BYTE BACK

"ByteBack"

ISSUE 4 • 1993

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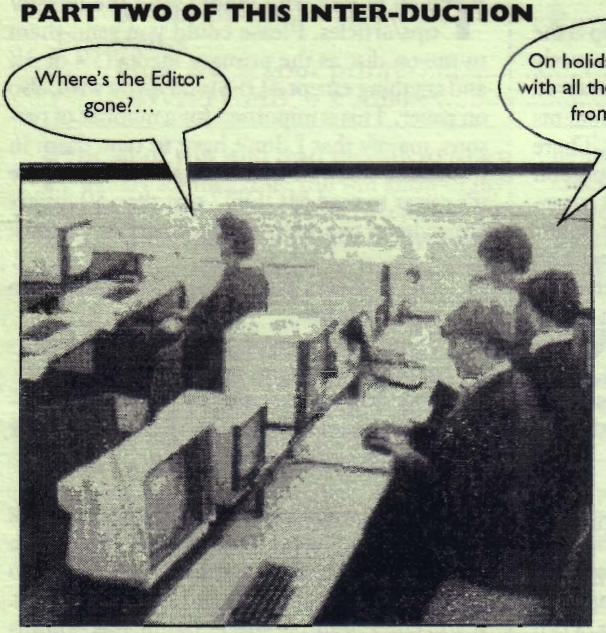
CHEAP PRINTERS

PART ONE OF A RUNDOWN ON USING PRINTERS WITH THE BEEB

INTER-BASE

PART TWO OF THIS INTER-DUCTION



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JOIN US, AS OUR TEAM OF INTREPID, OVERPAID AND UNDER QUALIFIED (AND UNDERAGED) STAFF WORK TIRELESSLY, DAY IN AND DAY OUT, TO BRING YOU THIS TOTALLY IMPARTIAL VIEW OF THE BBC FROM ISSUE TO ISSUE, EVERY WORD LOVINGLY FASHIONED TO THE HIGHEST BRITISH STANDARDS OF EXCELLENCE AND PRESENTED HERE WITH LOVE AND CARE - SIMPLY FOR YOUR ENJOYMENT...

A DIFFERENT WAY OF LOOKING AT YOUR BBC MICRO

editorial

Welcome to Issue Four of ByteBack – we're still here! Some of you may have noticed the subtle addition of a colour cover on Issue Three: what did you think? Is it better than having a white cover? To stop you getting too bored, I have selected another colour, "...from the 'pretty pastels' range..." for Issue Four. A game of your choice (from the wide range I have available) is yours if you can guess the colour I have chosen for 'Christmas' Issue Five...

A couple of changes for this issue. First up is the increase in size of 'Your Letters'. This is partly because of the number of letters I have received and partly because I think that your comments are the most important part of ByteBack. There are still books around that give information on the BBC Computer, but it's the fact that something like ByteBack offers the chance for different BBC users to communicate and interact with each other that makes the difference. This magazine will never be the definitive guide to the BBC and it won't offer all the answers or document all the machine code routines, etc. What it will hopefuly do is channel your enquiries/problems/solutions/tips/points-of-view for others to get involved with and make use of.

Secondly, the introduction of a 'competition' (Oooh!) This one is for all of you who have little to no knowledge of the BBC and have just learned how to switch it on, after picking it up at your local car-boot for next to nothing. Turn to page 14 for details.

Also, as promised, this issue includes an article (part 1) on printers for use with the Beeb, and the second part of the INTER-BASE tutorial. If you've been following it from Issue Two, you should now have an insight into the "why's and wherefore's." The "where's" and "how's to get's" are also provided for you to discover it for youself. Just in case you are wondering why every article seems to be in parts, it's not to get you to buy the next issue (perish the thought ever crossing my mind...), it's because this magazine is only little and can only accomodate little articles. For the bigger, more meaty articles I have to spread them out a little. The alternative is something like, "ByteBack Issue Five: the guide to printers", "ByteBack Issue Six: Your Letters". You understand I'm sure. Watch this space for possible changes to this 'problem'.

To all of you who kindly send me letters/tips/articles. Please could you send them to me on disc as the primary media (5¼ or 3½ and anything except ADFS) and if you wish, also on paper. This is important for a number of reasons, mainly that I don't have to type them in to include them in ByteBack and also because it's easier to read MODE 7 text than 50 different styles of handwriting! summary of reasons:

1) You'll always have a copy for yourself to refer back to;
2) I don't have to type the text into the computer for inclusion in ByteBack;
3) It eleviates the occasionaly problem of reading handwritten type (and I *know* you think ***yours*** is perfectly legible!).

In addition, when you format the text to look nice on screen before you save it to disc, please bear in mind the fact that I normally have to alter such things as TABs and spacing anyway. If you enter multiple spaces to line up columns of text or figures, they have to be removed and replaced by a single TAB when put into ByteBack. The emphasis, then, is on the actual words and content of the article, not the layout of it. The less complicated the layout, the easier my job is when it comes to formatting it for ByteBack. So, please avoid the use of additional characters other than TABs and please don't use TAB TAB TAB TAB... to get a column where you want it - one TAB only per column please!

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For all of you who read the Micro Mart weekly ads magazine you will know of my 'standing order' ad that I have been keeping in each issue, notifying people of ByteBack. Indeed, most of you heard of ByteBack this way! Well, the last couple of ads I sent were not included, even though they always seem to have enough space and often repeat ads to fill it. This morning (Sat 23rd October) I received a letter from MicroMart office, advising me that they would no longer print an advert for ByteBack, on the grounds that, **a)** It is a commercial venture (Er...I don't think i'll be packing up my day job in the near future to live on the abundance that ByteBack is apparantly creating I can assure you!) and **b)** because it is "offers of services to our readers". Well, silly me, I thought that was what MicroMart was for, but who am I to comment? Anyone wishing to query the purpose of MicroMart can write to *Alan Baker-Jones, Private Advertising, MicroMart, 24 Richmond Road, Solihull, West Midlands B92 7RP.* I would be interested to hear from anyone who decides to take this matter further! This will obviously alter the way that I now promote ByteBack (ie, I'll have to find an alternative outlet)...

