



Mushroom

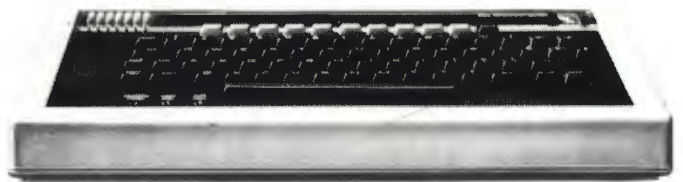
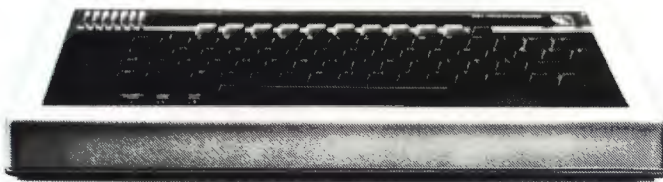
THE MAGAZINE OF BROADWAY ELECTRONICS

July 1985



*If you think the front looks good...
see pages 10 and 11.*

Who says you can't improve on the best?



The Best.

Since the day it was launched the BBC Micro has been garlanded with praise.

One early reviewer called it 'the limousine of home computers' and virtually every independent assessment of it since has added weight to that description.

The reasons are legion.

First, its famous adaptability and expandability. A feature which makes the BBC Micro invaluable in every corner of science, industry and education.

Then there are its exceptional graphics; its speed; its reliability. And of course its language - BBC Basic, which today is the leading language in education and widely used in business and industry.

All in all, quite simply, the best.

Better.

Above is a machine which at first glance looks very like the best micro in Britain.

But it's better.

It's the new, enhanced, BBC Micro B+.

Now you can have the legendary quality and reliability of the B, plus an extra 32K memory.

And since this extra memory is largely used on the screen it allows wider use of the outstanding graphics.

You also get an additional two expansion ROM sockets (making four available ROM sockets in all). In other words, room for more applications and languages.

The acclaimed Acorn disc filing system is included as standard for immediate access to a fast and efficient disc storage system.

There are extra utility commands for disc and ROM management - thus maximising memory availability.

And remember, the Model B+, like the B, is produced by Acorn Computers who have an unbeaten record for products of outstanding quality and reliability.

Moreover, since Acorn is now an associate company of Europe's largest computer manufacturer, Olivetti, you have the added assurance of a permanent commitment to product continuity and development.

The B+ represents a massive leap in performance. But only a modest step in price. The Model B is available at £399. The B+ is only £499.

You can see the BBC Micro B+ at any Acorn stockist. But if you would like further information, telephone 01-200 0200, or send the coupon to John Caswell, Department MM, Acorn Computers Limited, Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN.

The BBC Micro B+.

Please send me more information on the new BBC Micro B+.

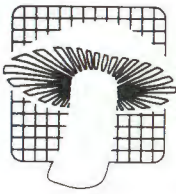
Name _____

Address _____

Tel. No. _____



Mushroom



Mushroom

COMPUTERS LIMITED

Aston Road, Bedford, Beds., MK42 0LJ

comment

WHERE HAVE ALL THE IRONS GONE?

In this microchip age, have we all gone totally lazy?

I am minded of when I first became aware of electronics at the age of eight or so in the mid fifties. In those days there was no such things as I/Cs and microchips – valves were still very much in their own and every town seemed to have their little surplus electronics store.

Bedford was no exception. What a delight it was every Saturday to surround oneself in an Aladdins cave of goodies. What magic it was to get your first soldering iron for your eighth birthday.

None of your electric gadgets of today, but one like you would see the GPO using down manholes with a massive copper tip that you had to file down to a point regularly.

I have been fortunate in my life to have had several firsts, your first solo flight, your first day in business (God, where's the mortgage coming from?), but none can compare with the thrill of first crackling sounds of making your first wireless. (Us pro's don't like the word radio.)

In those days my amateur friends used to make their transmitters using circuits from the magazines. You hadn't lived until you'd had 600 volts up your backside!

Nowadays it is all so easy. Most enthusiasts seem to be content with buying everything ready made (from Japan!!).

I blame the system we are in. Every school these days has microcomputers, but they are just being used to teach BASIC or boring word processing. Where are the interface gadgets? How many people even KNOW how to use a soldering iron? In my view we may know a lot more about the theory but we are sadly lacking in basic assembly skills and missing out on the great fun and pleasure that electronics can bring.

PAUL VAUGHAN



As predicted!

"Greed and complacency" by the British Computer Industry was the sombre warning spelt out by Broadway's managing director Paul Vaughan just 18 months ago. Despite most of the major computer journals featuring this prediction, this grim warning has come so horribly true.

What, then is to be done?

