram and the CP/M operating system.

The Lynx is dogged by a fast but primitive Basic but it is a great machine for the assembly language programmer. Software is noticeably very good and there is an important range of high quality learning programs.

It's more of a challenge than a machine such as the BBC. But, if you accept that, there is little the Lynx cannot do.

CPU: Z80, 4MHz
Ram: 48K-192K
Rom: 16K
Keyboard: Full, 57 keys
Display type: TV or Monitor, colour
Display ability: 40x24 text, 256x248 graphics, 8 colours, expanded memory allows 80 column text and 512x248 graphics
Sound: Notes, internal
Storage: Cassette tape, optional floppy disks
Interfaces: Light pen, RS232, Expansion connector
Languages: Basic, Assembler
Operating system: Camputers DOS or optional CP/M
Software included: Demonstration
Software availability: Poor
Guide price: £224

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COLOUR GENIE

A recent contender in the £200 computer market. The Colour Genie combines everything you would expect . . . colour, hi res graphics, sound, joysticks along with a sensible home computer. It has a proper keyboard, a standard Microsoft Basic and up to 32K memory. All of the Genie machines are similar in that they relate to the Tandy TRS80 range. The Colour Genie is a modern version of the classic TRS80 model 1. Certainly worth looking at.

CPU: Z80, 2MHz
Ram: 16-32K
Rom: 6K
Keyboard: Full, 58 keys
Display type: TV or Monitor, colour
Display ability: 40x24 text, up to 320x192 graphics, 8 colours
Sound: 3 voices with special effects, external
Storage: Cassette recorder
Interfaces: RS232, Centronics, Light pen, joysticks
Languages: Basic
Software included: Demonstration
Software availability: Fair
Guide price: £200

COMMODORE 64

The major alternative to a BBC micro. The 64 boasts a full 64K Ram, some impressive hardware graphics ability and a superb software choice. There's arcade games and business programs including word processors, spreadsheets, business graphics and data base systems.

Like the BBC, the 64 promises some attractive add ons. It comes with that same old Pet Basic as the Vic 20. But programming can be made easy by buying the BBC-like Simons Basic.

The 64 is an impressive home computer. Its value as an office tool is a bit limited by its 40 column screen. The choice between it and a BBC is very much a personal one. Try both systems before you buy.

CPU: 6510, 1MHz
Ram: 64K
Rom: 20K
Keyboard: Full, 66 keys
Display type: TV or Monitor, colour
Display ability: 40x25 text, 320x200 graphics, 16 colours, hardware 'sprite' graphics
Sound: 3 voices with special effects, external
Storage: Cartridge, Own cassette £45, optional 2x170K floppy
Interfaces: Serial, IEEE, user port, joystick ports and expansion connector
Languages: Basic
Software included: None
Software availability: Good
Special features: Connection to Z80 processor for CP/M
Guide price: £300

GENIE I

An elderly micro that has none of the colourful and noisy joys that come as standard on newer machines. It does have the advantages of being well built with a proper keyboard. It can be expanded into a reasonable disk system and it offers access to the vast range of Tandy TRS80 software.

CPU: Z80, 1.7MHz
Ram: 16-48K
Rom: 13K
Keyboard: Full, 54 keys
Display type: TV or Monitor, monochrome
Display ability: Up to 64x16 text, 128x48 graphics
Sound: Optional 6 voice synthesiser
Storage: Built in Cassette recorder, optional 4x102K floppy
Interfaces: Expansion port, optional RS232, Centronics etc.
Languages: Basic, most with disk drives
Operating system: Optional TRSDOS, NEWDOS, LDOS or CP/M
Software included: Demonstration
Software availability: Very good
Guide price: £330

GENIE II

A restyled Genie, with the built in cassette player missing in favour of a numeric pad. Beyond that, there are few differences between the two machines. For most people, the cassette recorder version is probably more preferable.

CPU: Z80, 1.7MHz
Ram: 16-48K
Rom: 13K
Keyboard: Full, 72 keys
Display type: TV or Monitor, monochrome
Display ability: Up to 64x16 text, 128x48 graphics
Sound: Optional 6 voice synthesiser
Storage: Cassette tape, optional 4x102K floppy
Interfaces: Expansion port, optional RS232, Joystick port
Languages: Basic, most with disk drives
Operating system: Optional TRSDOS, NEWDOS, LDOS or CP/M
Software included: Demonstration
Software availability: Very good
Guide price: £300

MULTITECH MICRO-PROCESSOR II

A miracle of small design and engineering. The Microprofessor is a tiny micro compatible with the all-conquering Apple system. It has a full 64K Ram and runs a Basic nearly identical to the famous Applesoft.

It comes with a ridiculous built in keyboard and the 'full scale keyboard' option is a rubber keyboard not much better than those on the Oric 1 and Sord M5. The official arrival of the machine in the UK should do wonders for this previously ignored and underated system.

CPU: 6502, 1MHz
Ram: 64K
Rom: 16K
Keyboard: Calculator, 49 keys

Display type: TV or Monitor, colour
Display ability: 40x24 text, up to 256x192 graphics, 6 colours
Sound: Notes, internal
Storage: Cassette tape, optional 1x140K floppy
Interfaces: Centronics, Joystick, Expansion connector
Languages: Basic, Assembler
Software included: None
Software availability: Fair
Special features: Compatible with Applesoft Basic
Guide price: £269

NEWBRAIN

Another machine that has suffered from poor marketing rather than a poor performance. The Newbrain is a superbly engineered micro that tends to be aimed at more serious applications. It lacks all those things you would need to produce games programs easily.

It offers a fabulous expandability including Ram up to 1Mb and CP/M based disk drives. But has been dogged by the non-delivery of such add ons and a marked lack of quality software.

The machine has found favour with a number of companies who resell it dedicated to particular applications such as stock control and invoicing. If you're looking for a small computer that can grow into a business system, then the Newbrain is worth comparing with machines like the BBC and Commodore 64.

CPU: Z80, 4MHz
Ram: 32K
Rom: 29K
Keyboard: Calculator, 62 keys
Display type: TV or Monitor, optional built in LED line display, monochrome
Display ability: Up to 80x24 text, up to 640x220 graphics
Sound: None
Storage: Cassette tape, optional floppy disk
Interfaces: 2xRS232, Expansion port
Languages: Basic, most with disk system
Operating system: Optional CP/M
Software included: None
Software availability: Poor
Special features: 1 hour battery pack available, twin cassette ports
Guide price: £220

NASCOM 2

The elderly British micro that was once a market leader in home computers. The Nascom still offers the hobbyist an exciting and expandable design. A fully expanded system is sold as the Nascom 3, including disks and improved graphics. The disk systems will run either Nascom's own Nasdos or the CP/M operating system.

CPU: Z80, 4MHz
Ram: 2-48K
Rom: 16K
Keyboard: Full, 57 keys
Display type: TV or Monitor, optional colour
Display ability: 48x16 text, 96x48 graphics, optional 80x24 text, 320x192 graphics
Sound: Optional
Storage: Cassette tape, optional 320K disk drives
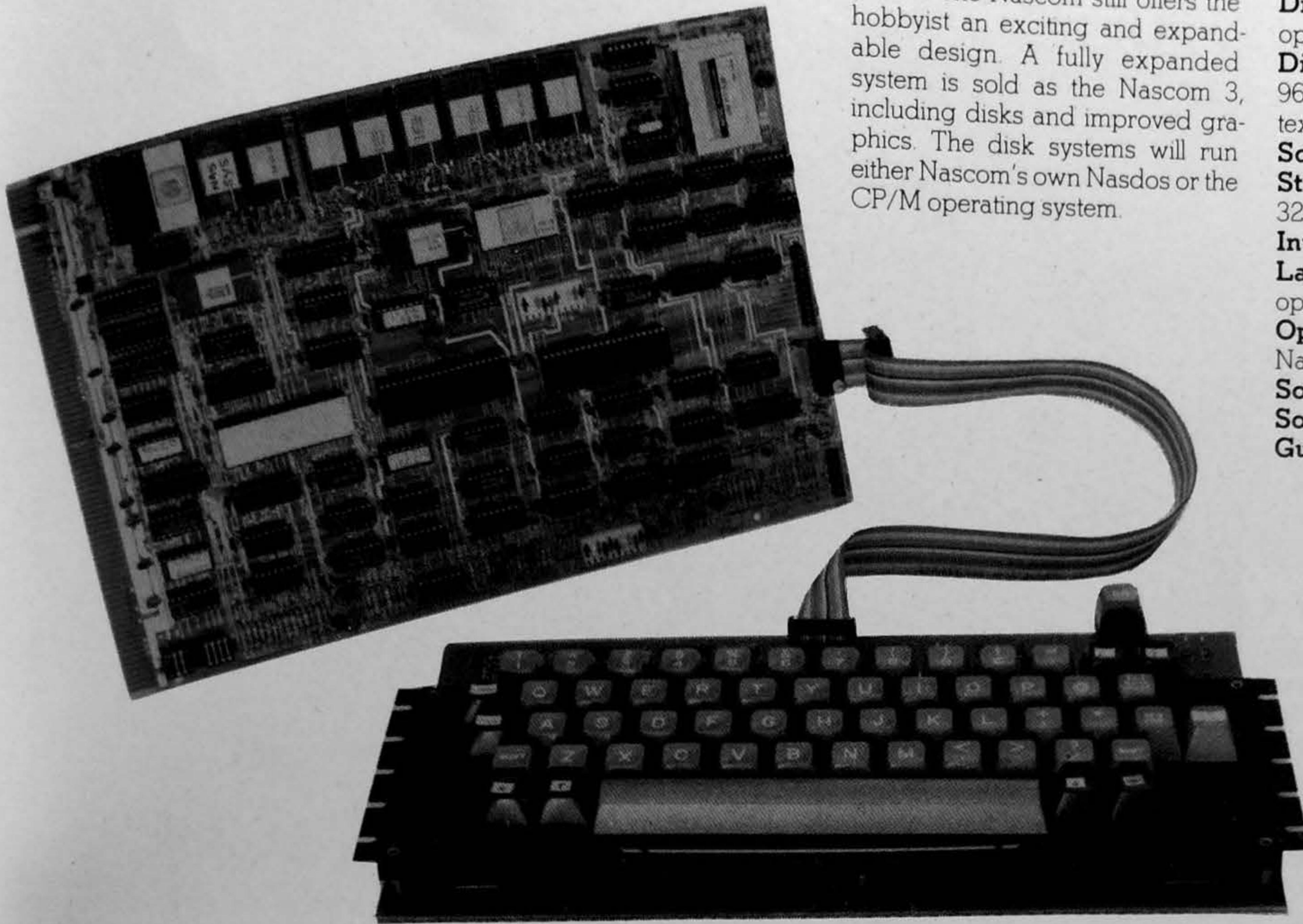**Interfaces:** Expansion port
Languages: Basic, Assembler, optional most with disk drives
Operating system: Optional Nasdos or CP/M
Software included: None
Software availability: Good
Guide price: £330

POWERTRAN CORTEX

A real hobbyist machine. The Cortex is intended as a kit for the hobbyist interested in electronics who wants to build a powerful home computer. The kit builds into a 16 bit machine, with 64K Ram, a 24K Basic and high resolution colour graphics. If you have the tools, time and expertise then the Cortex is a very rewarding project.

CPU: TMS 9995
Ram: 64K-1Mb
Rom: 24K
Keyboard: Full, 66 keys
Display type: TV or Monitor, colour
Display ability: 40x24 text, 256x192 graphics, 16 colours
Sound: Notes, internal
Storage: Cassette tape, optional floppy disk
Interfaces: Expansion connector, optional RS232
Languages: Basic, optional Forth
Operating system: MDEX
Software included: None
Software availability: Poor
Special features: Available as a kit or ready built
Guide price: Kit £340, ready built £445

TANDY TRS80 COLOUR COMPUTER

A modern successor to the TRS80 model 1, it's been an incredible success in America and almost as big a failure here. Even its greatly reduced price puts it in a category where most machines outperform it. And its unpopularity has limited the number of quality programs on the market.

This is the machine that formed the basis for the Dragon 32, a system that has been a runaway success here. So although the expanded Colour Computer does have its advantages, the popularity of the Dragon makes that machine a better bet.

CPU: 6809, 1MHz
Ram: 4-32K
Rom: 16K
Keyboard: Calculator, 53 keys
Display type: TV, colour
Display ability: 32x16 text, up to 256x192 graphics, choice from 8 colours
Sound: Notes, external
Storage: Cartridges, cassette tape, optional 4x156K floppy
Interfaces: 2xJoystick ports, RS232
Languages: Basic, optional Forth, Logo, Assembler
Software included: None
Software availability: Fair
Guide price: £240

ADVANCE 86b

The disk based version of the amazing 86a. The 86b is a real business system capable of most jobs for only £1000. Already, its dramatic price lead is having a profound effect on the market.

If you need a low cost 16 bit business system then there are few alternatives to the Advance.

But remember that IBM compatible software tends to be the best there is. So it's not cheap. If you have a simple application, you may find that a complete system works out a little cheaper if you base it on systems such as the Commodore 64, BBC micro, Lynx or Newbrain. Be wary of this though, as those machines are at the limit of their potential and an Advance includes plenty of room for future expansion — an all-important consideration.

CPU: 8086, 4.7MHz
Ram: 128-256K
Rom: 40K
Keyboard: Full, 83 keys
Display type: TV or Monitor, monochrome
Display ability: Up to 80x25 text, 640x200 graphics
Sound: Notes, internal
Storage: Cassette, 2x320K floppy
Interfaces: Centronics, RS232, 5xIBM expansion slots
Languages: Basic, optional most
Operating system: MSDOS
Software included: None
Software availability: Excellent
Guide price: £1000

APPLE IIe

Widely regarded and used as the best personal computer on the market. The Apple II was one of the first usable systems and is still a market leader. Even its modernised version, the IIe, needs considerable expansion before it can be used as more than a home computer. But, the computer-buying public still put their money on the Apple.

The Apple has an unrivalled range of add ons and software — in games, education, scientific and business fields. The vast numbers sold ensure support from dealers and software houses for years to come.

It starts off as an expensive home computer. But people rarely buy it in less than an 80 column and one disk drive configuration. Even if it's got none of the wonders of the newer machines, it is a sensible decision. Have a good reason if you choose something else.

CPU: 6502, 1MHz
Ram: 64-128K
Rom: 12K
Keyboard: Full, 62 keys
Display type: TV or Monitor, colour
Display ability: 40x24 text, 256x192 graphics, optional 80x24 text, 512x192 graphics
Sound: Notes, internal speaker
Storage: Cassette tape, up to 6x140K floppy
Interfaces: 8xexpansion slots for most interfaces, games paddle socket
Languages: Basic, optional most
Operating system: Apple DOS, optional UCSD-p, CP/M
Software included: Demonstration
Software availability: Excellent
Guide price: £980

BEST BUY

BASIS 108

A restyled Apple, designed to give a business like-configuration in a business like casing. The Basis is built on the old Apple II and includes an 80 column display and Z80 processor as standard. This gives you a business Apple while avoiding all the bits, pieces and trailing cables.

To use the Basis, you need to buy one, or preferably two, Apple compatible floppy disk drives. So don't make the mistake of thinking the Basis is a bargain.

CPU: 6502, 1MHz
Ram: 64-128K
Rom: 2K
Keyboard: Full, 100 keys
Display type: TV or monitor, optional colour
Display ability: Up to 80x24 text, 256x192 graphics
Sound: Notes, internal speaker
Storage: Requires 2 Apple

compatible floppy
Interfaces: RS232, Parallel, Games paddle, 6 Apple compatible expansion slots
Languages: Optional most
Operating system: Apple DOS optional UCSD-p, CP/M
Software included: None
Software availability: Excellent
Guide price: £995

COMMODORE 500

The new scientific machine from Commodore. It's aimed at those who want more computing power than a home machine (such as 128K Ram, powerful graphics and so on) without needing to buy expensive scientific machines. The 500 is a halfway house between the 64 and the 700 series of business machines. If you're interested, do check that your application isn't beyond the ability of a 64.