CIRCULATION

This issue's subscription stands at 35. Thank you to everyone who has taken the time to write and to all of you who have sent articles/discs/ideas, this magazine is dedicated to every one of you!

On the 28th October, I attended the Acorn World 93 show at the Wembley Conference Centre, for the simple reason that BEEBUG had a stand there. In the light of the magazine's iminent demise in April next year, they have made it known that they are willing to support any other amateur group that is set up to support the BBC after they have gone. I visited their stand with this thought in mind and a dozen issues of ByteBack under my arm, to see if I could 'wangle' a little extra promotion through their pages. Speaking to a gentleman on the RISC USER counter, he said he would see if he could get ByteBack a mention in a forthcoming issue of BEEBUG, and advised me that it may possibly be continuing beyond April 1994, under the steam of another collection of enthusiastic folk. More on this story as it happens...

Paul

This is Vintage BBC...

news

Extracts from the April 1983 BBC Micro User

DR MUSIC LIKES MICRO

Star of the BBC TV series, "Make the most of your Micro", has undoubtedly been fuzzy-haired Dr David Ellis, one of Britain's foremost exponents of computer music. Last month he was seen giving a virtuoso performance as he demonstrated some of the musical capabilities of the BBC Micro to presenter Ian McNaught-Davis (seen with him in our picture).

Said David: "I think the BBC Micro has great potential for making music. It could become one of the most cost-effective sound systems available".

MARS BUSINESS SYSTEM FOR Z80

Prospects for the BBC Micro to be considered as a serious business machine have been greatly enhanced by Torch Computer's release of a version of Mars on their BBC Micro Z80 disc system.

Mars - which stands for Management Accounts and Reports System - now available on a wide range of micros, is regarded as one of the best in its field. It is, in fact, only the first of a whole new range of software products now planned by Torch.

Meanwhile Acorn's own business machine is promised for the end of the year. Even so they'll have to move fast as the specification itself is unlikely to be finished until the autum.

COLOUR GALORE

More than four billion different shades of colour can be produced on the BBC Micro, according to software house Gaelsett.

By adding two easy-to-use commands to the BBC's Basic their Extended Colourfill Graphics package gives the micro capabilities only to be found on machines costing many times the price.

The cost of the package is £10.

TYPICAL PRICES FOR APRIL 1983

BBC Model A	£299.99
BBC Model B	£399.99
8271 DFS interface	£95.00
Microvitech Monitor	£249.95
Single Disc Drive (100k)	£230+p&p
80tk Disc Drive (400k)	£345
Wordwise ROM	£35.00

And a years subscription to the BBC Micro User (A4 100 pages) was £10, including postage...

SALES SOAR

Sales of the BBC Micro have broken new records, and the production target has been increased to 12,000 a month in order to meet the ever-increasing demand.

Latest figures released by Acorn show that in February nearly one out of every five customers paid extra to have the Econet fitted.

Most were for the educational market. But a substantial number went to multiple users such as British Telecom, the DHSS and the National Physical Laboratory.

the postbag
your letters

I think the idea of your present ByteBack Format is as good as can be attained without getting too complicated. As far as my particular need is, ie to read direct into Beeb from typed lists of old dodders, (some even older than myself!) an OCR is the optimum but would not just a hand scanner at least read into memory the data such as "Joe Soap" & "owes #xx.xx". Anyway I did put an ad into MicroMart for a Hand Scanner and got zilch response.. Just that I make mistakes and each of 5 Smiths get their Tel Nos. & subscriptions mixed up which takes hours to sort out when it's Audit time. Regards to ByteBack contents, I understand about your tech section thinking, but it's a chicken & egg situation?

Well returning to more mundane things, as you and probably many other present subscribers have lots of old hints & tips mags such as Micro User and Beebug, how can their contents best be utilised for benefit of all ? Not by circulating them probably but by providing extract or at least indexation-cum-bibliography. That way at least people can be made aware that their problem is not unique. Buying computers and other information technology is now a matter of buying a maintenance contract or taking pot luck. It may be possible to attract members who would like to show off their expertise.

As a starter, what about a breakdown of the Beeb circuits which handle startup operations, then one for the disc input/output components. ie an algorithm approach to the "what if this happens", what do I do. As in this area, only one small 2 man firm in Gloucester city. AJL Electronics, 49, Calton Rd. Gloucester (0452 309125) will even look at a faulty Beeb. Considering a replacement power supply is £50+ and in most cases only needs a replacement switched mode regulator at £2 max if one knew how to confirm just what was dud & that needs no more than a cheap multi meter and a diagnostic aid + circuit. It's fine having all the software to use on disc or ROM etc. but nothings of any use if the hardware plays up. The real cost saving is in fault finding down to component level and except for internally dud chips, the old beady eye is the best tool if trained to know what it is seeing.

Terry Heath, Cheltenham, Gloucester.

Hmm... recirculation of material from old magazines. There's the obvious copyright situation with 'lifting' articles straight from their pages, though quite who is around to worry about that now I can't say, yet the © still exists. There is no reason why the subjects and technical details can't be used from these articles, with the copy re-written to suit ByteBack - nobody has the copyright on allowing/disallowing the publication of technical information (except Acorn perhaps but then we are on their side after all...)