In these gloomy days of the micro market, with the gin and tonics of all the staff (on expenses) at Acorn being replaced with spaghetti and chianti, and Clive ending up in the gutter (press), a RAY OF SUNSHINE!!

"MUSHROOM MAGAZINE"

Yes folks, this is Broadway's own house magazine, a light hearted monthly look at the electronics industry which will be read by upwards of 20,000 people from all walks of life. Regular features will include News stories, interviews with notable people, a junior constructors corner and so on. We have all had a lot of fun producing the first edition, but above all this is YOUR magazine because we invite you to send in your comments, stories, complaints or photos. If you have anything to say, this is your chance to say it. Finally special thanks must go to all our advertisers for supporting us, John Guard for putting the project together and all the contributors.

Mushroom Magazine, the house journal of Broadway Electronics is published by G & G Publishers. Origination by Mansal Graphics.

Editor
Technical Editor
Editorial Secretary
Advertisement Man.
Classified Man.
Distribution Man.
Production Man.

Tim Hardingham
Paul Vaughan
Heide Vaughan
David Day
Tony Silvestri
David Porte
Mick Shillington



COVER PICTURE BY HARRY SEDGWICK

Miss Bedford, Cheryl Adams relaxes by the River Ouse at Cardington Mill, near Bedford. Cheryl, a local model is a finalist in the Miss Anglia Contest, to be shown on Anglia T.V. this month (July). See more of Cheryl on page 10.

DAREN ELECTRONICS LIMITED

SINGLE AND MULTI-OUTPUT SMP's



- Secondary switching for low noise & reliability
- Power trading to provide flexible outputs
- Large choice of voltage and power options
- Low cost

Designed and built in England by Daren Electronics Ltd., Bury St. Edmunds, Suffolk .035 - 921 - 498

Nobody
gets closer
to clients

WE WISH
MUSHROOM
COMPUTERS
EVERY
SUCCESS IN
THE FUTURE

For a full range of financial and
business services contact us at:
49 Mill Street, Bedford
Phone: Bedford 211521

Thornton Baker 
CHARTERED ACCOUNTANTS
A member of Grant Thornton International

Picture Contest



What is Dick Williams of D.W. Electronics
thinking of when this picture was taken?
£5 to the best reader answer.
(Keep it clean!)
If you have any interesting photo's for insertion
in Mushroom Magazine — send them to the
editor.



UNIT 1 YARDLEY ROAD IND. EST.
OLNEY BUCKS, MK46 5DX

PRECISION SHEET METAL WORKERS
AND FABRICATORS

**We are pleased
to be involved
in the
Design and
Manufacture
of
Broadway Electronics
Computer Accessory
Metalwork
and wish them
continued success
in the future**

FABRICATIONS AND WELDING IN ALL MATERIALS

We also offer a Metal Graining Facility
36" WIDE x 5" DEEP CAPACITY

FOR YOUR ENQUIRIES CALL MAURICE PHILLIPS ON
0234 711222

Mushroom



James unwrapped "Story Teller" and placed it in the player. He threw away the warning wrapper without reading it, and told the computer to LOAD. In the kitchen, his mother was complaining about her cooker again. James wondered what was on TV tonight. Still, might as well try this rubbish first, he thought. The monitor lit up.

THE STORY TELLER

NUMBER OF CHARACTERS? 5000,000
 MAIN SUBJECT? computers
 SECONDARY ELEMENTS? television, gas
 ... PROCESSING ...

Fielding placed the tip of the iron in position for the last time. He blinked with concentration, and hundreds of tiny reflections blinked back. The only sound was the drip of a distant tap, echoing his heartbeat in rhythm. There – it was done. A creation worthy of a class 2. There was no need to test it – he knew it would work. The plans had been painstakingly drawn up over a period of months, down to the last newly completed blob of solder.

His life had changed. He had expected to feel more emotion, but a tiredness born of years had spread through his limbs. All he wanted now was to sleep. He stood. The tingle in his legs gave way to the cold of blood, and he stretched. Soon it would be dawn. It was time to leave.

Fielding walked across the factory floor, automatically checking for the tell tale flash of red that would show that his presence had been picked up by the motion sensor. He had learned how to disable that many weeks before, but the reflex was still there. Still, better safe than sorry, he told himself, suppressing a grin at the cliché. That was one failing that his wife had, clichés. She would have said that he was up with the larks, and indeed there was just such a bird trilling as he opened the exit door. All was deserted. Fielding turned to the white panel on the wall beside him and did something to the wire knitting within. The lights showing

that all zones were clear came on. Fielding locked up and went to his car.