CPU: 6509, 1MHz
Ram: 128-896K
Rom: 28K
Keyboard: Full, 94 keys
Display type: TV or Monitor, colour
Display ability: 40x25 text, 320x200 graphics
Sound: 3 voices with special effects, external
Storage: Own cassette recorder £45, optional disks up to 2x1Mb floppy plus 5Mb hard disk
Interfaces: RS232, IEEE, User port, Joystick, Expansion connector
Languages: Basic, optional most
Operating system: Commodore DOS, optional CP/M, MSDOS
Software included: None
Software availability: Fair
Special features: Optional Z80 and 8088 second processors for CP/M and MSDOS
Guide price: £800

COMMODORE 4000 SERIES

The machine that started the computer business for Commodore. The original Commodore Pet was the first generally available plug-in-and-go micro. The 4016 and 4032 are renamed Pets.

There's still some life left in the machine. It's solidly built, perhaps the reason for its popularity in schools. Its neat 'one box' design and IEEE interface have made it very popular for use in labs and workshops as a controller. There's a wide choice of programs and accessories for the system.

So, although its specification is a bit out of date, you can still consider a Pet. There are some real bargains to be picked up second hand.

CPU: 6502, 1MHz
Ram: 16-32K
Rom: 18K
Keyboard: Full, 72 keys
Display type: Built in 12 inch green monitor
Display ability: 40x25 text, special graphics characters
Sound: Beeper
Storage: Own cassette recorder £45, optional disks up to 2x1Mb floppy and 5-30Mb
Interfaces: Parallel, IEEE
Languages: Basic, optional Assembler, Pascal
Operating system: PetDOS
Software included: None
Software availability: Very good
Special features: Optional Z80 for CP/M
Guide price: £635

COMMODORE 8000 SERIES

The business versions of the Pet, featuring an 80 column display. For a while these were the mainstay of British business microcomputing and there are still a number of impressive packages and complete systems that rely on the 8000s. It is unlikely that the systems will remain competitive but there is the possibility of a good second hand market.

CPU: 6502, 1MHz
Ram: 32-96K
Rom: 20K
Keyboard: Full, 73 keys
Display type: Built in 12 inch green monitor
Display ability: 80x24 text, special graphics characters
Sound: Beeper
Storage: Own cassette recorder £45, optional disks up to 2x1Mb floppy and 5-30Mb hard
Interfaces: Parallel port, IEEE
Languages: Basic, optional Comal, Assembler, Pascal
Operating system: PetDOS
Software included: None
Software availability: Very good
Guide price: £995

DAI PC

A shy but capable personal computer. The Dai is an old system with a fast, accurate Basic and impressive colour graphics. It hasn't really been sold to the home computer market and tends to be sold as part of package dedicated to some particular application.

CPU: 8080, 2MHZ
Ram: 48K
Rom: 24K
Keyboard: Full, 56 keys
Display type: TV or Monitor, colour
Display ability: 60x24 text, 260x352 graphics, 16 colours
Sound: 4 voices with special effects, external
Storage: Cassette tape, optional 2x80K floppy
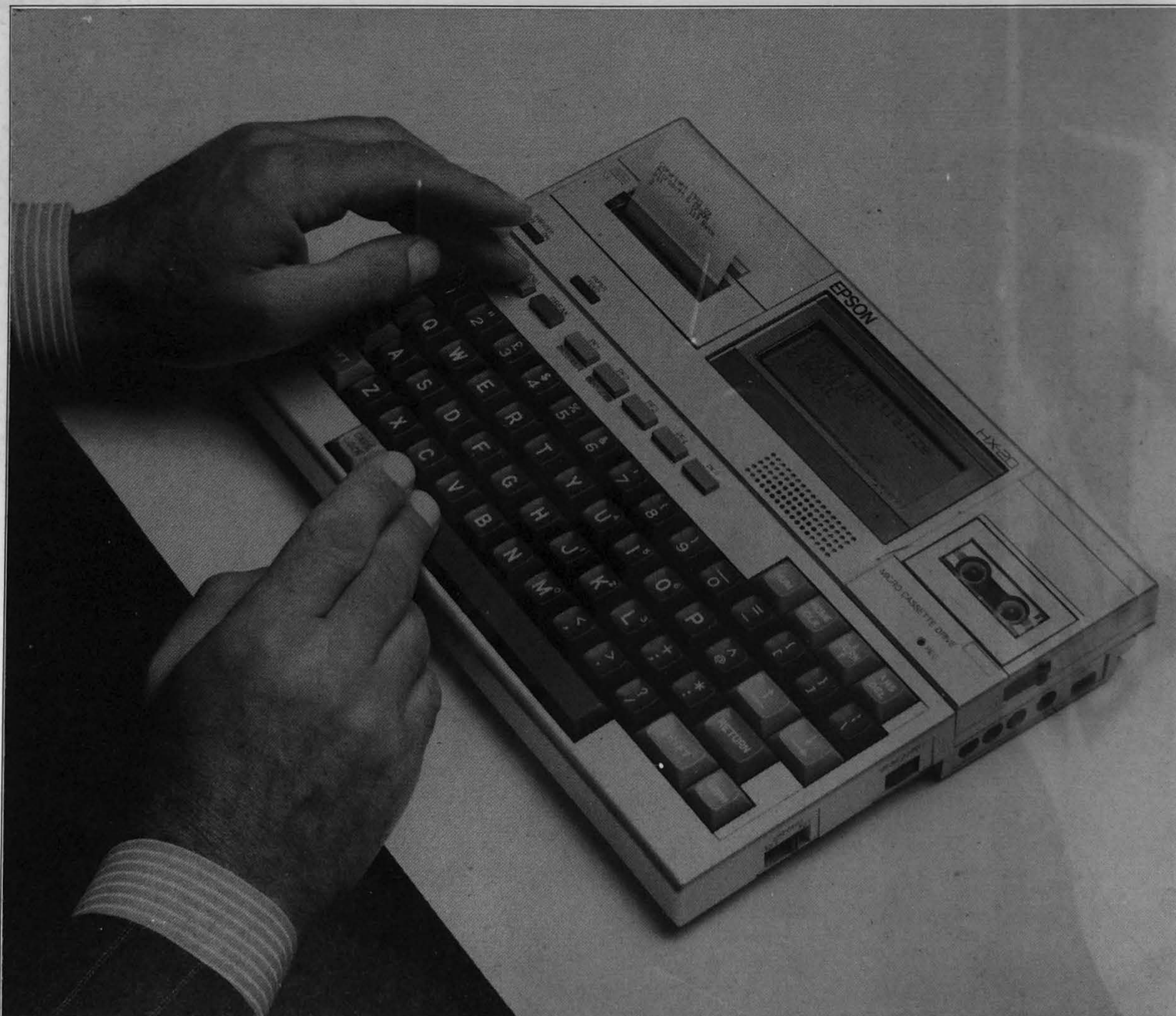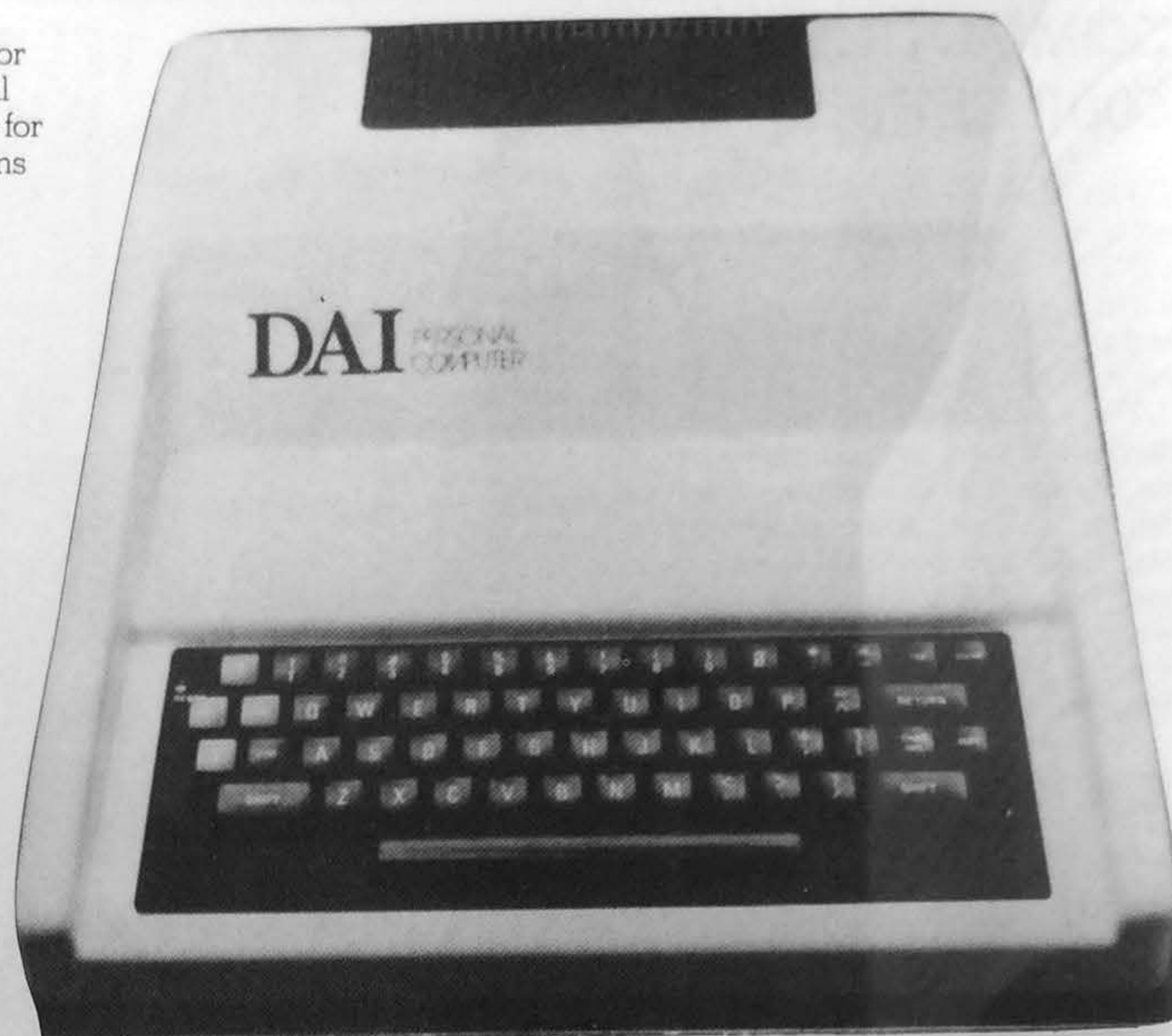**Interfaces:** Games paddle, RS232, Expansion bus
Languages: Basic, Assembler
Operating system: DAI O/S
Software included: None

Software availability: Poor
Special features: Optional hardware maths processor for fast and accurate calculations
Guide price: £684

EPSON HX20

The first of the briefcase computers. The HX20 is a battery powered self contained unit. It weighs less than four pounds, has a 20x4 character LCD display, full typewriter keyboard, Basic, and a tiny printer. A microcassette recorder is optional.

You can get business software for the HX20 but it isn't a business machine in the sense of an Osborne or Kaypro. It's much more suited for on-site users such as surveyors and salesmen. Epson intends the HX20 as a test product and there will almost certainly be great improvements in this field.

CPU: 2x6301, 1MHz
Ram: 16-32K
Rom: 32K
Keyboard: Full, 68 keys
Display type: Built in LCD screen, optional TV adaptor
Display ability: 20x4 text, 120x32 graphics
Sound: Notes, internal speaker
Storage: Cassette recorder, optional built in microcassette recorder, optional up to 4x320K floppy disks
Interfaces: RS232, serial, expansion port
Languages: Basic, Forth
Software included: None
Software availability: Fair
Special features: Portable battery powered unit, weighs less than four pounds
Guide price: £560

EXIDY SORCERER

An elderly system that hasn't really taken off in this country. It's a well made and capable machine, newer versions having a more business like case with built in disk drives and a screen. Apart from the CP/M option, the small numbers of Sorcerers sold has meant that there isn't a wide choice of software available. EMG, the machines' distributors, have however found considerable value in the system as a training machine.

CPU: Z80, 2MHz
Ram: 48K
Rom: 4K
Keyboard: Full, 79 keys
Display type: TV or Monitor, monochrome
Display ability: 64x30 text, 512x240 graphics
Sound: None
Storage: Cartridges, Cassette tape, optional 2x750K floppy and up to 35Mb hard disk
Interfaces: RS232, Centronics, S100 bus expansion slots
Languages: Basic, Assembler, optional most
Operating system: CP/M
Software included: None
Software availability: Poor
Special features: Expanded systems can have built in screen and floppy disk drives
Guide price: £910

FUJITSU FM8

A well made and designed Japanese micro that hasn't yet been officially launched here. The FM8 is well placed as top home computer and baby business system. Its unusual 6809 processor can be used with the Flex operating system or a plug in Z80 card lets you choose from the huge range of CP/M software.

The FM8 also offers the unusual bubble memory system, providing a fast, reliable permanent data storage that is a bit more durable than floppy disks. When the FM8 and the other Fujitsu systems become officially available, they are going to be very much worth considering.

CPU: 6809, 1MHz
Ram: 64K
Rom: 44K
Keyboard: Full, 79 keys
Display type: Monitor, colour
Display ability: Up to 80x25 text, 640x200 graphics, 8 colours
Sound: Beeper
Storage: Cassette tape, optional 2x320K floppy

Interfaces: RS232, Centronics, 4 A/D ports, expansion port
Languages: Basic
Operating system: Optional Flex, UCSD-p, CP/M
Software included: None
Software availability: Poor
Special features: Z80 option for CP/M. Bubble memory cartridges
Guide price: £1000

HP75C

The Rolls-Royce of hand held computers. Hewlett-Packard, a major minicomputer manufacturer, has never attempted to make its micros mass market products. The 75C is a beautiful and powerful system that can grow into a full blown desktop machine. It comes with Basic and a diary/clock package.

HP may be right in selling the machine as a top executive tool but its also handy as a powerful calculator for those who need more data processing ability than programmable calculators offer. A status symbol it may be. But it's a useful one.