I am offering you the job of historian to this happy band of 'Beebites' you have got going. Studying the adverts for Beebs, we hear of Issue 4, Issue 7 and as if it is somewhat super, the BBC+. What happened to Issues 1,2,3,5 and 6? I never seem to see these numbers featured in adverts and to one who has never seen or read of it's specification, what is so superior about the BBC+? What is the hierarchy of the BBC computer? Perhaps I have become interested in the above by the recent acquisition of a BBC issue 4 at a local car boot sale for £7!!! Yes, it does not work. On switching on, the screen features scattered dots and an odd letter or two. At the top left of the screen a hyphen appears; endless tapping of the RETURN key sees this hyphen progress down the screen. On reaching about line 20, the cursor appears and whatever is typed on the keyboard appears on the screen; most function keys work, loop programs can be run, arithmetical problems solved but graphics and a change of Mode don't run and the screen of chaos returns. One returns to tapping the RETURN key and success. I realise it is one of the ROMS, but which? Do I rip Watford's solderless Rom Board out of my Issue 7 and keep swop-

more of your letters

ping bits and pieces around till I solve it or wait till our joint banking account has a bit more money in and I can send it to Slogger for repair; hoping at a later date, on receipt of the Bank statement, my better half will only ruefully smile on seeing the cheque, muttering "Computers, XXXX computers" instead of blowing up. I think we will play around for a while. Talking of Watfords solderless 12 ROM board, despite two letters to Watford offering gold for information, I have not received a reply. I have 8 ROMS in of my choosing and there is a suspicion that SHADOW/SIDEWAYS ram might be lurking there, but when I operate two switches on the rear of the casing, other than I know that a battery is switched, no bells ring or whistles blow. An appeal to all on your mailing list can anyone help with a loan of what documentation is available? Also, while I am sending out an SOS, can any one sell me a tractor feed for an Epson LX80?. I do get fed up of the moment I turn away from this printer, it decides to move the page over gradually, so it winds up printing crossways. Stay and watch it and nothing goes wrong.

Frank Jones, Thirsk, North Yorkshire

No sooner said my friend, than set in motion: starting from a soon-coming issue, a look at the differences between the various models of the BBC that are in existence today, starting from the most humble Model A.

I find ByteBack has great potential, indeed all that is needed now are the subscribers in the broadest sense to come forward. Unfortunately I take and cannot give, either academically or practically. What I do have is a mass of material on disc and a very basic knowledge of some of the popular rom based applications. My knowledge on computer magazines is limited to the fairly well known old timers like Micro User, Acorn User, A&B and Beebug. These were and are essentially money making organisations using advertising as a source of revenue, providing a limited service to the user. Your magazine could provide the interchange of ideas and knowledge that is essential to the average user. We all struggle in the first instance to master a new skill irrespective of our qualifications and for quite a few this struggle continues for a considerable length of time. It would be nice to be able to have queries answered in public as it were, then everyone has the chance to benefit. I will readily agree that some of the stuff is going to be very basic and to a certain extent could be boring to those people who are lucky enough to have either sussed it out for themselves or have friends who explained it to them. My own hangup is using font programs, can anyone explain how these things work? OK, when I use Stop Press this has a font disc dedicated to this package and, that I do understand. The problem comes when using Wordpower, I read somewhere that PMS NTQ fonts will work with Wordpower but it does not work for me. Can anyone help?

F.T Crapper, Stockton-on-Tees

Fonts I don't know but I do know that ByteBack will have to be dealing with the more 'basic' side of the BBC Micro simply because of the number of new users there are in existence (and presently reading ByteBack!) I would beg to disagree that experienced Micro users would find the basics boring: there's always something new to learn and something that has been forgotten...

Thank you for the first copy of ByteBack. I wish you well with the magazine, but I must agree with your correspondent from Cheshire; finding contributors is likely to be a problem. Let me say however, judging by this first issue I think you are giving it every chance of success. I also include a little tip: In writing programs on my Master, I often ended up with a disc containing multiple versions of the same Basic program. A day or two away from the program and I found it difficult to remember which was the latest version. The Master having an internal clock has the potential to date files. I use the following two lines as the last in my Basic programs:

```
1999 $(TOP-26)=TIME$
2000 REM" Mon,13 Sep 1993.10:58:43
```

more of
your letters

Every time the program is run the last line is updated automatically and is saved when the program is saved. The line numbers are not important but these must be the last two lines of the program. If the blank after the quote in line 2000 is Shift-f3, the time will be listed in yellow.

A Donald, Ilford, Essex

Tips I like: please keep them coming. I can't promise fortune but for the few minutes it takes to put pen to paper and the price of a stamp, you could become famous by having your name in print, right here in the pages of ByteBack! And I'll like you even more than I already do.

Keep up the good work with the mag, it is nice to be able to understand some of the articles, although a few go right over my head. I am at a basic level as far as programs are concerned and my typing is not too fast. My setup comprises a BBC B+ that I bought second hand from the education department of the children's home I work at, for £300. An EPSON (S/H) I got for £70 and a STAR LC200. A borrowed disc drive. A £2.50 (NEW!) joystick that needs the musculature of Rambo to operate. As many manuals, mags and articles that I can beg, borrow or obtain by questionable means to teach me how to work what, to , is hi-tech gear but to some of your readers is no more complex than a microwave oven. I like my BBC because it will take the punishment us novices put to it, it will do as I tell it without too much trouble and no need to get on my knees to beg forgiveness if I hit a wrong key, just a nasty bleep followed by a curt reminder that I am an idiot and a message to put me right. Now that is what I call user friendly.

P Wren, Hucknall, Nottingham

J.Hay's comments (BB.iss3-p5) on the lack of a zeroing command on a spreadsheet: I wonder if he remembers the method of replicating a blank slot along a row or column. Better still, put zero, or a dot for each figure in the first slot and replicate that. One tip concerns *BUILDing a !BOOT file (BB.iss3-p12). A boot file is only a text file and I avoid using *BUILD at all by just listing the boot file statements (without line numbers) in VIEW. Simply SAVEd as !BOOT, it works fine. This method makes later revision easier and should also overcome the "Disc Full" message. Readers could try LOADing or READing an existing !BOOT file into their word processor/text editor to see what it looks like.

C Blake, Portsmouth, Hants.