Back home, Helen was in bed. She barely stirred as he climbed in beside her. It would be breakfast soon – it seemed a pity to wake her early. Fielding stared at the featureless ceiling for a few moments, seeing whirls of coloured light before sleep fell upon him.

In the factory something stirred. The just audible hum of motors started up. Electricity ran through the familiar maze of circuits, wires glowed, transistors switched. Suddenly the power took turns that it had never traversed before. Excited electrons jostled to be first through the new gates, to explore new twists. A relay clicked, and the countdown began.

At eleven o'clock that morning, Miss Stevens typed the last letter of the "ACTION" pile. Her immediate boss was reading an article in "Computer Business" that dealt with the growing problems in IBM. Slowly, he became aware of the cessation of typing, and almost in the same instant, it seemed that the bustle in the outside office took on a new note of urgency. He got up from his desk, hoping that the damn machine hadn't gone down again. Striding down the long corridor that led to the terminal room, he met Alveson, the chief programmer.

"What gives?"

"Brown says he has an alert."

"Brown would."

At the terminal room door, Johnson gave way to the technical man. Taking charge on his own territory, Alveson led the way to one of the machines that was manned by a little balding man.

"It's most strange, Mr Alveson," began Brown. "The data nexus is not returning expected results at all. Should I run Diagnostics?"

Alveson gave his permission, and Brown got up to go to the Tape room. At that moment, the terminal printed "Program Aborted", gave a small fading buzz, and switched off. A few seconds later, every machine in the room came to a crunching halt.

A few seconds silence, and then uproar. Men rushed from place to place, trying buttons and checking switches. Alveson took command.

"Everyone back to your places," he shouted. "Jim, check the main installation. Fred, you go and deal with head office. The rest of you wait here." Alveson turned, and strode from the room. Johnson followed, trying to keep up with the scowling programmer. Questions bubbled up and were left unasked. Johnson knew better than to interrupt his companion's train of thought.

It was three hours later that Alveson came to see Johnson in his office. He looked ill. Johnson sympathised with him. The responsibility for the running of the network was ultimately Alveson's, however much Johnson might like to pretend otherwise. If the computer wasn't running

again within a very short period of time, television screens all over the city would begin to blink out, one by one. People would invade the streets, at first puzzled, then questioning. Panic would follow. The end result might be catastrophic. That computer had to work.

As Johnson looked at Alveson, his heart sank. This could be serious.

"Well?" he snapped.

"The main unit has gone down. The secondaries should have cut in, but they've gone as well. We're on emergency power at the moment, but that will only last another half hour or so. After that ..." Alveson tailed off. They both knew what would happen after that.

The phone buzzed. Johnson answered it, knowing who it would be. The voice on the other end sounded grainy, almost faint. System X, thought Johnson, and immediately repressed the thought as irrelevant.

The conversation took only a few moments. By the end of it, Johnson felt as if he were made of wood. What they were asking him to do was impossible, unthinkable – and as unavoidable as death. No man had ever been placed in a situation like this before – millions of lives depended upon the push of a button. The motion of a finger was enough to ...

Leaving Alveson in his office, Johnson headed upstairs, for the door marked, quite unimaginatively, "WARNING. Class 1 Personnel only past this point." His pass key fitted snugly in the lock. Johnson turned it, and opened the door.

The room beyond was small and featureless. There was a panel on the wall which opened to Johnson's touch. He wept as he pushed the button.

All over the city, white gas began to spread. Every street, house and room was suffused with the toxic vapour. Birds fled from the roofs, squalling in their fright. None escaped.

Fielding felt the gas flow into his lungs. He hadn't known. Nobody had known. The only two people in the world who did know they were safe in their bunkers, miles away in the North. Fielding had wanted to change. He had wanted to free the people from the grip of life support television, to show them the way to becoming human again, to freedom. That was why he had built the block, that was why the computer had stopped working.

Far away, in a television studio somewhere across the town, the power failed. Silence fell upon the factory, while a dense fog formed. In the distance was a dripping tap.

THE END

Disgusted, James threw the cassette recorder across the floor. "Story Teller" indeed. Why, he could write better stories than that. What a waste of a weeks' pocket money. He turned on the television. Nothing happened. Behind him, a faint his began, and a white cloud invaded the room.

CARE ELECTRONICS

UNIT 14, PEERGLow INDUSTRIAL ESTATE, OLD'S APPROACH, TOLPITS LANE, WATFORD, HERTS.

TELEPHONE: 0923 777155

COMPUTER PRINTER SELECTOR

"T" SWITCHER @32.20d Inc VAT

- ★ 2 Printers to 1 Micro.
- ★ 2 Micros to 1 Printer.
- ★ 26 pin as BBC.
- ★ Colour finished honey beige.