CPU: Custom HP 8 bit microprocessor
Ram: 16-24K
Rom: 48K
Keyboard: Calculator, 64 keys
Display type: Built in line display, optional TV and Monitor adaptor
Display ability: 32x1 text, optional 32x16 text
Sound: Notes, internal speaker
Storage: Hand pull card reader, optional tape cartridge
Interfaces: HP-IL expansion system
Languages: Basic
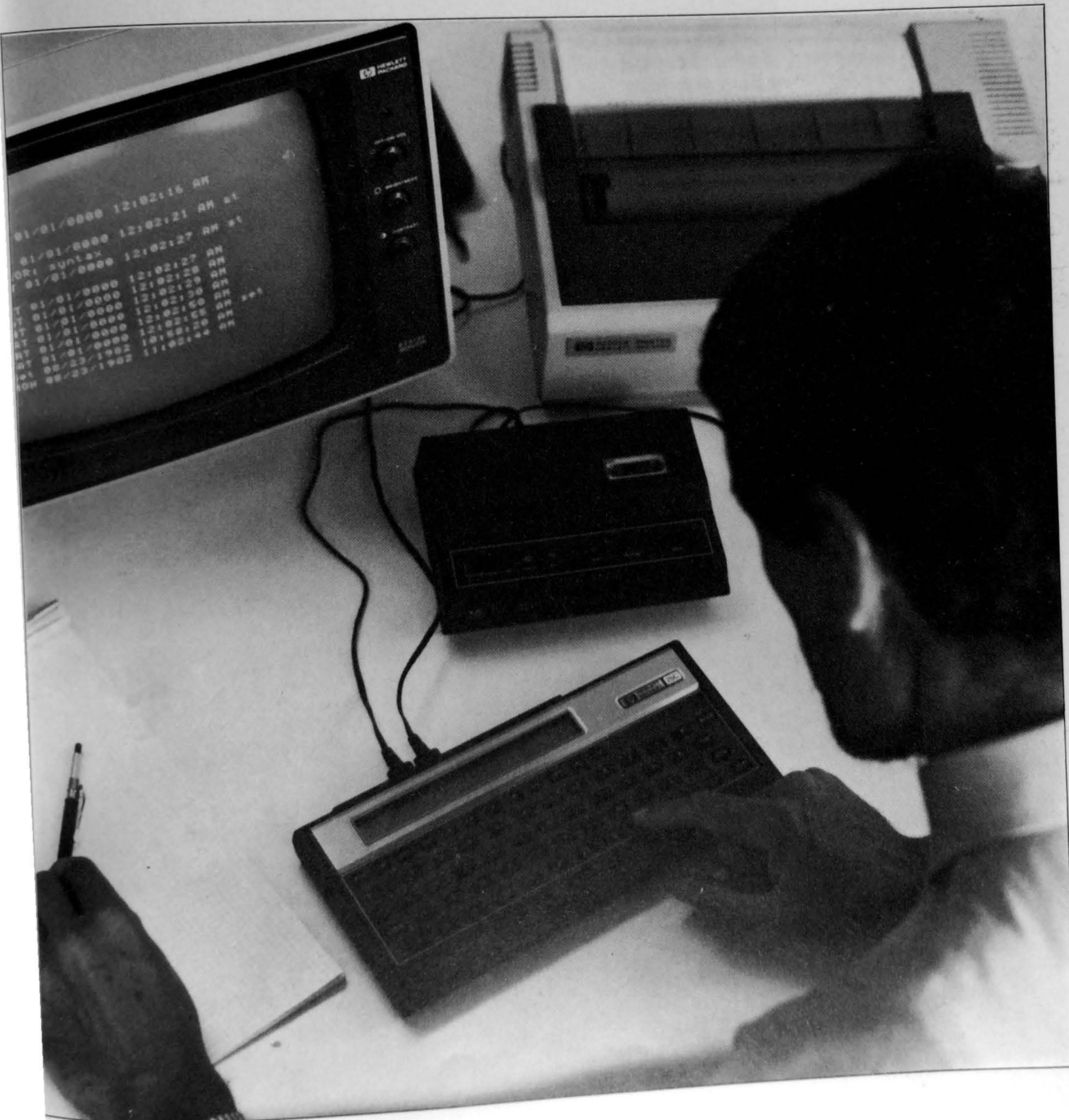**Optional system:** HP75 O/S
Software included: Appointment book and Calender

Software availability: Fair
Special features: Booksize, portable unit
Guide price: £730

LUXOR ABC80

A little known micro that has avoided the mainstream marketplace. The ABC80 uses its own operating system rather than CP/M and is therefore restricted in software choice. The system has sold mainly as a control unit for machinery and experiments.

CPU: Z80, 2MHz
Ram: 16-48K
Rom: 16K
Keyboard: Full, 68 keys
Display type: Built in 12 inch monitor, monochrome
Display ability: 40x24 text, 80x72 graphics
Sound: Beeper
Storage: 1x380K floppy
Interfaces: Expansion port
Languages: Basic, optional Assembler, Pascal, Fortran
Operating system: Luxor OS
Software included: None
Software availability: Poor
Guide price: £690

NASCOM 3

The fully expanded version of the Nascom 2 computer. Nascoms are as old as the industry and the 3 shows its good pedigree.

It can be configured as a business system, using CP/M or its own NASDOS or it makes an ideal development system. Nasnet, its low cost networking option, is tried and trusted and should help to re-establish the popularity of this once market leader.

Among its more attractive options is an 'advanced video card' allowing 80 column text and some spectacular colour graphics. The machine still shows much of its hobbyist background so you'd need some experience to get the best from it. But in general, the system is frequently unjustly overlooked.

CPU: Z80, 4MHz
Ram: 48K
Rom: 16K
Keyboard: Full, 57 keys
Display type: TV or Monitor, optional colour
Display ability: 48x16 text, 96x48 graphics, optional 80x25 text, 320x200 graphics, choice from over 1000 shades/intensities
Sound: Optional
Storage: Cassette tape, optional 2x320K floppy
Interfaces: Serial port, Expansion port
Languages: Basic, optional most
Operating system: Nasdos optional CP/M
Software included: None
Software availability: Good
Guide price: £630

PIED PIPER COMMUNICATOR 1

When it was launched, the Pied Piper was a major breakthrough in price versus performance. More recently, machines like the Advance have stolen its limelight.

But the Pied Piper still has a lot to offer. It's very portable, having a single built in 780K floppy and pop out carrying handle. There's no built in screen though Pied Piper offers a two line LCD display as an option.

The machine comes with the Perfect range of software including a word processor, spreadsheet and database system. And of course its CP/M operating system lets you choose from hundreds of ready to run programs. It may not be the fanciest of the cheap systems but it does have its advantages. Have a look at one

CPU: Z80, 4MHz
Ram: 64K
Rom: 2K
Keyboard: Full, 53 keys
Display type: TV or Monitor,
optional LCD 2 line display
Display ability: Up to 80x25 text
Sound: Beeper
Storage: 1x780K floppy, optional second floppy drive or 5Mb hard disk

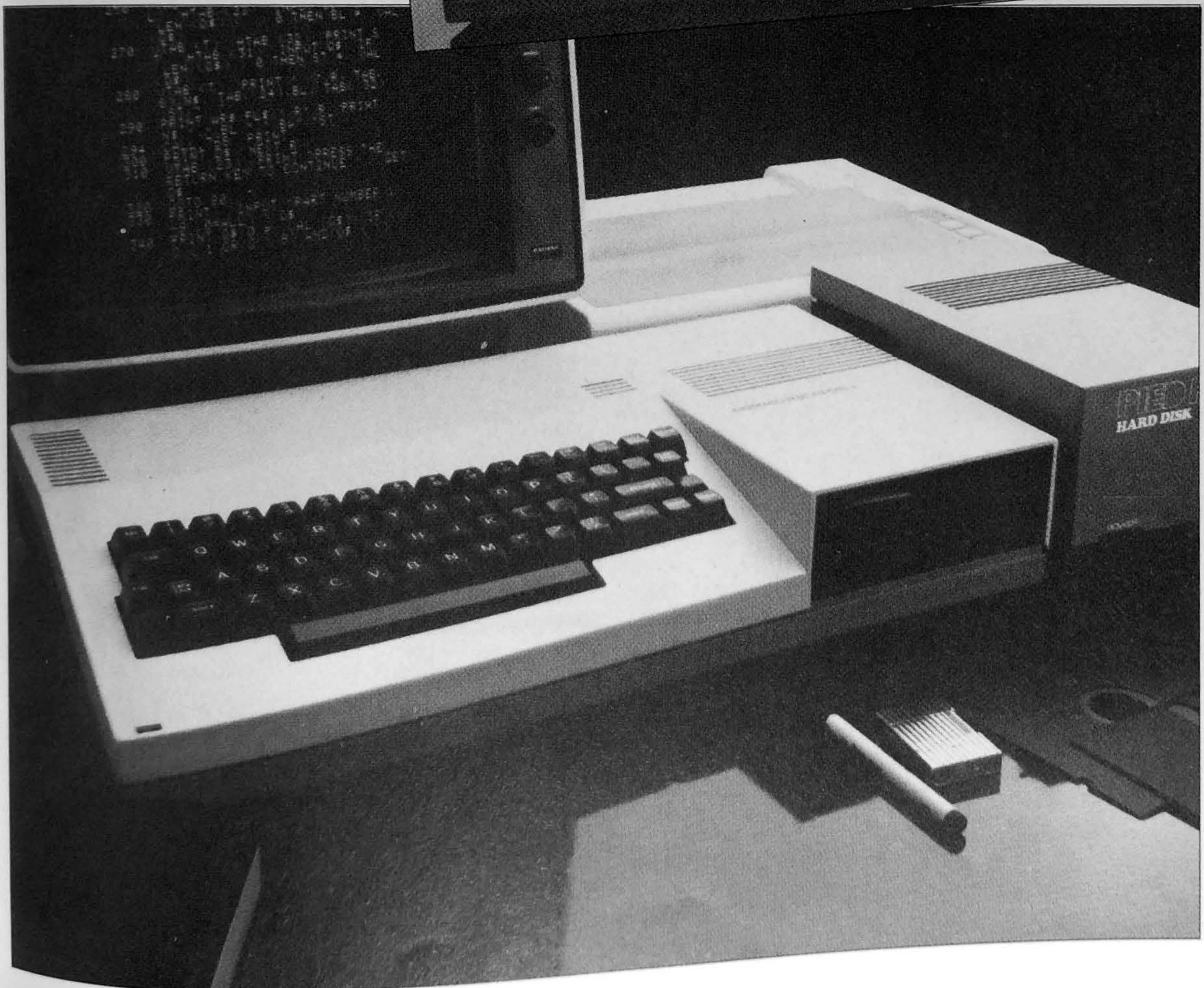**Interfaces:** Parallel, Serial
Languages: Optional most
Operating system: CP/M
Software included: Perfectwriter, Perfectfiler, PerfectCalc
Software availability: Very good

Special features: Portable light weight unit
Guide price: £1000

RML LINK 480Z

Research Machines' low cost educational system. There's no denying that the 480Z is a superb computer. It's got 64K Ram, superb high resolution graphics and a good Basic. It was originally designed to be a part of the RML 'Chain' network but has since been sold as a stand alone computer.

The 480Z has been sold almost exclusively to schools and colleges. So, although there is some very good software available, it tends to all be of an educational nature. In some ways, it's a shame that Research Machines has chosen not to market the system as a home computer.

CPU: Z80, 4MHz
Ram: 64K
Rom: 32K
Keyboard: Full, 65 keys
Display type: TV or Monitor, colour
Display ability: Up to 80x25 text, 640x192 graphics, 8 colours
Sound: Notes, internal
Storage: Cartridges, Cassette tape, optional floppy disk
Interfaces: Parallel port, 2xserial ports, IEEE interface, joystick port, optional network interface
Languages: Basic

Operating system: CP/M
Software included: None
Software availability: Good
Special features: Designed for network use. Includes 'software front panel' for debugging assembly language programs
Guide price: £685

SHARP MZ80A

The bottom end of the Sharp range, intended as a rival to machines such as the Pet and Genie. It has the advantages of being a neat, all-in-one design, complete with its own screen and cassette. It is a conservative design, having no colour or high resolution graphics. Unusually, these days at least, the MZ80A Basic is loaded from cassette when you want to use it rather than being in instantly available Rom.

The MZ80A is reasonably popular and offers a good selection of software to choose from.

CPU: Z80, 4MHz
Ram: 64K
Rom: 2K
Keyboard: Full, 68 keys
Display type: Built in 9 inch monitor
Display ability: 40x25 text, special graphics characters
Sound: Notes, internal speaker
Storage: Built in cassette recorder, optional 2x280K floppy disk
Interfaces: IEEE, Expansion port, Optional RS232
Languages: Basic, optional Pascal
Operating system: FDOS optional CP/M

Software included: None
Software availability: Good
Guide price: £550

TANDY TRS80 MODEL III

A halfway house between the elderly Model I and the more up-market Model II system. The Model III is compatible with most Model I programs and it can be supplied as a comparatively expensive home computer or as a small business system. The Model III is great for Tandy fans, or if you need access to a package that runs under TRSDOS. But it is perhaps a little out of date for many users.

CPU: Z80, 2MHz
Ram: 16-48K
Rom: 14K
Keyboard: Full, 65 keys
Display type: Built in 12 inch monitor
Display ability: 64x16 text, 128x48 graphics
Sound: Notes, external
Storage: Cassette tape, optional 2x187K floppy
Interfaces: RS232, Centronics
Languages: Basic, optional most
Operating system: TRSDOS, optional NEWDOS, LDOS, CP/M
Software included: 2 games
Software availability: Very good
Guide price: £600

TANDY TRS80 MODEL 100

A recent and capable briefcase computer. The model 100 has a full specification, including 64K Ram and Rom and built in wordprocessing and diary software. The system runs on just four penlight batteries. Should you want a computer that you can use on the move, the Model 100 is, for the moment at least, state-of-the-art.

CPU: Z80, 4MHz
Ram: 64K
Rom: 16K
Keyboard: Full, 72 keys
Display type: Built in LCD screen, TV and Monitor adapter optional
Display ability: 40x8 text
Sound: Beeper
Storage: Cassette tape
Interfaces: Serial port, Expansion port
Languages: Basic
Software included: Wordprocessing, diary
Software availability: Poor
Special features: Portable, briefcase size unit
Guide price: £500

COMMODORE 700

The new Commodore flag ship, the 700 series is a long overdue replacement for Commodore's business systems. Following a delayed launch, the machines have had Commodore's usual success.

They are based on 6509s, making it easy to convert existing 8000 series programs to the systems. More importantly, Commodore offers an 8088 processor option to allow the system to run the CP/M86 or the more popular MSDOS and a Z80 to run CP/M programs. So the 700s have the advantage of the best of the Pet software, CP/M programs and access to MSDOS software.

Commodore obviously intends to sell the machine to its existing customers but its low cost, its powerful graphics option and software flexibility make it attractive to new users.

CPU: 6509, 2MHz
Ram: 128-896K
Rom: 28K
Keyboard: Full, 94 keys
Display type: Built in 12 inch monitor, monochrome
Display ability: 80x25 text, optional 512x512 graphics
Sound: 3 voices with special effects, external

Storage: Own cassette recorder £45, optional disks up to 2x1Mb floppy and 5-30Mb hard
Interfaces: RS232, IEEE, User port, Expansion port, joystick port
Languages: Basic, optional most
Operating system: Commodore O/S, optional CP/M and MSDOS
Software included: None
Software availability: Excellent
Special features: Z80 and 8088 second processors for CP/M and MSDOS
Guide price: £1375

CROMEMCO C10

A shy but stylish personal computer, from a manufacturer of more upmarket systems. The C10 is beautifully put together, with good documentation and a pile of free software including a word processor, spreadsheet and a powerful version of Basic. Its based on a Z80 and 64K Ram and Cromemco has supplied its own CDOS operating system which is CP/M compatible as well as being a little easier to learn.

When it first appeared, the C10 was a tremendous bargain but it has suffered both from its dollar price and its competition. It's a smart little system for the user who wants to unpack his/her computer and get on with doing something useful — making it an ideal home word processor. If you fancy a personal computer that doesn't play games and that is easy to set up and use, then the C10 is worth that little bit extra.

CPU: Z80, 4MHz
Ram: 64K
Rom: 24K
Keyboard: Full, 59 keys
Display type: Built in 12 inch monitor, monochrome
Display ability: 80x25 text, some graphics characters
Sound: Beeper

Storage: 1x390K floppy, optional second floppy
Interfaces: Serial, Centronics, Disk drive
Languages: Structured Basic, optional most

Operating system: CDOS
Software included: Writemaster, Planmaster, Basic, Menu system, utilities and Chess
Software availability: Very good

Special features: Inherent terminal ability for use with larger computers
Guide price: £1350

HP86

The nearest HP ever got to a mass market system, the 86 series is a low cost and, as you would expect, beautifully made business system. Besides HP's own software, you can buy a plug in cartridge to give you CP/M ability. Unfortunately, the cost of this and twin disk drives makes the system hardly the best value for money.

It is a well built, specified and supported system but it's up to you how much you value the HP name if you're going to consider it.

CPU: Custom HP 8 bit microprocessor
Ram: 64-512K
Rom: 48K
Keyboard: Full, 82 keys
Display type: Monitor, monochrome
Display ability: 80x24 text, up to 544x240 graphics
Sound: Notes, internal speaker
Storage: Optional up to 2x270K floppy
Interfaces: RS232, Centronics
Languages: Basic
Operating system: HP O/S, optional CP/M
Software included: None
Software availability: Good
Special features: Z80 option for CP/M
Guide price: £1440

MORROW DESIGNS MICRO DECISION

A real bargain business system. Cheap (in this range), and cheerful, the Microdecision is a bog-standard CP/M machine at a really competitive price including a heap of free software. There's the famous Wordstar word processor, a spelling checker, two Basics, a Pilot interpreter and a menu system to make it easy to use the system.

It's not as exciting as the latest all-singing, all-dancing 16 bit portable but if you are trying to get some computing power into your business or home then it's perfectly capable of being a real help.