Thank you for your letter. You describe me as being an 'experienced' person: I only wish that when I visit computer shows I could convince the stall holders that I am serious. Because I am 80 years old and "female" they all seem to think that I must have been dragged there by a grandson! Whilst they are willing to talk at length to any male, I have to be really pushy to get any attention. When I was given an Electron about 10 years ago, I never thought that I would become a computer addict! I still think the it was a grand machine for the price. My progress to a Beeb, disc drive, various ROMs and a printer was gradual as I am far from well off but I have never begrudged the money spent. Living on my own, I am able to play numerous board and card games without having to wait for visitors. The computer makes a worthy opponent at Chess, Bridge, Scrabble, etc. If any one out there knows of a good Whist or even Knockout Whist game I should be very glad to hear from them. I enjoy graphics and have had good results with fairly short programs. I have a friend who has a very expensive IBM which of course can achieve much more, but I don't think he gets as much fun out of his machine as I do out of my Beeb, which I think of as my best friend.

D Goatley, Romford, Essex

That's it from you for another issue (SNIFF!) Please keep the letters coming especially leters on disc!)

public domain &
shareware

A disc containing a selection of education programs suited for our younger generation. Disc no. #159

Once again, Alan Blundell of BBC PD has come to the rescue by providing me with a number of discs to review. Unfortunately, I haven't been completely successful with all of them. My problems range from not being able to get a !BOOT file to !boot, to completely erasing side B of one of the discs with the *BACK-UP command (I was trying to copy the contents of side 1, disc 1 to side 1, disc 2 and got completely confused - I've even put large stickers on my drives so I know which one is 0/2 and which one is 1/3, that still didn't help). Anyway, enough of my difficulties, on to a review or two.

The first disc I've chosen is a kiddie's learning disc containing a suite of approximately 32 separate programs as diverse as possible. The programs are in 4 groups of 8, labelled A to D (nothing to do with A-D converters). At the main menu, select which group to enter and the 8 programs of that group are set up to load by pressing a function key f1-f8; nothing fancy in the Menu department.

The programs range from pretty useless to a lot of fun (and I'm talking from my point of view! Goodness knows what [smaller] kiddies will think of it all). You have the challenge of going shopping with money, to getting a farmer, a hen, a dog and a bag of grain across a river (a classic puzzle: if you don't know it, I can't explain it here, but it's a real brain teaser!), to traversing a maze of intersecting "roads", having to make it around the whole maze without having to cross your "footprints" more than once, and a whole lot more. The age-span of the programs is probably from about 6 years to over 25! Some of the programs have different difficulty levels built in, but I was stumped on some of the easiest levels.

Children using this suite of programs will be encouraged to work alone and in groups, to use a dictionary, to spell, to add, to think logically in handling different situations, to just about everything else children need to learn whilst growing up. In fact, I think I'll be revisiting this disc regularly, just to brush up on my own skills!

I don't really have any complaints about this collection of programs as such (how can you really be critical about programs that cost next to nothing?) but I think occasionally the user interface is a little quirky and not completely intuitive, considering small minds will be using it. At other times the interface is superb. Overall I recommend this one: it kept me busy for quite a while and I still haven't checked all of the programs out. BB

Take note...

- *Disc prices are £1.50 for 5¼" discs, and £1.75 for 3½" discs. The price decreases with the more discs ordered.*
- *BBC PD has been established for some time and has a vast range of discs available.*
- *Alan Blundell also writes a column for BEEBUG every month – oddly enough it happens to be the Public Domain column.*
- *The back issues of the BEEBUG discs for volumes 3, 4 and 5, many issues of the – now long gone – monthly disc magazine called Disk User and the bi-monthly, disc-based Fast Access magazine are all available through BBC PD.*
- *A number of educational shareware discs from John Lyons are also available.*

***Alan Blundell, BBC PD, 18 Carlton Close, Blackrod, Bolton BL6 5DL** - Tell him I sent you!*

an introduction to

INTER-BASE

What is INTER-BASE? Martin Pickering explains further in part two

THE BASIC CONNECTION

IBPL is a complete programming language in its own right. However, inventing a whole new language has the distinct disadvantage that you have to teach everyone how to use it from scratch. The one language that every programmer with a BBC Micro knows is BASIC, or BBC Basic to be more specific. For this reason Inter-Base was deliberately designed to be as similar to BASIC as possible, without compromising too far.

If you don't already know at least a little about programming in BASIC or a similar language, you are probably going to find it hard work to use IBPL. However, there are dozens of books available cheaply on the second-hand market which explain BASIC programming very well indeed (and a few which don't!)

If you already know how to program in BASIC, you will love IBPL because it removes just about all the annoying aspects of the language and adds a whole host of new facilities.

BASIC DIFFERENCES

1. IBPL uses no line numbers but relies upon simple destination "labels" (words proceeded by a full stop). For those of you who have used BBC BASIC assembly language the method of labelling will be familiar. Without line numbers, the program lines are run in the order in which they occur, reading down the screen, unless a jump to a labelled subroutine is encountered. Such a label can be very descriptive, making it easy to determine the function of a subroutine without scanning through lines of program trying to figure out why it is there. The lack of line numbers makes it easy to cut and paste lines to change the order in which they operate and also to duplicate lines where necessary.

2. IBPL has many more structured programming facilities including multi-line IF...THEN...ELSE, WHILE...ENDWHILE , CASE....ENDCASE and so on.

3. IBPL has very comprehensive record facilities which can work in a similar way to BASIC's arrays (with different syntax) but are far more flexible. They allow any array to contain different numbers of elements at each level and any item can be of any data type (string, real, integer or even another array).

4. IBPL strings may be any length and may include carriage returns (and all other ASCII codes). BASIC strings are restricted to 255 characters which can be very limiting for many types of data. Any string may be viewed and manipulated within an editor. In fact a string in IBPL is very much like a "SEGMENT" in WordWise Plus but there is no limit on the size or number of strings (other than memory).