COMPUTER PRINTER SELECTOR

- ★ 26 pin as BBC
- ★ 1 micro to 6 printers
- ★ 6 micros to 1 printer
- ★ colour finished honey beige @ £75.90 incl. VAT.

DUAL POWER SUPPLY UNIT FOR DISC DRIVES:

- ★ Colour finished to match BBC.
- ★ Comes complete with moulded mains lead.
- ★ 6 pin BBC outlet or Dual power leads for disc drives. (Please specify when ordering)

POWER RATING:

*Standard Version

Suitable for use with TEAC & TEC Drives.

*High Rated Version

Suitable for use with Mitsubishi, Tandy, Canon etc (Please ring factory for other makes)

Price Each.

Standard = £33.35b Inc VAT

High Rated = £35.65b Inc VAT

MAKE YOUR TEAC & TEC DRIVES SWITCHABLE:

(40/80 Conversion assembly)

200K & 400K Drives only

TEAC Version

@ 5.75c Inc VAT

TEC Version

@ 7.36c Inc VAT

READYMADE LEADS:

RIBBON:

- Disc drive single @ 6.67c Inc VAT
- Disc drive dual @ 10.12c Inc VAT
- Printer @ 7.82c Inc VAT
- Parallel 26 pin @ 8.74c Inc VAT

OTHERS:

- RGB 6 pin to 8 pin DIN QL @ 6.90c Inc VAT
- RGB 6 pin DIN @ 2.99c Inc VAT
- RGB 6 pin to 7 pin DIN @ 4.14c Inc VAT
- RGB 6 pin to SCART @ 7.82c Inc VAT
- BBC to single disc @ 3.45c Inc VAT
- BBC to Dual disc @ 4.60c Inc VAT
- Serial 25 pin "D" @ 12.88c Inc VAT

We can make up any combination of cable assy. Please contact Factory for details.

ACORN DISC INTERFACE @ 81.65c Inc VAT

EPROM 2764 250ns. @ 4.63c Inc VAT

EPROM 27128 250ns @ 6.90c Inc VAT

PRINTER INTERFACE QL SERIAL TO PARALLEL

- ★ BAUD RATE SWITCHABLE
 - ★ CRYSTAL CONTROLLED
 - ★ QDOS and SUPERBASIC compatible
 - ★ Drives any CENTRONICS printer
- @ £49.91d Incl. VAT

PHILIPS TV/MONITORS

High Resolution

12" Mono Green Anti-Glare
Model No BM502

@ 81.65a Inc VAT

Medium Resolution

BBC Versions 14" Model 14CT2006

@ £230.00a Incl. VAT

80 Characters Remote Control

14" Model 14CT2206

@ £258.06a Incl. VAT

16" Model 16CT2216

@ £302.45a Incl. VAT

QL Versions 14" Model 14CT2006

@ £253.00a Incl. VAT

85 Characters Remote Control

14" Model 14CT2206

@ £282.90a Incl. VAT

16" Model 16CT2216

@ £311.65a Incl. VAT

DON'T BUY A COLOUR MONITOR!!
HAVE YOUR 14" & 16" PHILIPS, PYE or FERGUSON TX
COLOUR TV CONVERTED TO A TV/MONITOR

REMOTE AND STANDARD TV'S

BBC @ 57.27a

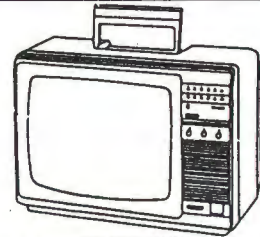
QL @ 67.39a

RGB CONVERSION KIT

BBC @ 43.47d

QL @ 54.05d

- ★ Resolution better than 585 x 450 pixels.
- ★ Image clarity comparable to leading monitors
- ★ Includes RGB lead for connecting with BBC/QL.
- ★ Conversions carried out at our workshops within 2/3 days.



Don't run the risk of damaging your ROMs/ EPROM or your BBC micro. Whenever you want to remove ROMS/EPROMS from your BBC. Fit our Low Profile Rom Module System and save your collection of ROMS/EPROMS in our specially designed cartridges.

THE CARE LOW PROFILE MODULE SYSTEM
Has been designed not to take any power from your BBC Micro and allows you unlimited ROMS/EPROMS.

- ★ The Low Profile system is a sideways mounting flush fitting unit.
- ★ Unlike other systems:
- ★ Won't get in the way when using the Keyboard
- ★ Stops damage caused by shortcircuit due to metal objects e.g. paperclips falling inside
- ★ Prevents damage caused by dust
- ★ Edge Card Socket which takes all the wear, Gold Plated for extended life.
- ★ Each System Contains:
 - ★ 1 Low Profile Assy.
 - ★ Library Rack 6 way
 - ★ Prices include VAT
- ★ 1 Rom Cartridge
- ★ 5 Blank Labels.
- ★ Manufactured entirely in the UK

Complete System @ 15.87d Spare Cartridge @ 2.99c

Library Rack to store 6 cartridges @ 1.84c

5 Cartridges @ 14.95c 10 Cartridges @ 28.75c

HOW TO ORDER:

By Post. Enclose your Cheque/P.O. made payable to:
CARE Electronics.