CPU: Z80, 4MHz
Ram: 64K
Rom: 2K
Keyboard: Full, 92 keys
Display type: 12 inch monitor supplied, monochrome
Display ability: 80x24 text
Sound: None
Storage: 1x200K floppy, optional up to 4x200K floppy
Interfaces: 2xRS232
Languages: Basic, optional most
Operating system: CP/M
Software included: Wordstar, Mailmerge, MBasic, Bazic, Logicalc, Menu system
Software availability: Very good
Guide price: £1145

BEST BUY

OSBORNE 1

A real first in microcomputing. The first portable, the first to come with a heap of free software and the first to sacrifice all the frills for a little no nonsense, inexpensive computing.

It's a standard CP/M machine stuffed into a 24lbs plastic case. Even if you can't carry it far or don't need to, the all-in-one design is great for crowded desks and borrowed dining tables. If you don't need the computer taking up space, you pick it up and throw it on the floor!

Even the Osborne's tiny and awkward screen has failed to stop it being a runaway success. As it's got CP/M there is also a wide range of software to chose from (though it comes with most of the things you'll need). And its manual is a lot better than many comparable systems.

If you can put up the weight and the small screen, the 01 is an excellent buy, both for first timers and experienced users.

CPU: Z80, 4MHz
Ram: 64K
Rom: 4K
Keyboard: Full, 68 keys
Display type: Built in 5 inch monitor, optional external monitor, monochrome
Display ability: Up to 52x24 text, optional 80x24 text, some graphics characters
Sound: Beeper
Storage: 2x184K floppy
Interfaces: IEEE, RS232
Languages: Basic, optional most
Operating system: CP/M optional UCSD-p
Software included: Wordstar, Mailmerge, Supercalc, MBasic, CBasic
Software availability: Very good
Special features: Portable unit weighs 24lbs
Guide price: £1440

SANYO MBC 1000

Another bottom end business system and one that strangely hasn't appeared on everybody's desks. It's an all-in-one desktop system, with a full size screen and keyboard. A major drawback is the single floppy disk drive, which means that file and disk copying involves the trouble of swapping disks in and out several times. Still, if you are looking at a Microdecision, Cromemco or Osborne, don't miss this one out.

CPU: Z80, 4MHz
Ram: 64K
Rom: 2K
Keyboard: Full, 83 keys
Display type: Built in 12 inch monitor, monochrome
Display ability: 80x25 text
Sound: Notes, internal speaker
Storage: 1x320K floppy, optional 3x320K floppy
Interfaces: RS232, Centronics
Languages: Basic
Operating system: CP/M
Software included: Demonstration
Software availability: Very good
Guide price: £1375

SHARP MZ80B

At first glance, a little expensive for a home computer. The MZ80B is a no compromise version of the MZ80A and bridges the gáp between a home computer and a business system. The system includes built in cassette recorder but can be expanded to use disk drives under Sharp's own FDOS or CP/M. The machine has enjoyed a lot of success but now appears to be a little outdated in the midst of the latest, cut price competition.

CPU: Z80, 4MHz
Ram: 64K
Rom: 2K
Keyboard: Calculator, 83 keys
Display type: Built in 9 inch monitor, monochrome
Display ability: Up to 80x25 text, optional up to 520x200 graphics
Sound: Notes, internal speaker
Storage: Built in cassette recorder, optional 2x280K floppy
Interfaces: Parallel, optional RS232
Languages: Basic optional Pascal
Operating system: FDOS optional CP/M
Software included: None
Software availability: Very good
Guide price: £1034

BRITISH MICRO MIMI 803

A well made British designed and built business machine. The Mimi uses a Z80 with 64K Ram and its own OS/M operating system. This is CP/M compatible so it gives you access to hundreds of standard ready to run programs. The Mimi goes one better than most CP/M systems in offering a high resolution graphics option.

Much of the Mimi's software was developed by Scifax Ltd, including Trojan, a system that allows untrained users to write business programs. Having Trojan on the Mimi has ensured that there is a range of good business software available for the system.

CPU: Z80, 4MHz
Ram: 64K
Rom: 4K
Keyboard: Full, 96 keys
Display type: Monitor, monochrome
Display ability: 80x25 text, optional 512x256 graphics
Sound: None
Storage: 2x320K floppy, optional 10Mb hard disk
Interfaces: RS232, Centronics, Light pen
Languages: Optional most
Operating system: OS/M
Software included: None
Software availability: Good
Guide price: £1550

CORONA PC

An IBM compatible micro that lets you get at the very best software and add ons on the market. Besides the price, the Corona comes with more memory, better graphics and more software than the IBM PC itself. The Corona comes with both MSDOS and CP/M86 operating systems as well as a wordprocessor and the GSX graphics system.
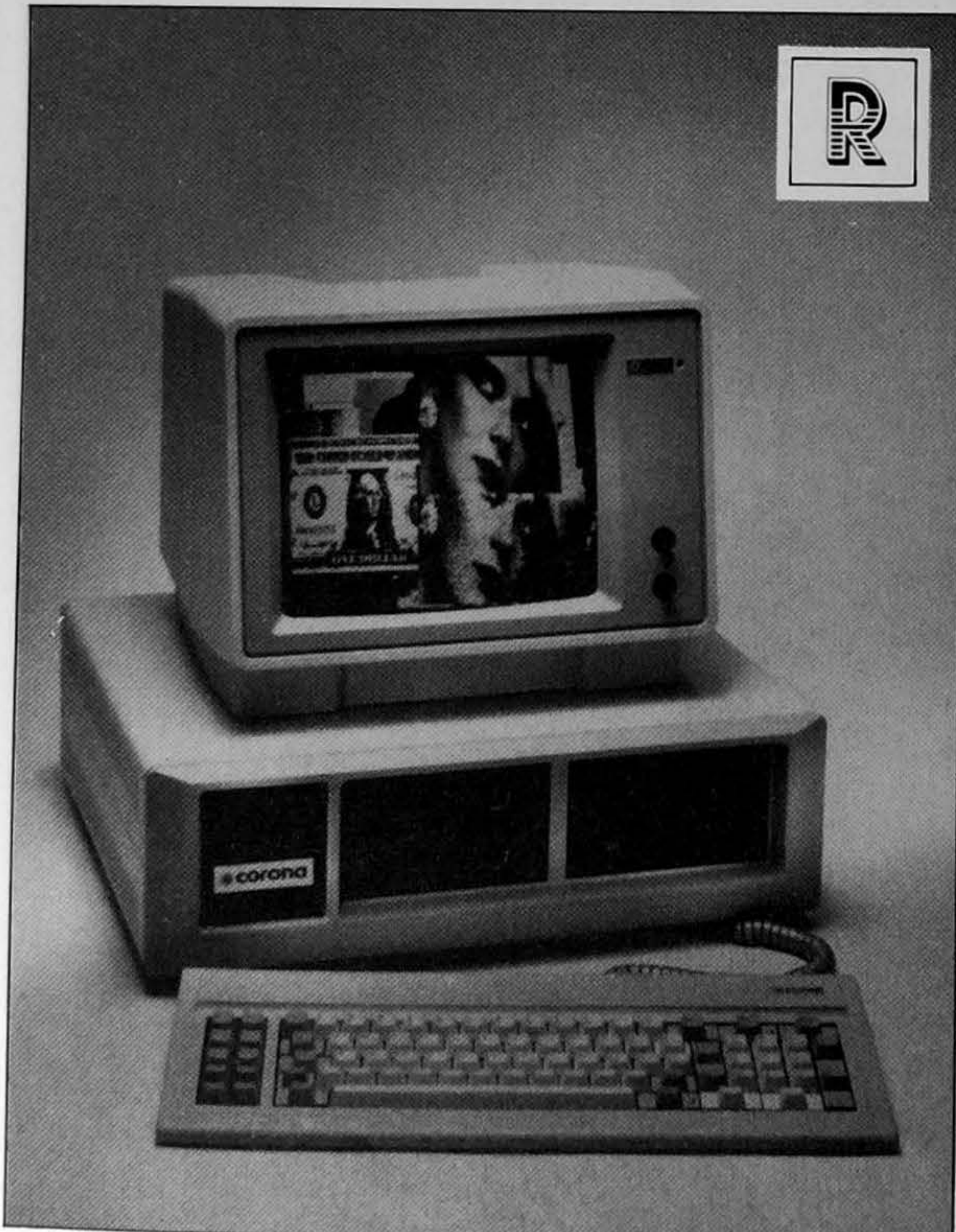
If you're in the IBM PC market, take a look at what Corona has on offer.

CPU: 8088, 4.7MHz
Ram: 128-512K
Rom: 2K
Keyboard: Full, 83 keys
Display type: 9 inch monitor supplied, monochrome
Display ability: Up to 80x25 text, 640x325 graphics
Sound: Beeper
Storage: 1x320K floppy, optional second floppy or 10Mb hard disk
Interfaces: RS232, Centronics, 4xIBM expansion slots
Languages: Basic, optional most
Operating system: MSDOS, CP/M86
Software included: GSX graphics for CP/M86, Multimate wordprocessor, PC—Tutor training course
Software availability: Excellent
Guide price: £1800

CORONA PPC

How could you improve on the Corona PC? Make it a portable IBM lookalike. The Corona PPC has all the same features of the PC except the optional built in hard disk. Even if you don't see the machine being carried all round the world, you might as well have the portability since it is there for the taking.

CPU: 8088, 4.7MHz
Ram: 128-512K
Rom: 2K
Keyboard: Full, 83 keys
Display type: 9 inch monitor supplied, monochrome
Display ability: Up to 80x25 text, 640x325 graphics
Sound: Beeper
Storage: 1x320K floppy, optional second floppy
Interfaces: RS232, Centronics, 4xIBM expansion slots
Languages: Basic, optional most
Operating system: MSDOS, CP/M86
Software included: GSX graphics for CP/M86, Multimate wordprocessor, PC-Tutor training course
Software availability: Excellent
Special features: Portable unit
Guide price: £1990

CW/P CORTEX

A neat, new CP/M system. The Cortex is more than just a neat and sensibly styled CP/M system. A second 6502 processor is dedicated to the screen, providing excellent high resolution graphics, user definable characters and all those things not normally associated with CP/M.

The system is made easy to use by a menu system for selecting and running programs and it comes with the popular Wordstar word processing system. If you want a cheap business system but have an application that requires graphics, then the Cortex would be a very sensible choice.

CPU: Z80, 4MHz
Ram: 64K
Rom: 32K
Keyboard: Full, 83 keys
Display type: Built in 12 inch monitor, monochrome
Display ability: 80x25 text, 600x200 graphics
Sound: Beeper
Storage: 2x400K floppy
Interfaces: RS232, Centronics
Languages: Basic, optional most
Operating system: CP/M
Software included: Wordstar, Menu system
Software availability: Very good
Special features: 6502 processor to handle screen. Provides fast graphics and user definable character sets.
Guide price: £1700

45

EPSON QX10

A powerful new business system produced with typical Japanese attention to design and performance. The QX10 may look like an ordinary CP/M system but its specially designed keyboard, high resolution graphics and optional Valdocs software make it rather special. The QX10 deserves its undeniable success.

CPU: Z80, 4MHz
Ram: 64-192K
Rom: 2K
Keyboard: Full, 104 keys
Display type: 12 inch monitor supplied
Display ability: 80x25 text, 600x400 graphics
Sound: Beeper
Storage: 2x350K floppy
Interfaces: RS232, Centronics
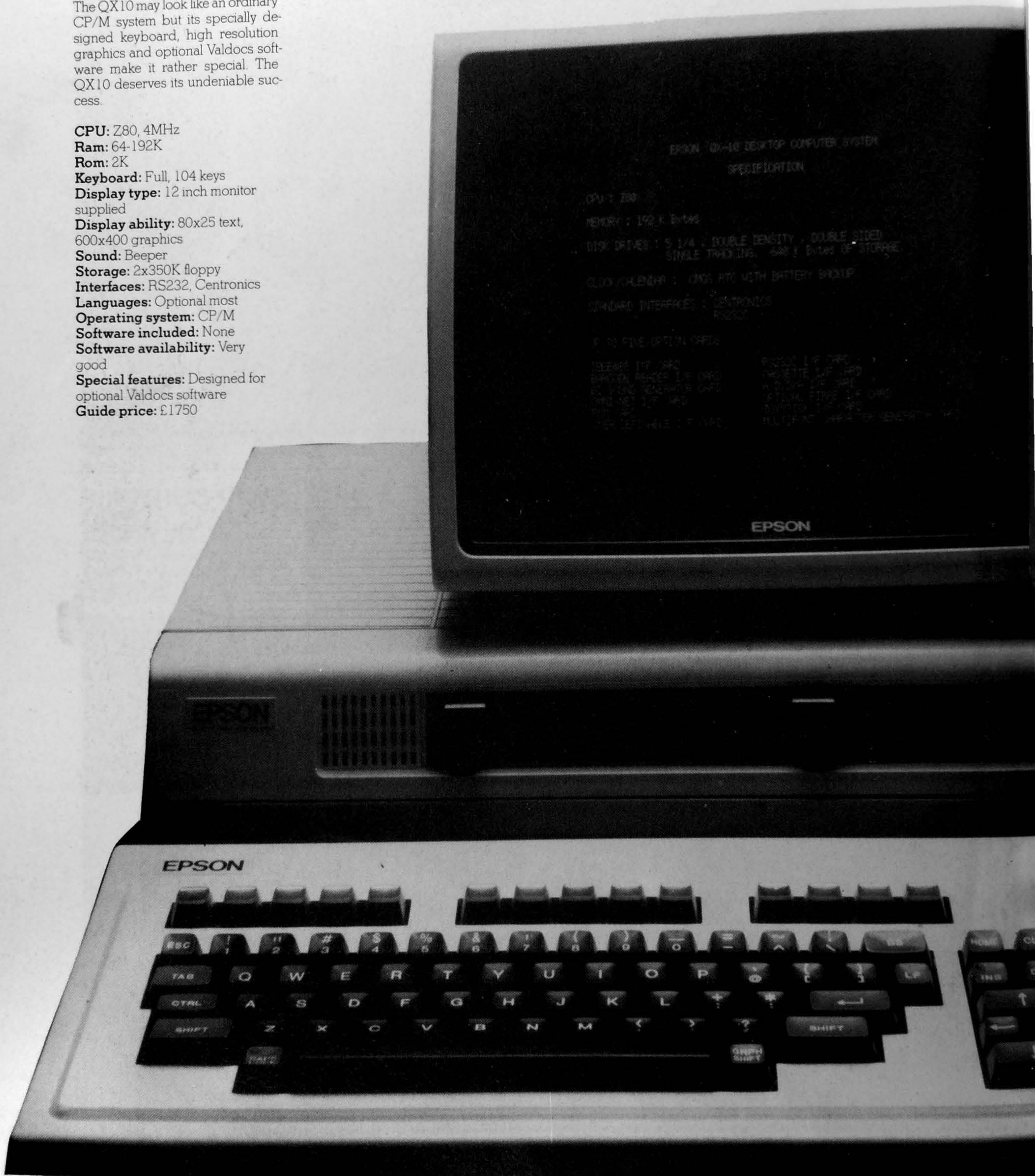**Languages:** Optional most
Operating system: CP/M
Software included: None
Software availability: Very good
Special features: Designed for optional Valdocs software
Guide price: £1750
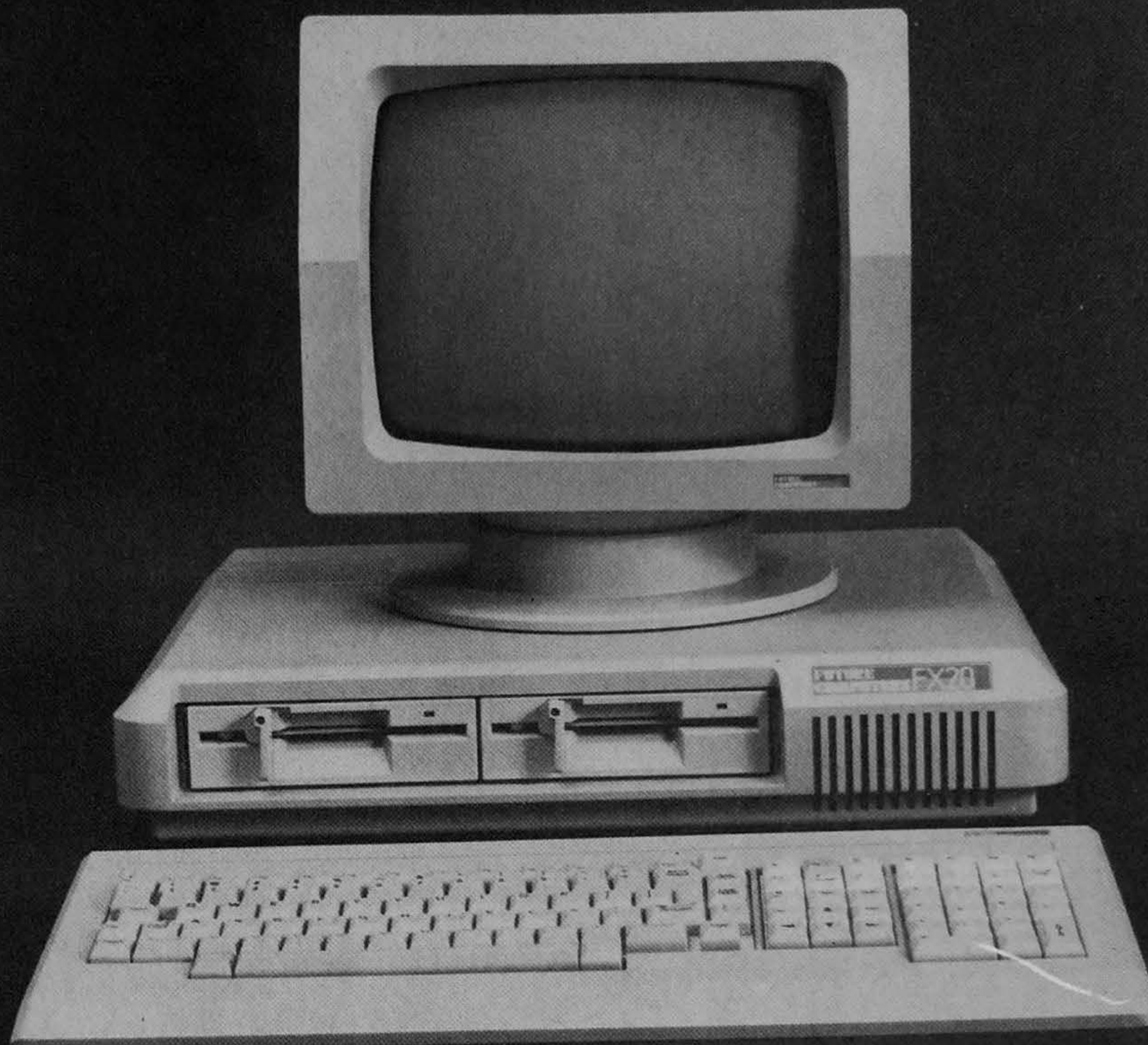
FUTURE COMPUTERS FX20