5. IBPL programs are stored in memory as ordinary strings, usually in plain ASCII form. This allows more than one program to reside in memory at the same time and it allows a program to create or modify another program. One common use of this facility is for a main program to stay in memory and to load any of a number of programs into other strings for use as required, giving an almost unlimited program size. ***(Continued on page 11)***

a bit o'this and a bit o'that...

An instructive homily, which catches the mood of the moment quite well, is circulating in the North East of England. It concerns a boat race, in which a Japanese eight (from the Nissan car factory, no doubt) beats a local British Coal eight, by a mile.

The tale continues thus:
"After the defeat, senior management set up a working party to investigate the reason. It concluded that the Japanese had eight people rowing, and one steering, whereas the British Coal boat had eight steering and one rowing"

Then we are told:
"Senior management then hired consultants to look at the team structure. Millions of pounds and several months later, they concluded that too many were steering and too few rowing"

And finally:
"To avoid losing again, the team structure was changed, to three Steering Managers, three Assistant Steering Managers, one Steering Executive and a Director of Steering Services. A performance and appraisal system was then set up to enable and encourage the person rowing the boat, to work more efficiently..."

My thanks to Ron Marshal of SOLINET for this little story... BB

(continued from page 8)

6. IBPL programs can be reduced in size (and increased in speed) by "tokenising". Command words and numbers are changed to hexadecimal codes. Such a program can also be loaded into RAM or "blown" into an Eprom so no main memory is used at all.

7. IBPL offers a huge variety of string search an manipulation commands - even more comprehensive than WordWise Plus. These are designed specifically for the type of searching and sorting which is required in database applications. Operations which would normally require complex programming are incredibly simple in IBPL.

8. While BASIC contains rudimentary file handling commands, IBPL contains sophisticated commands which make the construction of a database and sorted index a relatively simple task.

9. IBPL supports the use of calendar dates, allowing them to be entered, stored, added together, subtracted from one another and even printed in any one of a number of common formats.

10. IBPL uses DATA in the form of a string, not as a DATA statement.

11. IBPL allows the use of sideways RAM (as fitted as standard in the BBC Master and Compact) to be used as a fast, temporary disc storage.

12. Inter-Base contains a very flexible full or partial screen text editor which is not only available for entering and editing programs but is also available as a command within IBPL. A program can, therefore, invite the user to enter and edit long pieces of text or database entries while still remaining in control.

13. IBPL has many linking features allowing data to be transferred to or from other ROMLINK programs. For instance, IBPL can retrieve documents from within Inter-Word and manipulate them.

Phew! Who would've guesed an introduction could be so 'detailed'. I hope you're learning something here! Next issue, the final part (promise) of the intro. Now you understand why Martin wrote the book, "The INTER-BASE Programming Guide" - there is a lot to INTER-BASE that wasn't dealt with in the user guide.

If you want to get hold of a copy of his book and/or INTER-BASE itself, turn to page 14... BB

in black and white (and colour)
printers part I

If you're thinking of purchasing a printer for your BBC, there are a few things you ought to consider...

For those of you who already have a printer connected to your computer you know the difference it has made to your system, just like the day you got your first disc drive and have never looked back (except to play those brilliant games that you haven't been able to transfer to the newer 'super' media). With a printer, you don't realise how much you really need one – until you get it. It's duties range from the obvious letter printing to producing a hardcopy of the program you're writing (very helpful if you're trying to debug or tidy it up), to producing figures, pictures, newsletters and... well the list goes on.

WHICH INTERFACE?

There are two main types of interface with which we should be concerned when using a printer with a BBC, namely Serial and Parallel. The Parallel interface, which is better than the Serial interface, is by the far most common around on todays modern printers although a car-boot sale will probably turn up one of the serial types. If the price is right (something in the region of £20 for a working machine), it ought to be worth a look in. The terms Serial and Parallel refer to the way in which information from the BBC is sent to the printer. Serial indicates that data is sent in 'single file', ie one character is sent after the other. The Parallel interface allows data to be transferred in groups (normally 8 pieces of information at a time). A typical analogy would be a country lane, compared with an 8-lane motorway. From this it should be obvious that the parallel interface provides capacity for quicker transfer of information and partially dictates the maximum speed the printer will print your documents although other more important factors should be taken into account, including the manufacturers quoted top speed of the particular printer in question (which can be anything from 20 characters per second, to over 200cps!) for example. Under normal circumstances it won't be the interface that holds up your printing but the speed of the printer itself (beware of those quoted printer speeds! They are based on ideal conditions and are almost certainly on the "generous" side). The BBC is equipped with a dedicated parallel 'printer' port alongside the disc drive socket. A serial printer needs to be plugged into the RS423 socket at the back of the machine. Some software may not work with a printer connected to the RS423 socket as this is not a designated printer socket but an interface for a variety of serial devices including Modems (which BB will cover in more detail in another issue).

To sum up then, if you find a 'bargain' at a car boot fair and it is a serial interface type, go for it. If you're going to purchase a printer new, you'll be hard pushed to get one with a serial plug – it will most likely be parallel only so you'll have no problems there.

TYPES OF PRINTER

DOT MATRIX

Apart from the types of interface available there is the type of printer to consider. The most common and by far the cheapest 'base' machine you can buy, is the 9-pin Dot Matrix printer. This produces characters on the page using a vertical line of nine pins on the print head, which strike the paper (through an ink ribbon) in the correct order to produce the characters as the print head moves across the page line by line. The quality of print is at the worst very basic and at best quite presentable. When operating in Near Letter Quality (NLQ) mode if available, the print head passes twice over the same line, increasing the effective number of dots to 18 per character and improving on the look of the text overall. There are also 24-pin Dot Matrix printers available which

are similar to the 9-pin, only there are more pins - 24 to be exact! This has the advantage of being able to produce much better quality text, and NLQ can be achieved with one pass of the print head although two passes are used to produce 'bold' text.