Or use your ACCESS. Allow 7 days for delivery. Please add carriage.

OPEN
9am-5pm MON-THUR
9am-4pm FRI/SAT

a) @ 8.00 c) @ 1.00
b) @ 5.00 d) @ 2.00



CARE
ELECTRONICS
TEL: 0923 777155

£50

for your old computer*



when you buy a Mitsubishi MSX Computer

Full details in store



*Receive £50 for your old computer or video game machine when you purchase any Mitsubishi MSX Computer before 31st August 1985

MSX

Mushroom



Save time with MSX

Any busy salesman will know that he spends much of the day on the telephone. But when you analyse the call, a fair proportion of the time is spent just in dialling and waiting for someone to answer, and if you get a wrong number, you will have to repeat the whole process. In fact, one businessman we talked to recently thought that he was wasting up to an hour a day doing just that.

Now there could be an answer in the form of a computer. New from Mitsubishi MSX is a communications and wordprocessing package. This consists of an interface and software that plugs into any MSX computer. The system is made up of an RS232 interface, needed to make the computer work with a modem. There is also some software. This is a card index database system which allows a user to compile a list of the clients he wants to contact, with space for all the relevant information. It also has a space for the telephone number, and this

is where the package comes into its own. At the touch of a button, the computer will automatically dial up the number on the current card, leaving the user to get on with other work. A loudspeaker on the modem lets him hear when the phone is answered, and only then does he need to drop what he is doing. Because there is no room for human error, you don't get any wrong numbers either.

This is a telecommunications package, and so there is also some terminal software provided. This will let you log on to such services as Telecom Gold and Prestel. Telecom Gold offers a telex facility, and so your MSX computer becomes a telex terminal as well!

As if that weren't enough, there is also a wordprocessor with the package, providing the means to produce letters and documents quickly and easily with the minimum of fuss.

The combination of word-

processor and database as one package also means that it is possible to do mailshots with the system, writing one standard letter on the wordprocessor, and taking the names and addresses from the database and inserting them into the letter at appropriate points. Obviously this option will require a printer as well.

The package comes in one MSX cartridge, with a cable leading to the modem. This not only means that there are no trailing wires all over the desk, but the software is instantly available. The database will keep all the relevant information either on tape or on the MSX disc drive.

The MSX Telephone dialling system is very reasonably priced - the computer, modem, software and hardware all add up to less than seven hundred pounds. At that price it will quickly pay for itself in time saved, as well as taking over some routine office chores.

La Scala

for the finest Italian meal in town...

We specialize in Fine Italian Food.

- Veal Dishes and Pasta Dishes
- Beef, Chicken and Fish Dishes
- Everthing individually prepared and cooked.

OPEN FROM TUESDAY-SUNDAY
MID-DAY TO 2.30 PM & 7 PM-12 PM

BEDFORD 216255



41 PARK ROAD WEST

(BEHIND CLAPHAM ROAD)

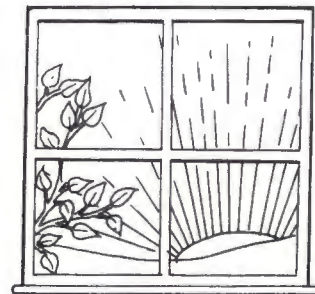


THE COMPLETE MAGAZINE SERVICE

- ★ PUBLISHERS
- ★ TYPESETTERS
- ★ ADVERTISING SALES
- ★ ADVERTISING AGENTS

G+G Publishers

44-46 BUNYAN ROAD, KEMPSTON
Tel: Bedford (0234) 857771 (4 lines)



WAKE UP TO IT!

*Beds on Sunday — your only FREE
Sunday newspaper. The only local
paper you can read at your leisure.*



EDITORIAL 57888

● DISPLAY ADVERTISING 49611/2

● CLASSIFIED 45191

No retired person should be without one !



I woke up one cold crisp morning early in January 1984 to realise that I was over 62 semi-retired and still had not found a reason for buying a computer!

After twenty-seven years as a professional sucker (tea taster) and another eight as the architect of a Saudi Arabian European group of companies, I had always suspected that had I fully understood computers then quite a few of the problems that had dogged my commercial life would have been minimised.

Or at least, I could have blamed those decisions I would rather have forgotten, as the results of "The Wretched Computer!"