A remarkable product at a remarkable price. The FX20 is a top business system combining outstanding design with a top performance. Its 8088 processor runs MSDOS or CP/M86 software but its high clock speed gives it around twice the performance of the IBM, Sirius and similar machines.

It is just one model from a complete product line and includes a network ability as standard. Anyone looking for a business system that can grow with them should consider the FX20 as well as more directly IBM compatible systems.

CPU: 8088, 8MHz
Ram: 128K-1Mb
Rom: 4K
Keyboard: Full, 109 keys
Display type: Built in 12 inch monitor, monochrome
Display ability: 80x25 text, optional up to 1280x500 graphics
Sound: Beeper
Storage: 2x800K floppy, optional 5-50Mb hard
Interfaces: RS232, Parallel, Network, optional IBM expansion slots
Languages: Basic, optional most
Operating system: CP/M86, optional MSDOS, MP/M86
Software included: Spellbinder, CP/M emulator
Software availability: Excellent
Special features: Network ability, can read IBM format disks
Guide price: £2000

GEMINI GALAXY II

A standard CP/M business system derived from the Nascom range.

The Galaxy is solidly built, well supported and holds no surprises. If all you need is a computer to run CP/M programs such as Wordstar, DBase and Cardbox, then the Galaxy will do the job in a no nonsense manner.

CPU: Z80, 4MHZ
Ram: 64-192K
Rom: 2K
Keyboard: Full, 62 keys
Display type: 12 inch monitor supplied
Display ability: 80x25 text, 160x75 graphics
Sound: None
Storage: 2x400K floppy
Interfaces: RS232, Centronics, Light pen
Languages: Comal, optional most
Operating system: CP/M
Software included: None
Software availability: Very good
Guide price: £1650
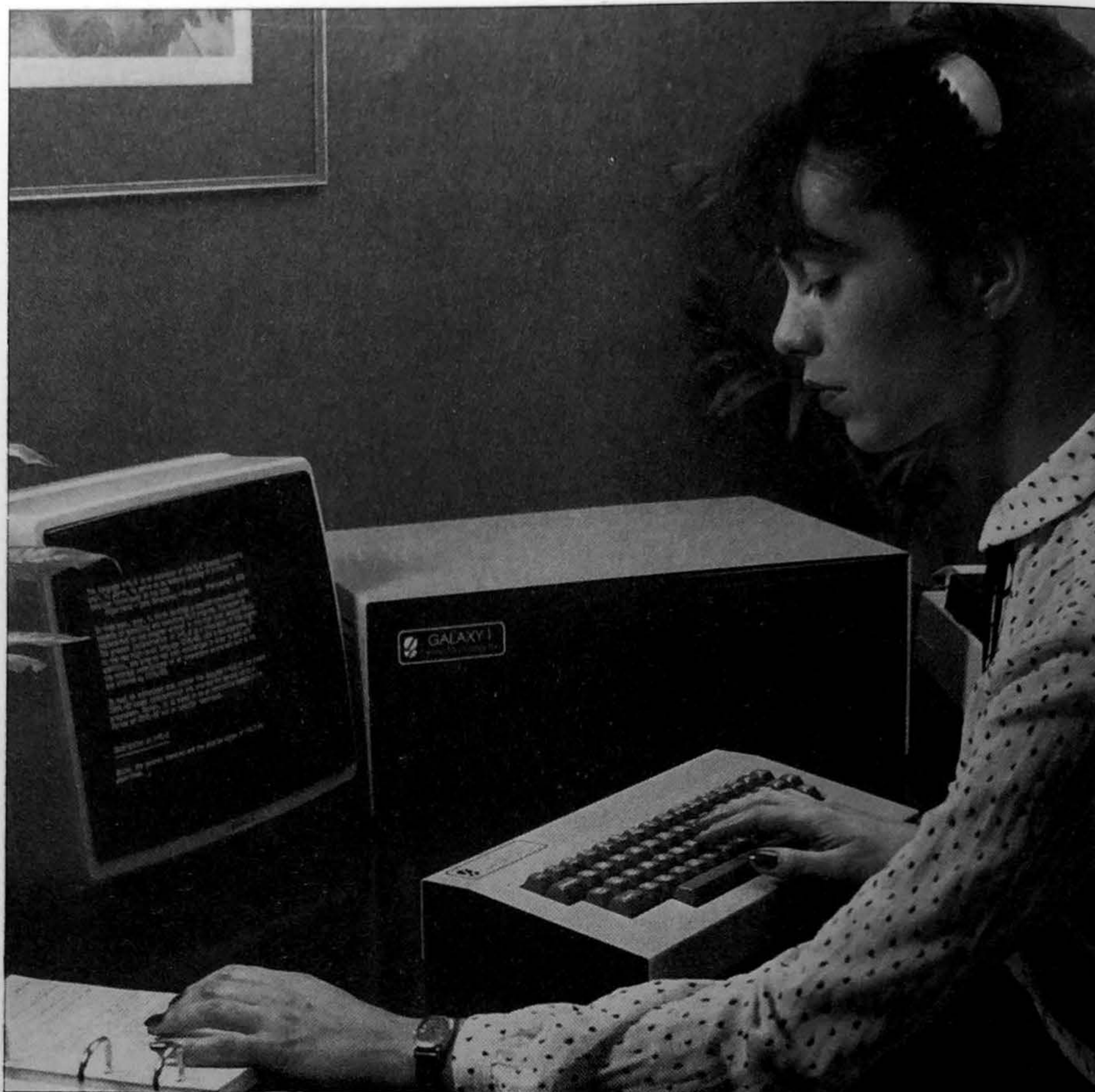
GENIE III

A well equipped business system from the same Hong Kong company that produces the Genie and Colour Genie systems. The Genie III hasn't been a runaway success even though it does offer access to both CP/M and Tandy software in one neat integrated unit.

CPU: Z80, 3.5Mhz
Ram: 64K
Rom: 2K
Keyboard: Full, 85 keys
Display type: Built in 12 inch monitor
Display ability: Up to 80x24 text, 160x72 graphics
Sound: Notes, internal speaker
Storage: 2x700K floppy
Interfaces: RS232, Light pen
Languages: Basic, optional most
Operating system: NewDOS, optional CP/M
Software included: None
Software availability: Very good
Guide price: £1900

HP85

A compact microcomputer intended, as is much Hewlett-Packard equipment, for the lab or workshop. The 85 combines a built in screen, keyboard, printer and tape cartridge. It's capable of high resolution graphics both on the printer and screen.

In comparison to other systems, the HP may seem overpriced but it does cater for a particular market. And like most HP products, it fulfills its particular role very well.

CPU: Custom HP 8 bit microprocessor
Ram: 16-32K
Rom: 48K
Keyboard: Full, 86 keys
Display type: Built in 5 inch monitor, monochrome
Display ability: 32x16 text, up to 255x192 graphics
Sound: Notes, internal
Storage: Built in 200K tape cartridge, optional 2x270K floppy
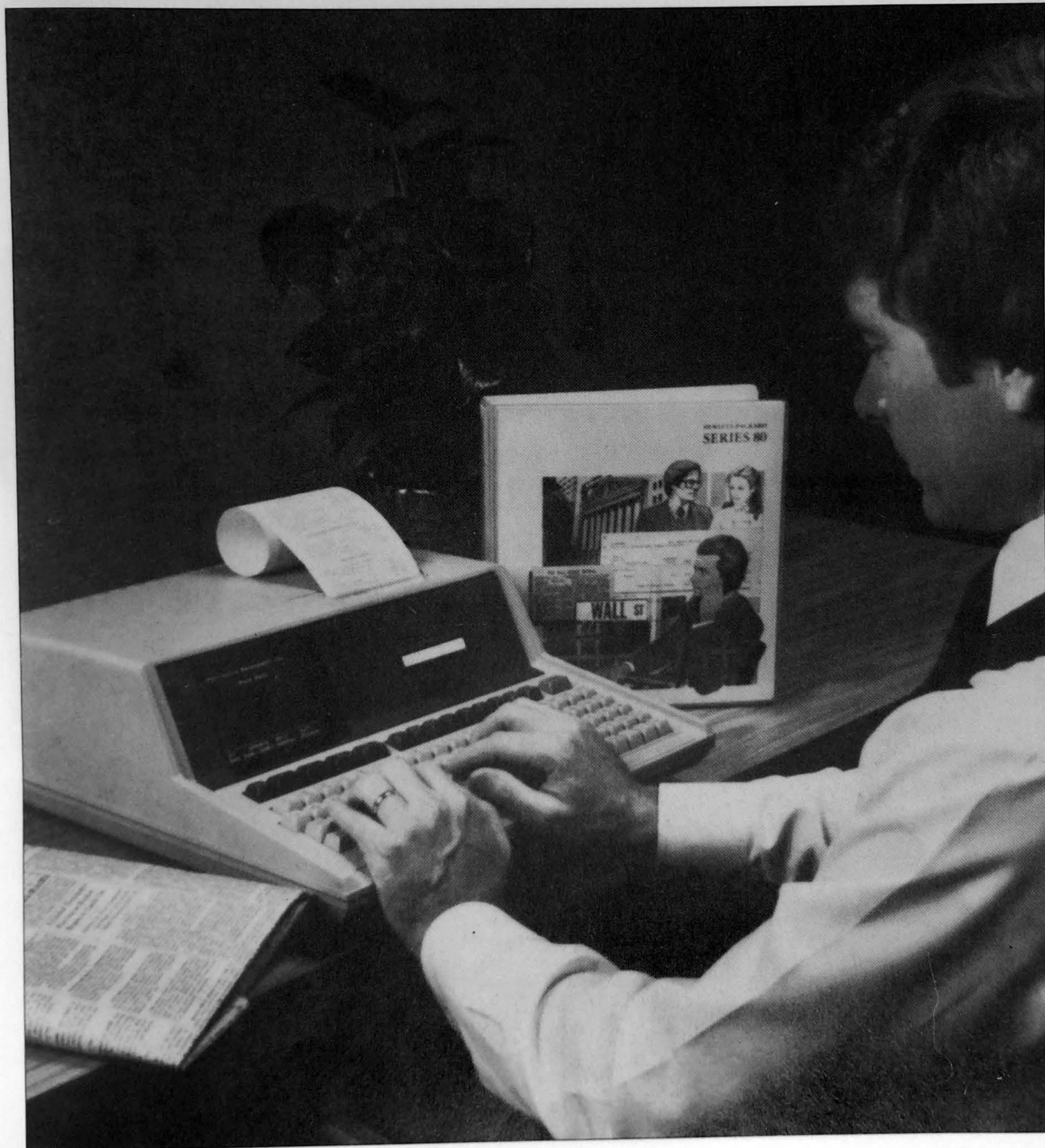**Interfaces:** 4xExpansion slots
Languages: Basic
Operating system: HP O/S

Software included: None
Software availability: Good
Special features: All-in-one unit with built in printer
Guide price: £1920

KAYPRO II

Unashamedly an Osborne copy though now with the distinction that, for a while, it outsold the Osborne 1 itself. The Kaypro II is made out of metal and is consequently a touch heavier at 26lbs.

However, it does have the big advantage of a full 9 inch 80 column screen rather than the Osborne's tiny 5 inch unit. Performance wise, the Kaypro is very similar, being a 64K Ram, Z80, CP/M machine. The free software is different, being the Perfect range, two Basics and a handful of games. Perfectwriter is not as popular as Wordstar but may be adequate for your own needs.

Options on the Kaypro include 400K disk drives, a 10Mb hard disk and a high resolution graphics card. So if you're looking for a portable, make sure you try out the Kaypro system.