DAISYWHEEL

This method of printing is performed with a disc of fine spokes, each one ending with the impression of a character (rather like the ends of the arms on an old typewriter). The disc is spun at high speed to bring the required character to the top (12 o'clock) position. A solenoid then 'punches' the back of this spoke, causing the character on the front to impact with the paper, through a ribbon. The quality of the letters are of course excellent, being preformed in plastic. The main drawback to a daisywheel printer is the fact that the only characters you can print with it are the ones on the disc provided – sorry, no graphics! Some daisywheel printers can have alternative character discs fitted for different looking letters. If you don't need the facility to print graphics, a daisywheel is an ideal 'word processing' printer, if you can pick up a bargain (around £40-50)

'BUBBLEJET'

Another option to consider is the 'Ink-Jet' printer, also called 'bubblejet'. This works by firing ink at the page through tiny nozzles in the print head (*tiny:* normally 64 nozzles are lined up vertically in the space of 6mm). Technically, each nozzle has a heater in it and a bubble of air. To fire a particular nozzle the heater is switched on, which causes the bubble to expand (we all know that hot air expands don't we?). This in turn pushes a tiny blob of ink out of the end of the nozzle. The heater is switched of, the bubble contracts again and this draws a little more ink into the nozzle from the ink cartridge ready for the next burst. Obviously this process happens a lot quicker than it took you to read it: typical speeds for Ink-Jet printers are 67-100cps and that's using all 64 nozzles at once! Because the print head never actually touches the paper, this is by far the quietest tye of printer available, a definite consideration if most of your letter writing goes on in the small hours, whilst everyone else is in bed (sounds a bit like me there).

LASER

The last type of printer to consider (if you have a large bank balance just waiting to be severely altered) is the laser printer. These machines (which are computers in themselves, having their own Central Processing Unit, memory, circuit boards, etc) print by transferring a dry powder (toner) to the paper and heating it to make it 'stick'. A 'laser' beam is shone on a negatively charged rotating drum where the text or pictures are required to appear on the paper but as though looking in a mirror. The laser causes the drum to become positively charged in those places. Then, negatively charged toner is passed over the drum and it is attracted and sticks to all the places that are positively charged from the laser. The paper is passed by the drum and this in turn attracts the toner from the drum to itself, producing a mirror image of the drum on the page but now the correct way around. Finally the paper with toner is passed through heated rollers which causes the toner to 'fuse' to the paper. Job done.

Which to consider? In the next issue of ByteBack I hope to include (with the help from readers, hint hint...) more specific information on a few of the more popular old and new printers that are available either through an established retailer or via a car-boot. Having used a number of these myself I will also present my 'findings' based on actual experience and frustration!

Print method	Typical base model £(new)	Typical Print Speed	Print quality Text	Print quality graphics
9-pin Dot Matrix	£100.00	50cps*	Reasonable - Good	Poor
24-pin Dot Matrix	£150.00	70cps*	Good - Very Good	Reasonable
Daisywheel	£140.00	70cps	Very Good - Excellent	N/A
Ink-Jet (Bubblejet)	£200.00	100cps*	Very Good - Excellent	Very Good
Laser Printer	£500.00	4ppm†	Very Good - Excellent	Excellent

Figures for all printers except the Laser are for those machines working in NLQ (Near Letter Quality) mode, ie the best they can produce. Lasers do that anyway...
* cps - characters per second. Figures quoted are typical, not manufacturers suggested!
† ppm - pages per minute.

LITTLE BITZ LITTLE BITZ LITTLE BITZ LITTLE BITZ

With the following !BOOT file, it's possible to BOOT the second side of a disc if the SHIFT is held down until the !BOOT file is excecuted while performing the SHIFT-BREAK combination:

```
IF NOT INKEY-1 THEN <command><filename>
*DRIVE 2
<command><filename>
```

<command> and <filename> are the command and any optional filename of your choosing.

If <command> and <filename> are the same for both sides of the disc, a more compact version of this !BOOT file could be:

```
IF INKEY-1 THEN *DRIVE 2
<command><filename>
```

WANTED

A COMPLETE DFS INTERFACE KIT (PREFERABLY 1770) WITH A SINGLE, DOUBLE-SIDED, 80TRACK 5.25IN DISC DRIVE. PLEASE CONTACT ME IF YOU CAN HELP. (Editor)

HOW FAST IS YOUR PRINTER?

SHOULD WE BELIEVE THE MANUFACTURERS QUOTED FIGURES?

If you are in possession if a printer of your own you might like to try running these three short programs. The first gives the speed of fanfold pages printed in an hour (you don't need to run it for an hour though!), the second gives the number of lines printed per minute and the third gives the characters printed per second. Run each program a few times. Then, add together the times for each run and divide this figure by the number of times the program was run to get a more acurate average.

Although using these programs won't improve you printer, they will perhaps provide some interesting results. I would be interested to hear of the results you have obtained using these programs with your printer.

```
10 REM Program 1
20 REM Test in draft Pica
30 *FX 3 10
40 TIME=0:FOR N = 1 TO 11:PRINT STRI
NG$(80,"*"):NEXT:S% = TIME
50 *FX 3
60 PRINT "Stop clock when printer st
ops":INPUT "Enter time in seconds "T
70 PRINT "Run time: ";S%/100;" secon
ds"
80 lps = 11/T:lph = 3600*lps:PRINT "
lines per minute: ";lps*60
90 PRINT "Characters per second: ";I
NT(80*11)/T'"Fanfold pages per hour:"
INT(lph/66)
```

```
10 REM Program 2
20 REM Test line feed speed
30 @%=&20309
40 VDU 2:TIME = 0:FOR N = 1 TO
66:VDU 1,10:NEXT:VDU 3
50 PRINT "Stop the clock when printe
r stops":INPUT "Enter time in seconds
"T
60 feed = T/66
70 PRINT "Line feed speeds = "feed;"
seconds"
80 @% = &90A
```

```
10 REM Program 3
20 REM Test head speed
30 @% = &20309
40 *FX3,10
50 TIME = 0:FOR N = 1 TO 11:PRINT ".
";STRING$(78,".");".":NEXT:S% = TIME
60 *FX3
70 PRINT "Stop clock when printer
stops":INPUT"Enter time in seconds "T
80 PRINT "Run time: ";S%/100;" secon
ds"
90 PRINT "Head speed =";(T/11)/8;" i
nches per second"
```

for sale:
classifieds

★ A large variety of ROM software available, including INTER-WORD, Communicator, Inter-Sheet, Wordwise-Plus, from £4.00. Also books, (machine code and user guides). **Contact Martin: "Synectics", 10 Bollin Close, Elworth, Sandbach, Cheshire CW11 9TZ, 0270 761928 (8pm-9pm)**