The truth of the matter was that like most British business men I had given little thought to the use of computers other than speculating that my secretary should have one, as it might impress the customers if we had one in the office.

A great friend, the commercial manager, had always maintained "we were too small to need one, and anyway, I'm too old to learn at my age!" How wrong we were!

Now here I was at last, time on my hands and no responsibility, other than to do some housework and prepare my hard working wife's evening meal when she returned from a trying day at the hospital.

So now was the time to do something about a Micro.

I purchased two books on the subject: *Silicon Chip Valley* and *The Good Computing Book for Beginners* by Dennis Jarret.

Having thoroughly digested these I bought a third: The Spring 1984 edition of *A-Z of Personal Computers*. (I joined the excellent short beginner's course at Bedford central library.)

I now knew that a Computer could also be a Wordprocessor! So I had a valid reason to make the purchase at last. I would write my life's story.

At least that was the thought at the time!

So, which Micro should I buy?

Well, I would make use of all those marketing skills I had gathered over the years and narrow the field.

As far as I could discover it was the only machine designed by engineers to keep up with developments in this fast moving field and the marketing men had not been allowed to get too close!

You could add on just about everything, perhaps even the dish washer! Everyone was writing programs for it just because it came from the B.B.C. and with a name like that, how could you go wrong?

It was priced just about right for the money I had put aside.

I settled for Acorn's BBC.B machine but where to buy?

After one or two visits to main street retailers, and coming to grips with the appalling lack of knowledge of the "salesmen". As any good marketing man should, I began looking for the main dealer.

If the thing should go wrong he would have to repair it!

So one Friday afternoon early in February my wife and I wandered into the tightly packed little shop at No1. The Broadway, Bedford and after a little while introduced ourselves to a harrassed Allen Dumburs.

"How can I help you?" he said. "What do you know about computers?"

"Nothing," I replied, "but it's got to be a B.B.C. model.

"I want to write a book, so I'll need a printer

and a Word processor. I understand disks are faster than tapes, otherwise I am in your hands entirely."

"He has an honest face for a salesman!"

We settled for: One Microvitec VDU (colour); One BBC Model B with diskface; One Broadway Double Disk unit 40 track; One Epson RX-80F/T matrix printer; One Wordwise Chip; plus all the manuals to go with them.

"I would still like to know what kind of an old crank he thought I was?"

By the following Monday I was in despair and had to make a few desparate phone calls to get help from Tim Hardingham. By Tuesday I was convinced the bloody thing would never work properly but I was making some progress.

At the end of the following week after I had taken it back twice and a sympathetic smiling Pat Brown had said, "We've had it on the sump for the past two days Mr. Puddifoot and we can't find anything wrong!" I knew it was my fault.

My Computer could not lie, I would learn all about this bloody thing or die in the attempt!

After six weeks of about three hours per day I was writing small programs and churning out reams of notes and sheets of spotlessly clean paper on the Epson.

Now after fourteen months, a second processor, a Print master, a Disk Doctor and a Wordwise upgrade, I have a glimmering of how much I have to learn and have begun to tackle Assembly language.

And the paper wastage is not so great!

It has provided me with a new challenge and

a totally new perspective on the future of business in the U.K.

No retired person should be without one! I now realise how much time I wasted in commerce in not making the investment and how much British companys must do to catch up with our friends, the Japanese and the Americans, if we are ever to put ourselves back on the international business map.

The Micro is still in it's early stages of development, just beginning and we still have a chance but we must ensure that people at the top of companys understand it's value, we cannot leave it to the young!

Young people may understand how to program, but without business experience will they know what to write about?

It must be the older experienced people who help to plan and devise the new programs together with the young, otherwise we in Britain will fall sadly behind the rest of the world!

Let us forget the spread sheets and get on to the electronic office!

That's why I have joined the Broadway Computer Club, perhaps if we all help each other in a positive fashion, we can still do something in a small way to further Britain's effort in this very exciting business.

P. W. PUDDIFOOT
Manor House,
Stevington
Beds

CAMBERWELL

Plain Paper Copiers Limited.
Chaucer House,
Biscot Road,
Luton, Beds. LU3 1BL.
Telephone: Luton (0582) 419090

ALL COPIERS
GUARANTEED
FOR FIVE YEARS

24 HOUR SERVICE
BY FACTORY
TRAINED ENGINEERS

APPROVED LOCAL
GOVERNMENT
CONTRACTORS





If you think the front lo

Broadway's new workstation s



Hands on Experience!....

Broadway Electronics have literally "bridged the gap" between micro and monitor, giving twin disc power to the BBC Model B. The Broadway Disc Bridge features enhanced cable management, replacing the familiar cats' cradle of trailing wires an efficient business work station look.