CPU: Z80, 4MHz
Ram: 64K
Rom: 2K
Keyboard: Full, 72 keys
Display type: Built in 9 inch monitor
Display ability: 80x24 text, optional graphics
Sound: Beeper
Storage: 2x200K floppy, optional 2x400K floppy and hard disk
Interfaces: RS232, Centronics
Languages: Basic, optional most
Operating system: CP/M
Software included: Perfectwriter, Perfectfiler, Perfectcalc, MBasic, SBasic, games and utilities
Software availability: Very good
Special features: Portable all-in-one unit, weight 26lbs.
Guide price: £1895
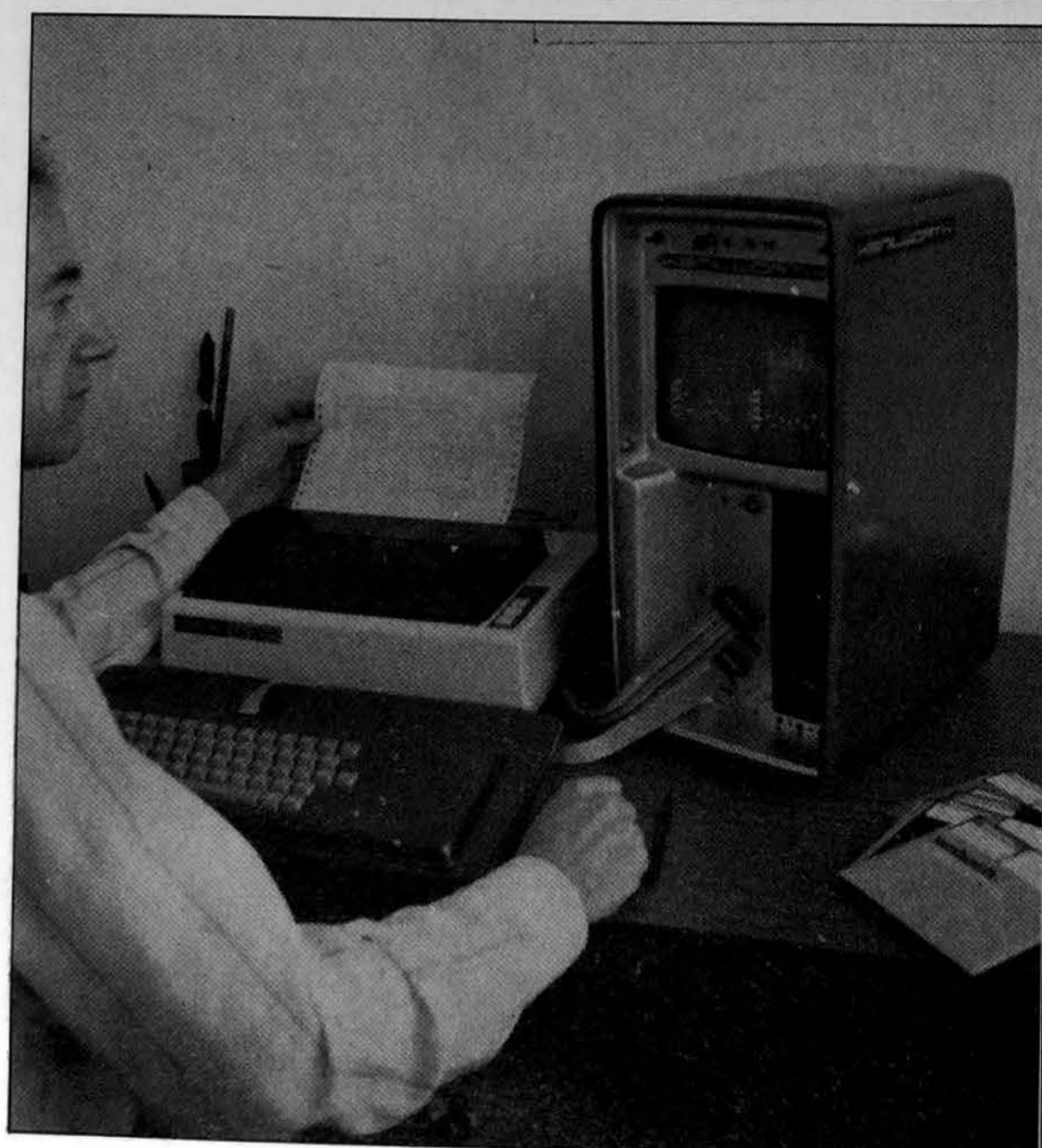
KENILWORTH 83

A British designed and built portable. The Kenilworth's most obvious distinction is that it operates what would be, from an Osborne point-of-view, tipped on its end. The makers claim that this reduces eyestrain as it puts the screen up at a normal height. It certainly reduces the amount of desk space needed to operate the computer.

The Kenilworth also adds to the standard CP/M computer by providing optional high resolution graphics and an impressive disk capacity. The weight of this unique looking computer is a staggering 28lbs.

CPU: Z80, 4MHz
Ram: 64K
Rom: 2K
Keyboard: Full, 52 keys
Display type: Built in 9 inch monitor, optional colour
Display ability: 80x25 text, 160x75 graphics
Sound: None
Storage: 2x350K floppy
Interfaces: RS232, Centronics
Languages: Optional most
Operating system: CP/M
Software included: None
Software availability: Very good
Special features: Portable unit, weighs 28lbs
Guide price: £1900

MICROAPL SIGNET

The Shelton Signet system resold by MicroAPL as an APL computer. APL is a very powerful high level language, especially for mathematical use and owes much of its recent popularity to the promotion of MicroAPL. So if you want APL at a reasonable price, this version of the Signet could be what you're looking for.

CPU: Z80, 4MHz
Ram: 64K
Rom: 2K
Keyboard: Full, 103 keys
Display type: Monitor, monochrome
Display ability: 80x25 text
Sound: None
Storage: 2x200K floppy, optional 2x800K floppy, 20Mb hard
Interfaces: RS232, Centronics
Languages: APL
Operating system: CP/M
Software included: None
Software availability: Good
Guide price: £1800

POSITRON 9000

An unusual British business system based on the powerful 6809 processor. The Positron therefore runs the Flex and OS9 operating systems rather than the more common CP/M.

The system features colour high resolution graphics and can be expanded into a multi user machine. If you have an application, such as stock and order processing that might benefit from a low cost multi user system, then it's worth seeing what Positron has to offer.

CPU: 6809, 1MHz
Ram: 64-512K
Rom: 36K
Keyboard: Full, 96 keys
Display type: 12 inch monitor supplied, colour
Display ability: Up to 80x24 text, 240x240 graphics, 8 colours
Sound: None
Storage: Cassette tape, optional 2x380K floppy, 5MB hard
Interfaces: 4xRS232, IEEE
Languages: Basic, optional Pascal, Cobol, Assembler
Operating system: OS9 optional Flex
Software included: None
Software availability: Good
Special features: Can be expanded to multi-user, multi-tasking system
Guide price: £1800

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RML 380Z

The original schools' machine and one of the few veterans of micro-computing. Like the Apple and Pet, the 380Z has undergone some major changes. The current system boasts improved disk capacity, an 80 column text option and superb high resolution graphics.

Like its little brother, the 480Z, the 380Z has remained a school and college machine. So the bulk of its software tends to be educational even if its CP/M operating system means that it wouldn't be difficult to run most major packages on it.

Apart from its frequent application as a controller in experiments and labs, the 380Z has little to offer over a disk based 480Z system.

CPU: Z80, 4MHz
Ram: 32-56K
Rom: 4K
Keyboard: Full, 65 keys
Display type: TV or Monitor, optional colour
Display ability: 40x24 text, optional 80x24 text, 320x192 graphics, choice from 256 shades/intensities
Sound: None
Storage: 2x144K floppy, optional 2x241K 8 inch floppy
Interfaces: RS232, Parallel, IEEE488
Languages: Basic, optional Fortran, Algol, Logo
Operating system: CP/M
Software included: None
Software availability: Good
Guide price: £1900

SANYO MBC 1250

A smart CP/M system, around the middle of Sanyo's large range. It offers customary CP/M facilities with the added bonus of a high disk capacity and high resolution graphics.

CPU: Z80, 4MHz
Ram: 64K
Rom: 12K
Keyboard: Full, 79 keys
Display type: Built in 12 inch monitor
Display ability: 80x32 text, 640x400 graphics
Sound: Beeper
Storage: 2x640K floppy
Interfaces: RS232, Centronics
Languages: Basic, optional most
Operating systems: CP/M
Software included: None
Software availability: Very good
Guide price: £2000

SHELTON SIGNET 1002

A British built business system that at first sight appears to be an ordinary CP/M system. But Shelton has developed its own unique method of networking/multi user use by adding units, giving each user their own 64K Ram. So the Signet is a good way to start small and built up a big office installation.

CPU: Z80, 4MHz
Ram: 64K
Rom: 2K
Keyboard: Full, 103 keys
Display type: Monitor, monochrome
Display ability: 80x25 text
Sound: Beeper
Storage: 2x200K floppy, optional 2x800K floppy, 20Mb hard
Interfaces: RS232, Centronics
Languages: Optional most
Operating system: CP/M
Software included: None
Software availability: Very good
Special features: Unique easy way to expand to multi-user system
Guide price: £1600
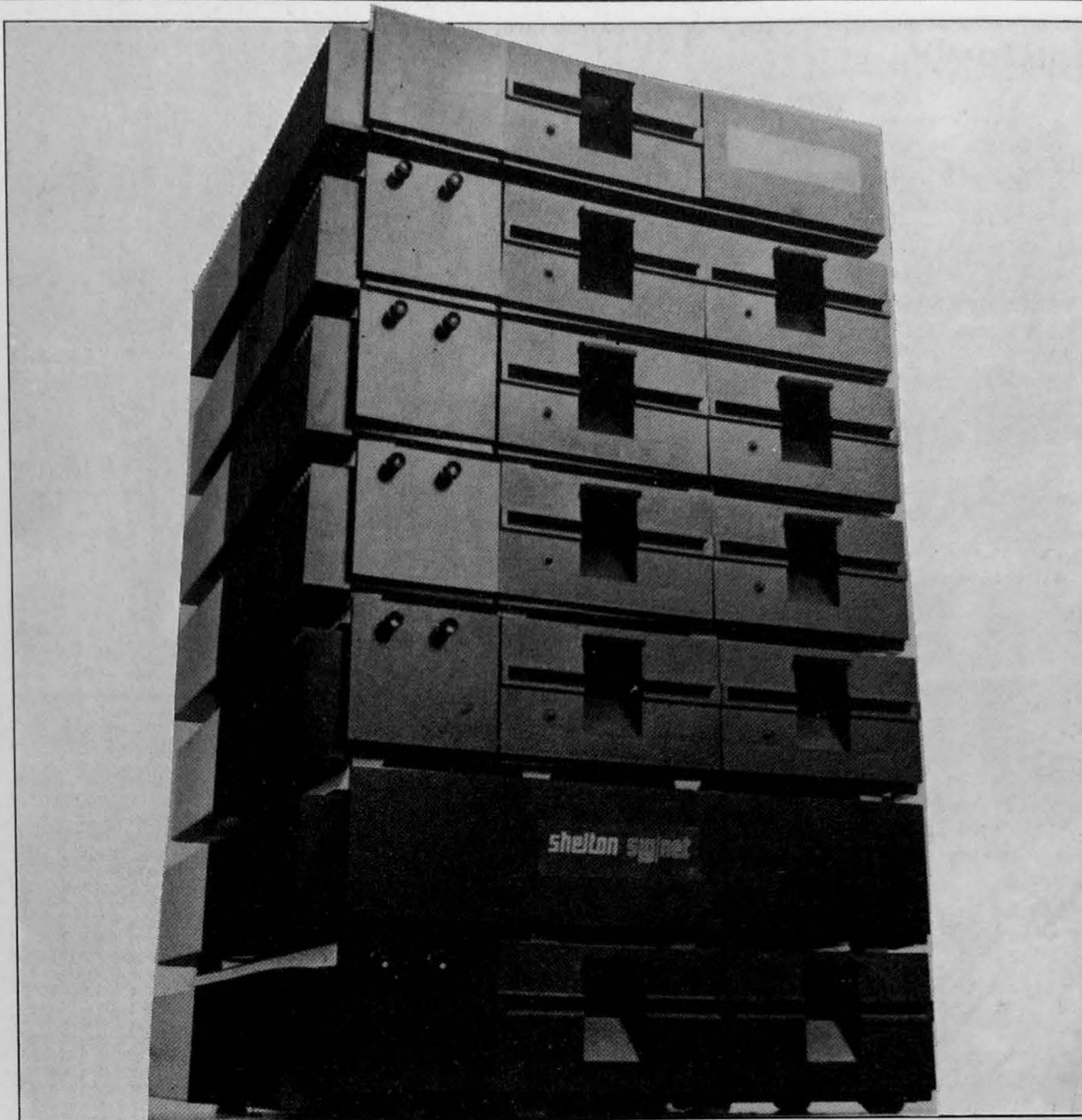
SORD M23P

A diminutive portable business system. The M23P was one of the first machines to use Sony 3.5 inch microfloppies for storage and also one of the first to have a workable LCD screen for use away from a monitor. The M23P's LCD option costs £500 but provides an 80 character by 8 line display.

The M23P also offers colour high resolution graphics and comes with Pips, Sord's unique general purpose easy to use programming tool. Besides Sord's own operating system, you can buy SB80 which will run standard CP/M programs.

For many people, the light weight (18lbs) and the benefits of Pips will be a good reason to spend that little bit more than the price of an Osborne.

CPU: Z80, 4MHz
Ram: 128K
Rom: 4K
Keyboard: Full, 94 keys
Display type: Sord Monitor or built in LCD screen
Display ability: 80x25 (or 80x8) text, up to 640x200 graphics, 8 colours
Sound: Beeper
Storage: 2x290K Sony microfloppy
Interfaces: 2xRS232, Centronics, 2xS100 expansion slots
Languages: Pips, Basic
Operating system: Sord O/S optional SB80
Software included: Pips
Software availability: Fair
Special features: Portable unit weighs 18lbs
Guide price: £1800

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SUPERBRAIN II

The archetypal CP/M business machine. The Superbrain is a standard CP/M micro in a durable but heavy one box design. Despite its notorious reputation for unreliability, the Superbrain is still a tremendously successful small business machine.

The latest version, the Superbrain II, also includes high resolution graphics.

Thousands of systems are in use and the Superbrain would be a good buy that will last for years to come.

CPU: Z80, 4MHz
Ram: 64K
Rom: 2K
Keyboard: Full, 80 keys
Display type: Built in 12 inch monitor
Display ability: 80x25 text, 560x240 graphics
Sound: Beeper
Storage: 2x160K floppy, optional disks up to 2x750K floppy, 20Mb hard

Interfaces: 2xRS232
Languages: Basic, optional most
Operating system: CP/M
Software included: None
Software availability: Very good
Guide price: £2000

TANDY TRS80 MODEL II

Tandy's first move upmarket into the business area. The Model II now looks distinctly dated, with its single 8 inch floppy disk drive. But with both CP/M and Tandy's own TRSDOS on hand, it could cope with many small applications. There are plenty of units around from the days when it was modern and you may meet the system being kept on because that 8 inch drive is handy to have for swapping disks with larger machines.

CPU: Z80, 4MHz
Ram: 64-256K
Rom: 3K
Keyboard: Full, 72 keys
Display type: Built in 12 inch monitor, monochrome
Display ability: 80x24 text
Sound: None
Storage: 1x500K 8 inch floppy, up to 4x800K 8 inch floppy, 4x5Mb hard
Interfaces: Centronics, RS232, Expansion port
Languages: Basic, optional most
Operating system: TRSDOS, optional CP/M
Software included: None
Software availability: Very good
Special featurs: Second processor port
Guide price: £2000

BEST BUY

TELEVIDEO TS800 SERIES

The bottom end of the Televideo range of stand alone microcomputers. The 800 series is based on the Z80, 64K Ram and CP/M operating system and offers twin 500K disks and high resolution graphics as standard.

Televideo equipment is highly regarded and often used within the industry itself as well as being one of the better business systems. The range is compatible so that the user can upgrade the system as needs be rather than throwing away old equipment. Ultimately, Televideo machines can be networked using Televideo's own MmmOST system.

CPU: Z80, 4MHz
Ram: 64K
Rom: 4K
Keyboard: Full, 75 keys
Display type: Built in 12 inch monitor
Display ability: 80x24 text, 512x256 graphics
Sound: None
Storage: 2x500K floppy

Interfaces: 2xRS232, serial port
Languages: Optional most
Operating system: CP/M
Software included: None
Software availability: Very good
Special features: Can be expanded into MmmOST network
Guide price: £1850

TRANSAM TUSCAN

A British business system that offers the unusual distinction of starting life as a low cost kit. The Tuscan can be built up to or bought as a well specified CP/M system, useful for many small business applications. The ability to read and write to different disk formats has made the system popular with software houses and could be of use within a large company.

CPU: Z80, 4MHz
Ram: 64K
Rom: 4K
Keyboard: Full, 71 keys
Display type: 12 inch monitor supplied
Display ability: 80x24 text
Sound: None
Storage: Choice of 5.25 inch or 8 inch disk systems
Interfaces: 2xRS232, Centronics, S100 expansion bus
Languages: Optional most
Operating system: CP/M
Software included: None
Software availability: Very good
Special features: Can be bought as a kit and built up into business system
Guide price: £1725

TRANSTEC BC2

A well built and reliable business system that is sold complete with relevant software. The Transtec comes as part of a package for accounting or word processing applications. Underneath, it's a CP/M system that can be supplied as either a twin floppy or hard disk machine. For companies that need a computer application installed with the minimum of fuss and even for those with previous computer experience, the Transtec is not only a good choice but excellent value for money.