★ Does anybody know of a hardware/software package that can handle Optical Character Recognition? I need a scanner and software to take text from a page and convert it into ASCII or something similar, to save me from having to type it all in! **Contact Mr Heath: 0242 515669**

★ Epson LX80 printer for sale. No instructions, nothing flash, bog standard but works perfectly, ideal as a backup machine or work horse. £50.00. **Contact Pat: 0602 638165**

★ BBC Tape software for sale, prices for individual items, or good offer for all considered. Also a few 32k Sideways Ram cards left! **Contact Chris: 25 Alexandra Close, Illopgan, Redruth, Cornwall TR16 4RS**

★ **Wanted:** A teletect screen editor ROM called TED, once marketed by Watford Electronics. Good price paid, with or without manuals. **Contact Ken Jackson: 0942 716296**

INTER-BASE

The INTER-BASE Programming guide

For anyone who has Computer Concept's INTER-BASE Database Rom and for anyone who wants to learn it. This 290-page, spiral bound book takes up where the "inadequate" user guide left off. It takes you through creating your own database setup from beginner's level, with example programs along the way and every command is explained in the reference section.

INTER-BASE Guide	**£14.95**
INTER-BASE ROM	**£22.50**

SYNECTICS - 0270 761928

between 8pm-9pm

(Other CCs' ROM's also available)

★ **Wanted:** ADFS ROM, Sideways ROM board, Shadow Ram. Also, contacts to write to regarding the BBC Micro. **Contact Chris: 25 Alexandra Close, Illopgan, Redruth, Cornwall TR16 4RS**

★ **Wanted:** Information about a piece of software from KOSMOS, entitled ANSWERBACK: I have database modules but not the main program. Do you have a copy you don't need anymore or know where I can get it? **Contact Frank: "Carrwood", 21 Back Lane, Sowerby, Thirsk, North Yorkshire YO7 1NQ**

★ **Wanted:** 16K of SWRAM, Shadow Ram, 80186 512 Board/Co-proc/Interface, Music5000 soft/hrdware/music, Peartree Music 87, Asmpler, MIDI software (I have both UMI-2B and EMR interfaces but no software!), AMX PictGallery/Extra!/Max/Design/MindGames, Video Digitiser, Hand Scanner, Comms soft/ROMs, Replay ROM, Spellmaster ROM, Wordpower WP, PowerFonts 24pin fonts, BEEBDOS for IBM-PC, MSDOS/CPM convertor for Beeb...as cheap as possible! **Contact Simon: 081 840 0220 evenings**

★ **Wanted:** Information on suppliers of single colour printer ribbons other than black! **Contact Chris Robbins: 0727 830264**

★ **Wanted:** "Advanced Machine Code Techniques for the BBC Micro" by A.P & D.J Stephenson, "Floating Point Assembler: a dabhand guide" by David Spencer. Willing to pay full price. **Contact Steve: 081 504 5222**

★ **Wanted:** "Cassette recorder and lead for the BBC. **Contact K Williamson: 051 526 5206 2pm-4pm weekdays**

★ **Wanted:** Blitzkrieg/Palace of Magic/educational discs/tapes for BBC. **Contact Jacquetta: 78 Blake Hill Crescent, Lilliput, Poole, Dorset BH14 8QS**

Submissions for inclusion in ByteBack Classified Ads are free, by the way.

SUPPLIERS & SUPPORT

- **Adventure Soft Ltd** - PO Box 786, Sutton Coldfield, West Midlands, B74 4HG - 021 352 0847
- **Rickitt Educational Software** - 0460 57152
- **Pres Ltd** - PO Box 319, Lightwater, Surrey GU18 5PW - 0276 472046
- **Software Bargains & Mercury Games** - C/O Northwood House, North Street, Leeds LS7 2AA - 0532 436300
- **Watford Electronics** - 0582 487777
- **BBC PD** - 18 Carlton Close, Blackrod, Bolton, BL6 5DL
- **Headfirst PD** - 97 Chester Road, Southport, PR9 7HH
- **Mad Rabbit PD** - Joel Rowbottom, PO BOX 4, Crigglestone, Wakefield, West Yorkshire WF4 3XE
- **JJF PD** - James Farmer, 49 Hollyberry Close, Winyates Green, Redditch, Worcs. B98 0QT

OTHER BBC USER GROUPS

- **SOLINET** - *Disc based magazine packed full of useful BBC items:* Ron Marshal, 41 Westbrook Drive, Rainworth, Mansfield, Nottingham NG21 0FB
- **ELECTRON USER GROUP**- *Magazine for the Electron with some BBC relevance:* Will Watts, "EUG", 134 Great Knightleys, Basildon Essex SS15 5HQ
- **EIGHT BIT SOFTWARE** - *A good source of BBC information and PD software via a disc based magazine for enthusiasts:* Chris Richardson, 8BS, 17 Lambert Park Road, Hedon, Hull HU12 8HF
- **BEEBUG** - *Excellent magazine on its 12th year of publication:* 117 Hatfield Road, St Albans, Hertfordshire AL1 4JS - 0727 840303

THE NOTICEBOARD

BYTEBACK ISSUE FIVE -

✓ Part two of the "PRINTERS" series

✓ A new series for those of you who have software/ROMs and no instructions. First up, INTER-WORD word processor.