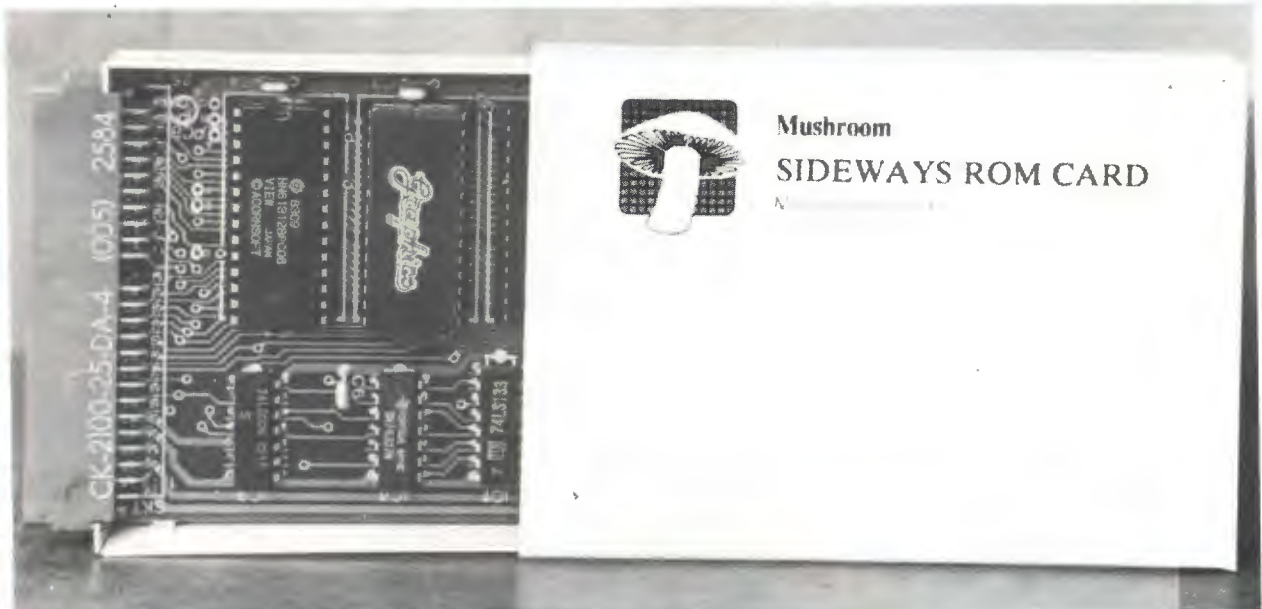
It features twin 400k Misubishi slim-line drives, which are both conveniently switchable from 40 to 80 track format by front mounted buttons with status indicator LEDs.

On board is a 4 Amp. fully regulated power supply with full overload shutdown to protect the drives.

An important feature is the mains input filter, to provide a "clean" power supply. Filtered mains power is also taken to the three power take off sockets at the rear of the unit to power the micro, monitor etc.

The Bridge, which is manufactured to the highest safety specifications, is made in light-weight but strong aluminium by Broadway's own Bedford factory. It is attractively finished in oatmeal with orange trim to blend with the BBC Micro. It is ergonomically designed to hold the

Mushroom Electron Sideways ROM Card



Allows into t

- Runs Conc

- Allow blow

- Can b

- Electr allow

- All fo

- WRIT LIST

Broadway Electronics 55 Tavistock St. Tel. 58303



Looks good... see the back.

Best for sales success.

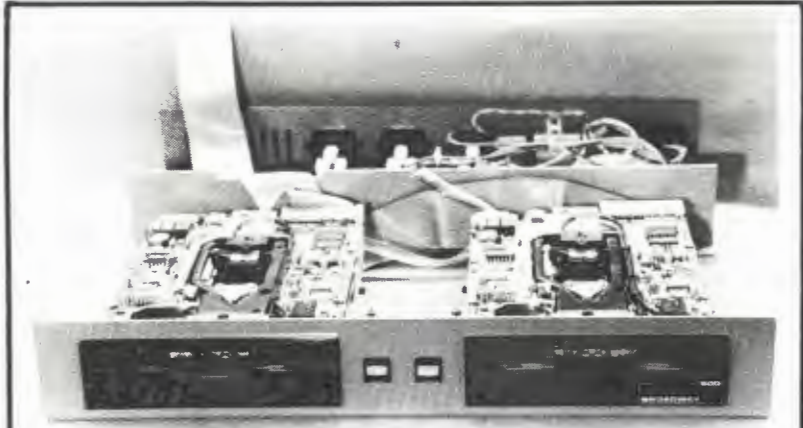
monitor at the optimum height for comfortable programming. When not in use, the micro is stored underneath, affording useful protection from accidental knocks or spillage.