CPU: Z80, 4MHz
Ram: 4-256K
Rom: 2K
Keyboard: Full, 93 keys
Display type: Built in 12 inch monitor, monochrome
Display ability: 80x24 text
Sound: Optional sound generator
Storage: 2x388K floppy, optional 5Mb hard disk
Interfaces: Serial, Parallel
Languages: Optional most
Operating system: CP/M
Software included: Sold with applications software for accounting, stock control or word processing
Software availability: Very good
Guide price: £1604

Price range under £200

Model	Price	CPU	Ram	Keyboard type	TV output	Monitor	Colours	Text format	Graphics resolution	Cassette recorder	Disk capacity	RS232	Centronics	Joysticks	Expansion port	Other	Language included	Operating system	Distributor
Acorn Atom	£170	6502	2-40K	F	*	0	0	32x16	256x192	0	100K	–	–	–	*	–	Basic	Acorn	Acorn Computers
Acorn Electron	£199	6502	32K	F	*	0	8	40x24	256x160	0	–	–	–	–	*	–	Basic	Acorn	Acorn Computers
Atari 400	£150	6502	16K	T	*	–	256	40x24	320x192	0	88K	0	0	4	*	*	Basic	Atari	Atari
Commodore Vic 20	£140	6502	5-29K	F	*	0	8	22x23	176x158	*	170K	–	–	1	*	*	Basic	Commodore	Commodore
Dragon 32	£175	6809	32-64K	F	*	0	8	32x16	256x192	0	–	–	*	2	*	–	Basic	Dragon	Dragon Data
Jupiter Ace	£90	Z80	3-51K	C	*	–	–	32x24	64x48	0	–	–	–	–	*	–	Forth	Jupiter	Jupiter Cantab
Oric 1	£100	6502	16-48K	C	*	0	8	40x28	240x200	0	–	–	*	–	*	–	Basic	Oric	Oric Products
Sinclair ZX81	£40	Z80	1-16K	T	*	–	–	32x24	64x48	0	–	–	–	–	*	–	Basic	Sinclair	Sinclair
Sinclair ZX-Spectrum	£100	Z80	16-48K	C	*	–	8	32x16	256x192	0	–	–	–	–	*	–	Basic	Sinclair	Sinclair
Sord M5	£196	Z80	4-16K	C	*	0	32	40x24	256x192	0	–	–	*	2	*	–	Basic	Sord	Sord
Tandy TRS-80 MC-10	£100	6803	4K	C	*	–	9	32x16	64x32	0	–	0	–	–	*	–	Basic	Tandy	Tandy
Tandy TRS80 model 1	£200	Z80	4-32K	F	*	0	–	64x16	64x32	0	87K	0	0	–	*	–	Basic	TRSDOS	Tandy
Texas Ti99/4A	£150	TMS9900	16-48K	F	*	0	16	32x24	256x192	0	90K	0	0	1	*	*	Basic	Texas	Texas
Texas TiCC40	£150	TMS9900	4-16K	C	0	0	–	20x4	–	0	–	–	–	–	*	–	Basic	Texas	Texas

Price range £200-£500

Model	Price	CPU	Ram	Keyboard type	TV output	Monitor	Colours	Text format	Graphics resolution	Cassette recorder	Disk capacity	RS232	Centronics	Joysticks	Expansion port	Other	Language included	Operating system	Distributor
Advance 86a	£400	8086	128-512K	F	0	0	–	80x25	640x200	0	320K	–	*	–	*	–	Basic	MSDOS	Advance Products
Atari 800	£300	6502	48K	F	0	0	256	40x24	320x192	0	88K	0	0	4	*	*	Basic	Atari	Atari
BBC Micro	£300	6502	16-32K	F	0	0	8	80x25	640x256	0	100K	*	*	*	*	*	Basic	Acorn	Acorn Computers
Camputers Lynx	£224	Z80	48-192K	F	0	0	8	40x24	256x248	0	–	–	0	–	*	*	Basic	Camputers	Camputers
Colour Genie	£200	Z80	16-32K	F	0	0	8	40x24	320x192	0	–	–	–	–	*	–	Basic	Genie	Lowe Electronics
Commodore 64	£300	6510	64K	F	0	0	16	40x25	320x200	0	150K	–	–	2	*	*	Basic	Commodore	Commodore
Genie I	£330	Z80	16-48K	F	0	0	–	64x16	128x48	*	87K	0	0	–	*	–	Basic	TRSDOS	Lowe Electronics
Genie II	£300	Z80	16-48K	F	0	0	–	64x16	128x48	0	87K	0	0	–	*	–	Basic	TRSDOS	Lowe Electronics
Multitech MPF II	£269	6502	64K	C	0	0	6	40x25	280x192	0	140K	–	–	–	*	*	Basic	Multitech	Sirtel
Nascom 2	£330	Z80	2-48K	F	0	0	0	40x25	0	0	320K	–	–	–	*	–	Basic	Nasdos	Lucas Logic
Newbrain	£220	Z80	32K	C	0	0	–	80x24	640x220	0	–	*	–	–	*	–	Basic	Newbrain	Grundy
Powertran Cortex	£340	TMS9900	64K	F	0	0	16	40x24	256x192	0	100K	0	–	–	*	–	Basic	MDEX	Powertran
Tandy Color Computer	£240	6809	16-32K	C	0	0	8	32x16	256x192	0	156K	*	–	2	*	–	Basic	Tandy	Tandy

KEY TO SYMBOLS 0 optional/included/not available/T flat keyboard/C calculator keyboard/F full keyboard

Price range £500-£1000

Model	Price	CPU	Ram	Keyboard type	Display TV output	Monitor	Colours	Text format	Graphics resolution	Storage Cassette recorder	Disk capacity	Interfaces RS232	Centronics	Joysticks	Expansion port	Other	Language included	Operating system	Distributor
Advance 86b	£1000	8086	128-256K	F	*	0	—	80x25	640x200	0	320K	*	*	—	*	*	Basic	MSDOS	Advance
Apple IIe	£980	6502	64-128K	F	*	0	16	40x24	280x192	0	140K	0	0	1	*	—	Basic	Apple	Apple
Basis 108	£995	6502	64-128K	F	*	0	0	80x24	280x192	—	140K	0	0	1	*	—	Basic	Apple	Community Computers
CBM 500 series	£800	6509	128-896K	F	*	0	16	40x25	320x300	0	150K	*	0	1	*	*	Basic	Com-modore	Commodore
CBM 4000 series	£635	6502	16-32K	F	—	*	—	40x24		0	150K	—	—	—	*	*	Basic	PetDOS	Commodore
CBM 8000 series	£995	6502	32-96K	F	—	*	—	80x24	—	0	150K	—	—	—	*	*	Basic	PetDOS	Commodore
Dai PC	£684	8080	48K	F	*	0	16	60x24	260x352	0	80K	*	—	1	*	*	Basic	Dai	Dai
Epson HX20	£560	6301	16-32K	F	0	0	—	20x4	120x32	0	—	*	—	—	*	*	Basic	Epson	Epson
Exidy Sorcerer	£910	Z80	48K	F	*	0	—	64x30	512x240	0	750K	*	*	*	*	—	Basic	CP/M	EMG microcentres
Fujitsu FM8	£1000	6809	64K	F	*	0	8	80x25	640x200	0	320K	*	*	*	*	—	Basic	Flex	Stirling Micros
HP75C	£730	HP	16-24K	C	0	0	—	32x1	—	0	—	—	—	—	*	—	Basic	HP O/S	Hewlett Packard
Luxor ABC80	£690	Z80	16-48K	F	—	*	—	40x24	80x72	—	380K	—	—	—	*	—	Basic	Luxor OS	Datamark
Nascom 3	£630	Z80	48K	F	—	*	0	48x16	96x48	0	320K	—	—	—	*	*	Basic	Nasdos	Lucas Logic
Pied Piper 1	£1000	Z80	64K	F	*	0	—	80x25	—	—	780K	*	*	—	—	—	0	CP/M	Semitech Corp
RML 480Z	£685	Z80	64K	F	*	0	8	80x25	640x192	0	144K	*	*	—	*	*	Basic	CP/M	Research Machines
Sharp MZ80A	£550	Z80	64K	F	—	*	—	40x25	—	*	280K	0	—	—	*	*	Basic	FDOS	Sharp
Tandy TRS80 model 3	£600	Z80	16-48K	F	—	*	—	64x16	128x48	0	187K	*	*	—	*	—	Basic	TRSDOS	Tandy
Tandy TRS80 model 100	£500	Z80	64K	F	—	—	—	40x8	—	0	—	*	—	—	*	—	Basic	Tandy	Tandy

Price range £1000-£1500

Model	Price	CPU	Ram	Keyboard type	Display TV output	Monitor	Colours	Text format	Graphics resolution	Storage Cassette recorder	Disk capacity	Interfaces RS232	Centronics	Joysticks	Expansion port	Other	Language included	Operating system	Distributor
CBM 700 series	£1375	6509	128-896K	F	—	*	—	80x25	512x512	0	340K	*	—	1	*	*	Basic	Com-modore	Commodore
Cromemco C10	£1350	Z80	64K	F	—	*	—	80x25	—	—	380K	*	*	—	—	—	Basic	CDOS	Comart
HP86	£1440	HP	64-512K	F	—	*	—	80x24	544x240	—	270K	*	*	—	*	—	Basic	HP O/S	Hewlett Packard
Microdecision	£1145	Z80	64K	F	—	*	—	80x24	—	—	200K	*	—	—	—	—	Basic	CP/M	Interam
Osborne 1	£1440	Z80	64K	F	—	*	—	52x24	—	—	184K	*	—	—	*	*	Basic	CP/M	Osborne
Sanyo MBC1000	£1375	Z80	64K	F	—	*	—	80x25	—	—	320K	*	*	—	—	—	Basic	CP/M	Logitek
Sharp MZ80B	£1034	Z80	64K	C	—	*	—	80x25	520x200	—	280K	0	*	—	*	—	Basic	FDOS	Sharp

Price range £1500-£2000

Model	Price	CPU	Ram	Keyboard type	Display					Storage		Interfaces					Language included	Operating system	Distributor
					TV output	Monitor	Colours	Text format	Graphics resolution	Cassette recorder	Disk capacity	RS232	Centronics	Joysticks	Expansion port	Other			
British Micro Mimi 803	£1550	Z80	64K	F	–	0	–	80x25	512x256	–	320K	*	*	–	–	*	0	OS/M	British Micro
Corona PC	£1800	8088	128-512K	F	0	*	–	80x25	640x325	–	320K	*	*	–	*	–	Basic	MSDOS	Corona Data
Corona PPC	£1900	8088	128-512K	F	0	*	–	80x25	640x325	–	320K	*	*	–	*	–	Basic	MSDOS	Corona Data
C/WP Cortex	£1700	Z80	64K	F	–	*	–	80x25	640x200	–	400K	*	*	–	–	–	Basic	CP/M	C/WP
Epson QX10	£1750	Z80	64-192K	F	–	*	–	80x25	600x400	–	350K	*	*	–	*	–	Basic	CP/M	Epson
Future Computers FX20	£2000	8088	128K-1Mb	F	–	*	–	80x25	0	–	800K	*	*	–	*	–	Basic	CP/M86	Encotel
Gemini Galaxy II	£1650	Z80	64-192K	F	–	*	–	80x25	160x75	–	400K	*	*	–	*	*	Comal	CP/M	Gemini
Genie III	£1900	Z80	64K	F	–	*	–	80x25	160x72	–	700K	*	–	–	–	*	Basic	CP/M	Lowe Electronics
HP85	£1920	HP	16-32K	F	–	*	–	32x16	256x192	–	270K	–	–	–	*	*	Basic	HP O/S	Hewlett Packard
Kaypro II	£1895	Z80	64K	F	–	*	–	80x24	–	–	200K	*	*	–	–	–	Basic	CP/M	CK Computers
Kenilworth 83	£1900	Z80	64K	F	–	*	–	80x25	160x75	–	750K	*	*	–	–	–	Basic	CP/M	Kenilworth
MicroAPL Signet	£1800	Z80	64K	F	–	0	–	80x25	–	–	200K	*	*	–	–	–	APL	CP/M	MicroAPL
Positron 9000 series	£1800	6809	64-512K	F	–	*	0	80x24	240x240	–	380K	*	–	–	–	*	Basic	OS/9	Positron
RML 380Z	£1900	Z80	32-56K	F	*	0	0	80x24	0	–	144K	*	*	–	*	*	Basic	CP/M	Research Machines
Sanyo MBC1250	£2000	Z80	64K	F	–	*	–	80x32	640x400	–	640K	*	*	–	–	–	Basic	CP/M	Logitek
Shelton Signet	£1600	Z80	64K	F	–	*	–	80x25	–	–	200K	*	*	–	*	–	Basic	CP/M	Anglotech
Sord M23P	£1800	Z80	64K	F	–	0	8	80x25	640x200	–	290K	*	*	–	*	–	Pips	Pips	Sord
Superbrain II	£2000	Z80	64K	F	–	*	–	80x25	560x240	–	160K	*	–	–	–	–	Basic	Cp/M	Icarus
Tandy TRS80 model 2	£2000	Z80	64-256K	F	–	*	–	80x24	–	–	500K	*	*	–	*	–	Basic	TRSDOS	Tandy
Televideo TS800 series	£1850	Z80	64K	F	–	*	–	80x24	512x256	–	500K	*	–	–	*	–	Basic	CP/M	Encotel
Transam Tuscan	£1725	Z80	64K	F	0	0	–	80x24	–	0	0	*	–	–	*	–	Basic	CP/M	Transam
Transtec BC2	£1604	Z80	64-256K	F	–	*	–	80x24	–	–	388K	*	*	–	–	–	0	CP/M	Transtec

KEY TO SYMBOLS 0 optional/included/not available/T flat keyboard/C calculator keyboard/F full keyboard

Applications

Computers are general purpose machines. While some are more suited to certain tasks than others, all but the cheapest micro-computers can play games, file information, calculate your finances and so on. So what do people actually do with their computers?

Games: Playing games is probably the single most popular use for computers. Even if you haven't considered playing computer games, you may find that a computer can be a great deal of fun if you give it a try. What's more, computers are really good at games. They have been playing them from the day they were invented, long before even small companies could dream of owning one. Now that computers cost almost nothing and can use joysticks and imitate arcade displays and sounds, there's a massive arena for the games enthusiast.

A computer is an ideal games partner. In strategy games like Chess and Backgammon, it can provide a willing and able opponent or teacher. In puzzles, the computer can be the master, often providing puzzles that it would be physically impossible to make. Imagine a Rubik's cube with 10 sides! And of course, the computer is a cheap and convenient way of getting your favourite arcade action to your fingertips.

And there are other games that are often too difficult or tedious to organise in the real world. Computers play Adventure, a role playing game similar to the Dungeons and Dragons played by hobbyists. You become the hero in a story that 'lives' as it adapts to your actions. Computers also add a sparkle to Wargaming, removing the need for dice, rulers, plenty of space and so on.

So the message has to be don't dismiss computer games. There really is something there for everyone. And they give you a chance to relax as well as become familiar with the way computers think and work.

Programming: This is the other major use for home computers. You can learn to program using any of the home computers. You don't need a degree or a training course or a teacher. You just sit down and do it. It's a lot easier and a lot more interesting than many people think.

Programming has its uses, other than to teach you about the way computers work. You can create the programs you need, no matter how unusual a job you want doing. If you've got a specialist hobby then it may be the only way to get the program you need. Being able to program also lets you create your own games and pastimes — for you and your friends.

Education: Computers are great educational tools for just the same reasons that they are great games players: Versatility, skill and patience. More and more programs are being sold to turn home computers into teaching machines.

These don't replace teachers or text books. They are a supplement, a bit of light relief from normal school work. But educational programs can be a great deal of fun. If a child is interested in what they are doing, then he or she will learn more.

So, even if you don't want to computerise your child's education, having a home computer around with a handful of educational programs could be a very helpful aid to their education — and yours, say, if you want an exciting way to learn a foreign language.

Home Management: Running your house with a computer tends to be a little bit unpopular. It's perfectly possible to do everything from shopping lists and recipes to budgets and diaries using a small computer. But people rarely do.

Having to sit at the computer and enter all the details of receipts, bills and so on is a bit of a chore. Particularly, if you have to fight to get a go on the computer you bought and that your family plays with.

But if you want to, your average 32K or 48K micro will have the programs available for you to try. And there's no reason why you can't have a go at it.

Business Applications: Small computers are really at home helping out small companies. But there are at least three common applications in use in business that can be a great help in the home. These are word processing, spreadsheet calculations and database management. Or, if you like, typing, calculating and filing.