WATCH OUT!

If you are in the postion of selling something second hand through such magazines as MicroMart, beware of a prospective 'buyer' called Alan Curtiss, of 34 Mighell Avenue, Redbridge, Ilford, Essex IG4 5JW. A couple of people have had bad experiences when dealing with this person, specifically in not receiving promised cheques.

COMPETITION

Right, hands up all those who are not too sure about BBC Basic? Well, here's a competition (the first I might add) with a BASIC instruction book and accompanying cassette as a 'prize' to help you improve your knowledge of it. All you have to do is answer the followng questions. If you're not sure of the answers I particularly want to hear from you on this one!

1. *What are the following BASIC keywords short for?* (a) **GCOL**, (b) **CLS**, (c) **PROC**
2. *How many arguments must follow an* **ENVELOPE** *statement?*
3. *What does* **LISTO 0** *do?*

Please send any correspondence (always welcome) to: Paul Harvey, ByteBack, 33 King Henry's Mews. Enfield Lock, Middlesex EN3 6JS.

SUBSCRIPTIONS

My aim is to produce an issue of ByteBack once a month. It won't always happen (due to the rest of my life getting in the way), so we'll just see what happens. The subscription will remain at £1.00 a copy (including postage), and you can subscribe to as many or as few copies as you like, up to 12 copies maximum. No need to return any forms, just pop a cheque in the post (payable to **P.Harvey** please, ***not*** ByteBack!), along with a note explaining which copies you require and I'll make sure you get them in tippy-top condition! BB

"SWATCHB"

A GRAPHICAL OFFERING FROM C.BLAKE OF PORTSMOUTH

(Or: 'Experimenting and expanding the realm of GCOL')

In the early days, many letters drew attention to unspecified values of the GCOL statement with odd examples. This program facilitates the exploration of all values, and shows a new pattern.

```
10REM "SWATCHB"
20REM Version B0.5
30REM Cliff Blake 1993
40REM for Public Domain
50:
60REM The left hand background is a
70REM simple plain colour plot,
80REM which can be changed with the
90REM < > keys.
100:
110REM The two triangles are the
120REM same changeable GCOL plot,
130REM which can be varied with the
140REM cursor arrow keys.
150:
160REM Notice the overlap area,
170REM which shows another pattern
180REM obtained by double printing
190REM over the same area.
200:
210MODE7
220r$=CHR$129:y$=CHR$131:c$=CHR$134:d$
=CHR$141
230PRINT TAB(12,1)r$;d$;"SWATCHB"
240PRINT TAB(12,2)r$;d$;"SWATCHB"'
250PRINT y$;"UP arrow increases GCOL a
ction by 1."
260PRINT y$;"DOWN arrow decreases GCOL
action by 1."
270PRINT y$;"SHIFT changes step from 1
to &10"'
280PRINT y$;"RIGHT arrow increases GCO
L colour."
290PRINT y$;"LEFT arrow decreases GCOL
colour."'
300PRINT y$;"> key increases backgroun
d colour."
310PRINT y$;"< key decreases backgroun
d colour."''
320PRINT r$;"Select MODE to continue."'
330PRINT TAB(10)c$;"0  (2 colour)"
340PRINT TAB(10)c$;"1  (4 colour)"
350PRINT TAB(10)c$;"2 (16 colour)"
360PRINT TAB(10)c$;"4  (2 colour)"
370PRINT TAB(10)c$;"5  (4 colour)"
380REPEAT:mode%=GET-48:UNTIL mode%>-1
AND mode%<6 AND mode%<>3
390IF mode%=0 THEN tot%=1:plain%=1
400IF mode%=1 THEN tot%=3:plain%=3
410IF mode%=2 THEN tot%=15:plain%=7
420IF mode%=4 THEN tot%=1:plain%=1
430IF mode%=5 THEN tot%=3:plain%=3
440MODE mode%
450act%=0:col%=1
460:
470DIM action$(5)
480action$(0)="PLOT new colour  "
490action$(1)="OR both colours  "
500action$(2)="AND both colours "
510action$(3)="EOR both colours "
520action$(4)="INVERT old colour"
530action$(5)="Unspecified      "
540*FX11,0
550*FX4,1
560PROCplot
570:
580REPEAT
590g%=GET
600IF g%=44 OR g%=60 THEN plain%=plain
%-1:PROCplot
610IF g%=46 OR g%=62 THEN plain%=plain
%+1:PROCplot
620IF g%=136 THEN col%=col%-1:PROCplot
630IF g%=137 THEN col%=col%+1:PROCplot
640IF INKEY(-1)THEN inc%=&10ELSEinc%=1
650IF g%=138 THEN act%=act%-inc%:PROCp
lot
660IF g%=139 THEN act%=act%+inc%:PROCp
lot
670UNTIL FALSE
680:
690DEFPROCplot
700IF plain%<0 THEN plain%=tot%
710IF plain%>tot% THEN plain%=0
720IF col%<0 THEN col%=tot%
730IF col%>tot% THEN col%=0
740IF act%<0 THEN act%=act%+&100
750IF act%>255 THEN act%=act%-&100
760array%=act%
770IF array%>4 THEN array%=5
780CLS
790PRINT"MODE ";mode%
800PRINT'"Backgrnd GCOL &0,&";~plain%
810PRINT'"Triangs  GCOL &";~act%;",&";
~col%
820PRINT'action$(array%)
830GCOL 0,plain%
840MOVE 0,0:MOVE 0,760:PLOT &55,640,0:
PLOT &55,640,760
850GCOL act%,col%
860MOVE80,40:MOVE80,720:PLOT &55,920,380
870MOVE 1200,40:MOVE 360,380:PLOT &55,
1200,720
880ENDPROC
```