Wordprocessors turn the computer into an electronic typewriter. You type onto the screen rather than onto paper. So you can make changes, move paragraphs around and so on. When the letter or document is ready, you just print it off on a printer. The wordprocessor will format it nicely, so that you've got numbered pages with titles and neatly aligned margins.

The top wordprocessors, such as Wordstar and Spellbinder also offer numerous other advantages. You can print 'Dear blank' letters or sort lists. You can buy add-on programs that check spellings and even style for you.

Wordprocessors are quick and easy. Even for non-typists. So, if you write letters, reports, articles or almost anything, you may find a wordprocessor is just what you've always wanted.

Spreadsheets are a little more complicated to explain. They are used for doing almost any calculations and are just right for choosing between special offers, HP deals, building societies and banks and practically any other money matter you care to name.

You might find that a spreadsheet will help just as much with home management as a specially written program. They're also great for maths homework and any other number work that gives you problems.

The basic idea is that the computer becomes a huge worksheet, divided into rows and columns. You can put numbers or formulae into any of the boxes on the grid. So you might have a column with all your expenditures in it. Underneath, you put a box which totals up the entire column.

Change one of the numbers in the column and the total is automatically worked out for you. You can go on building up columns, rows and formulae until you have built up a complete 'model' of your problem. Then you just fiddle about with the numbers and the computer puts in the hard work of working out the results for you. Instantly.

Using the computer as an electronic filing cabinet or database system is an immensely popular and rewarding use. Computers take the drudgery out of filing. They can sort and search items, and print them out in a neat way as and when you need them.

Programs vary from very sophisticated but awkward to use to simple systems that imitate normal cardboxes. So you can always find a program just right for your needs.

You name it! These are just some of the things people use computers for. You may want a computer to do just one or all of these jobs. Or you might want it for something completely different.

Remember, everyone of these applications was invented at some time by someone. If you've got something no-one has ever thought of, get a computer and do it — that's what they're there for!
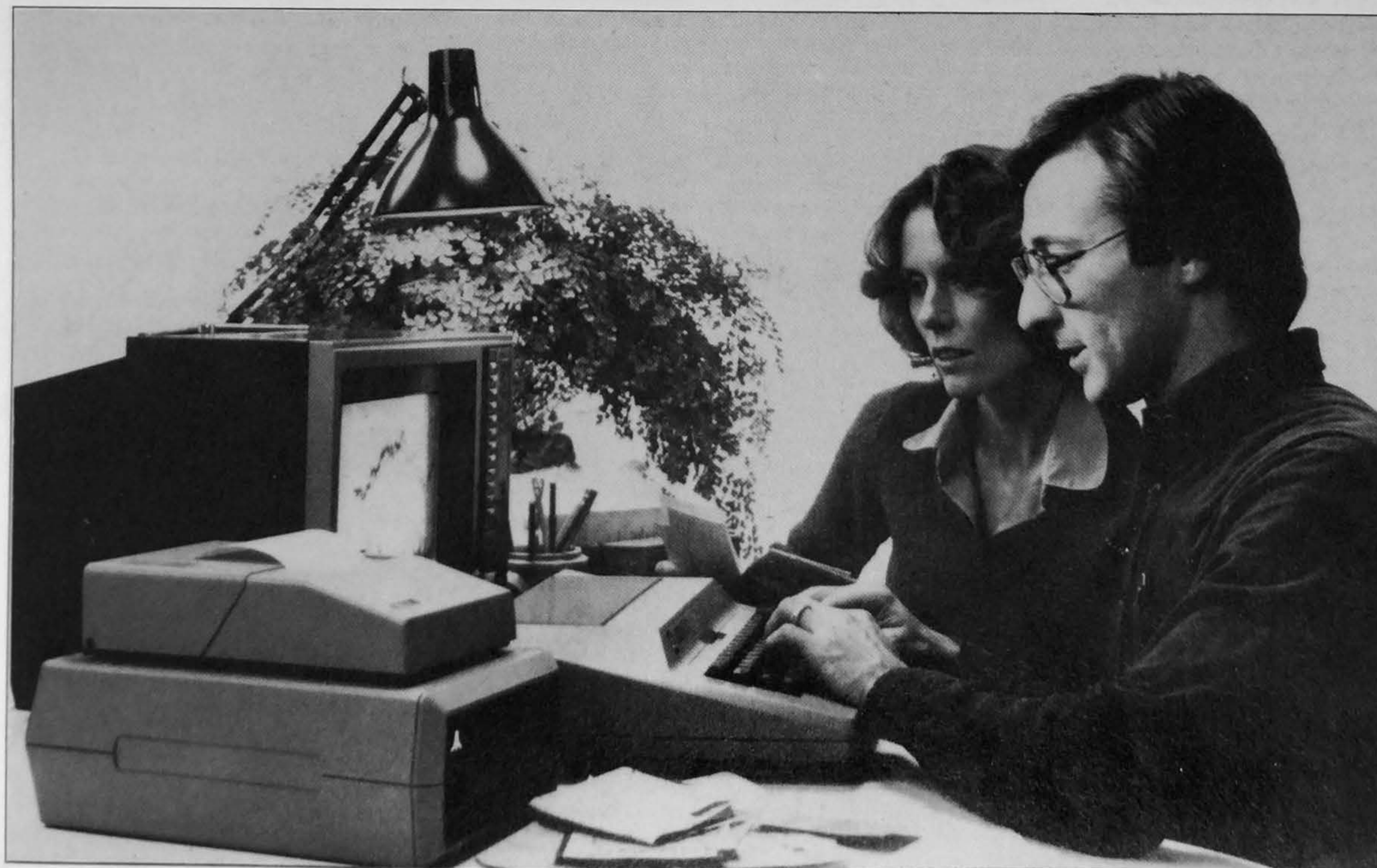
Add ons: Any equipment that can be connected to a computer system. These might be expensive items such as printers and disk drives or simple things such as more memory or joysticks.

Application: The particular job or task you want a computer to do. It might be calculating your budgets, typing a letter or just playing a game of space invaders.

Basic: The most popular computer language. Most people use Basic to write their own programs. It's reasonably powerful and it's very easy to learn.

Just like a real language, Basic has dialects, suited for particular machines. So you'll hear of different versions of Basic, such as BBC Basic, MBasic, CBasic and so on. These are essentially the same language but with slight differences.

Bit: The smallest amount of information a computer can understand. A bit can be either 0 or 1 (if you like that's 'on' and 'off' or 'yes' and 'no' and so on). Bits are grouped together to form bigger numbers. 8-bit computers are based on information split up into 8 bit chunks. The more powerful 16-bit machines can move groups of 16 bits around at once.

Bug: A mistake in a computer program or a fault in its hardware. Bugs are problems that need to be solved . . . a process known as debugging!

Bus: A pathway used to connect the various bits of a computer system. Computers with a standard bus, such as S100, IBM PC or Apple, can use the same add ons.

Centronics: A common way of connecting printers to computers. Centronics is actually a printer manufacturer but its method has been adopted by many different companies.

Character: A letter, digit or symbol such as "£$%&' and even a space. Computers also use special invisible 'control characters' that have special meanings to the computer such as 'forget this command' or 'stop what you're doing' and so on.

Columns: The number of letters and symbols that can be shown across a screen or printed across a printer. Many home computers have only 40 or 32 column displays. Business machines tend to have 80 column screens so that more information can be seen at once.

Compatible: When one piece of software or hardware will work with another. Add ons and programs have to be compatible with your particular machine if they are going to work together.

Configuration: The particular bits and pieces in a computer set up. What add ons you have, which programs you use and so on.

Controller: A computer that is used to control some other equipment. It could be your central heating and lights. Or a lab experiment, stage lighting and so on. The computer's ability to look at what the equipment is doing and make adjustments to it if needs be is a very useful way of making automatic equipment.

CP/M: The most common operating system on micro-computers. Any micro which uses CP/M can use any of the huge range of CP/M software available on the market.

CPU: The brain at the centre of a computer. On small computers, it is nearly always a micro-processor . . . hence the name Microcomputer.

Disk drive: A device for storing and retrieving information from a disk.

Floppy disk: A flexible disk in a cardboard jacket, used for storing programs and information on a micro.

Graphics: Detailed drawing and pictures presented on a computer screen or on a plotter. Graphics are great for both games, and business jobs such as producing piecharts and histograms.

High resolution graphics can show more detailed pictures than more limited low resolution graphics. They are essential for games such as Space Invaders and Pacman.

Hard disk: An expensive rigid disk used for storing information and programs on a computer. Hard disks are usually fixed in their drives. But they are more reliable, faster and have more storage space than floppy disks.

Hardware: The physical equipment in a computer system . . . anything you can touch or hold . . . such as the computer, its screen, keyboard, printer and so on.

Input: Information that is fed into the computer to help it do its job. Most input is through ordinary typewriter-like keyboards but you can use lightpens, joysticks and many others.

Joystick: An add on just like the joystick control in an airplane. You can move the lever in any direction and there's usually a 'fire' button as well. Joysticks are used mostly for games but they're also useful in drawing and design programs.

K or Kilobytes: The unit in which computer memory is measured. 1K is about 1000 characters. So a 100K floppy disk holds around 20 typed sheets of A4. Games computers tend to have from 16K to 48K of memory and business systems rarely have less than 64K.

LCD: A liquid crystal display as used in calculators and digital watches. Some portable computers use LCDs instead of TV screens.

Language: A special language invented for writing programs for a computer. Most users rely on the easy-to-learn Basic language (see *Basic*) but there's a whole range to choose from. Different languages do different jobs. Some of the names you'll meet are Forth, Pascal, Cobol, Fortran and 'C'.

Light pen: A pen shaped pointer that can be used to choose things from a computer screen just by pointing at them. Great for programs that create pictures or help design things.

Machine code: The complex electronic instructions that a computer can understand and execute. You can write programs in machine code but it is a slow and difficult process. It's much easier to use a computer language which is then automatically translated to machine code for you.

Memory: The place where the computer remembers the information and programs it is working on. Memory is measured in so many thousands of characters or K.

There are two types of memory . . . main memory is built into the computer and consists of Ram and Rom. External memory is a permanent store used to keep information while it's not actually being used. This could be ordinary cassette tape or perhaps floppy disks.

Microprocessor: A particular type of chip that forms the CPU at the heart of a computer. The Microprocessor is the actual brain of a microcomputer.

Modem: A device used to connect a computer to a telephone so that it can 'talk' to other computers many miles away.

Monitor: A screen like a TV that's specially designed for use with a computer. Monitors are expensive but they do give a high quality picture.

Multi-user: A computer that can be used by more than one person at once. Useful in business or perhaps in a school or college.

Network: A series of computers connected together. Networks allow the computers to talk to each other and to share expensive add ons such as printers and disk drives.

Operating system: The program in charge of running a computer. On most home machines, the operating system or OS is invisible . . . it's just a part of the Basic language. On disk machines, the OS is a major program that looks after the computer and helps the programs that run on it (see *CP/M*).

Output: The opposite of Input! Any information coming out of a computer. This could be results typed on a printer or pictures on a screen. Even music through the computer's speaker.

Package: A complete 'kit' for doing a particular job. A package might include hardware . . . even a whole computer or it could just be a set of programs.

PEEK and POKE: These are common instructions in the Basic language to look at and directly alter the computer's memory. They are very useful for hundreds of different jobs but they can be quite hard to use.

Peripherals: See Add ons.

Printer: A device for typing out information from a computer onto paper.

Program: A series of instructions that tell a computer how to do a particular job such as play a game or file your recipes. Computers can't understand any old instructions . . . programs must be written in a computer language.

Ram: Memory used for storing your programs and data while the computer works on them. Ram is only temporary . . . it forgets what's in it when you switch the computer off.

Rom: A permanent memory used to store the information a computer needs whenever it is switched on. You can't change Rom, its contents are fixed by the manufacturer.

Several computers let you plug in cartridges with pre-written

games on them. The cartridges simply contain some Rom with the programs permanently stored on them.

Run: To use a program.

RS232: A common way of attaching add ons such as Modems and printers to computers.

Software: The programs used on a computer.

Spreadsheet: A particular application. A spreadsheet program makes it easy to work out budgets or investigate the advantage of one special offer, HP deal or building society over another.

Utilities: Short programs useful for 'housekeeping' in a computer system. They do such jobs as copying disks or individual programs or setting up a printer to type in a bold typeface and so on.

Wordprocessor: The computerised equivalent of a typewriter. A wordprocessor lets you type onto the screen and correct your text before printing it out. So you can do everything from sorted lists, Dear Blank letters, projects and reports all with the minimum of typing.
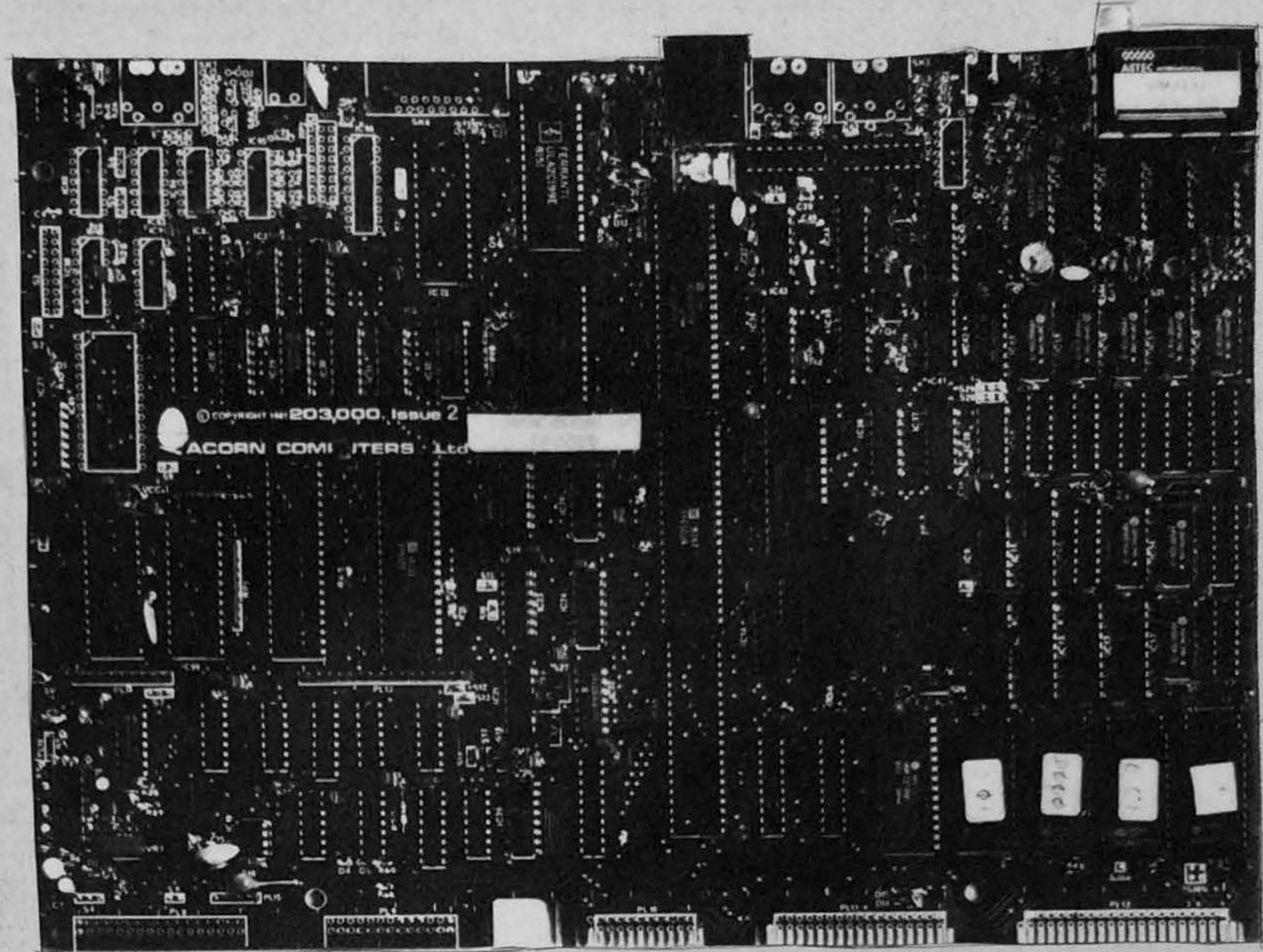
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