Customers already owning disc drives, whether Broadway or not, will be in a position to have their existing drives re-cased in the Broadway Bridge at nominal cost.

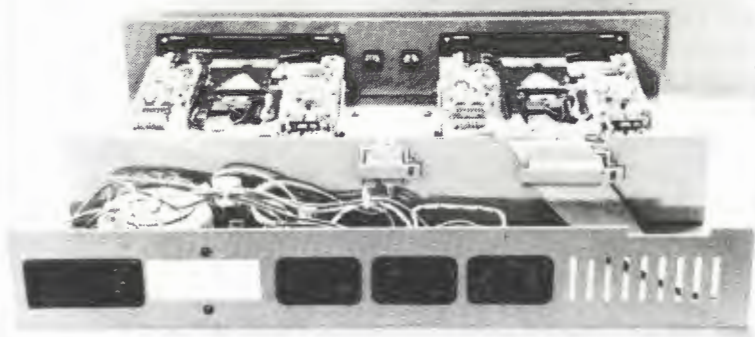
Managing Director Paul Vaughan says: "The Broadway Bridge has already proved an outstanding success locally just by word of mouth and is already in use by many local companies, schools and the home enthusiast, and we are now planning versions with even higher specifications – the details of which are a tightly kept secret as patents are pending."

Paul adds: "Many small businesses would find the BBC computer ideal but because image is important to them, they are put off by the amateurish appearance of separate units and trailing wires. The Broadway Bridge makes the BBC and its hardware into a planned part of the office or college environment."

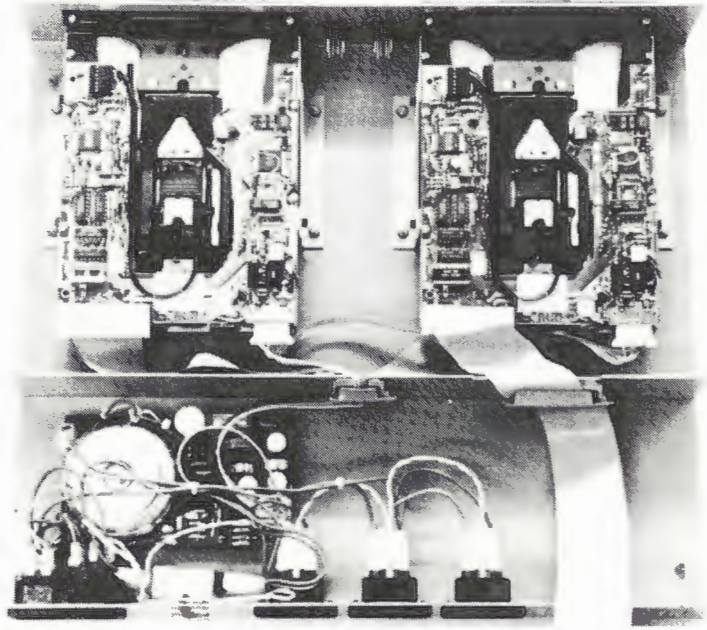
The cost of the new Broadway Bridge is £399.00 VAT and delivery at the moment is within 7 days.



Front view showing 40/80 switches.



Rear view clearly showing power take-off sockets.



Plan view

- to 4 Sideways ROMS to be Electron
- any BBC ROMS (including Computer Graphics ROM, Printmaster etc.)
- Full use of the ROM filing system - own EPROMS!
- Configured to read sideways RAM too!
- Edge connector carried through the card - further expansion!
- Only 29.95 INC VAT!
- CALL OR PHONE TODAY FOR THE LATEST 'COMPATIBLE ROMS



USING THE BBC MICRO No 1 in an occasional series.

One of the most useful interfaces that exists on the BBC micro (and can be bought for the Acorn Electron) is the User Port. It can be used both as a means of controlling external peripherals, and as a form of input. The range of external devices covers joysticks, video cameras, robots and turtles, plotters and many more. But the problem that many people seem to have is how to actually use the port!

The user port on the Acorn machines is what is known as "memory mapped". This simply means that in order to read or write the port, you only have to look at two locations in memory. In the BBC, these are &FE60 and &FE62, whilst in the Electron they are &FD60 and &FD62. In both cases, the two locations consist of a Data Direction Control Register and an Output register. In English, this means simply that one location tells the computer whether you are reading from the port or writing to it, and the other one contains either what has been read or what you want to write.

In order to proceed further, it is necessary to understand both binary notation, and the fact

that "bits" and their corresponding values are numbered as follows:-

BIT 7 6 5 4 3 2 1 0
VALUE 128 64 32 16 8 4 2 1

The port contains eight pins - each of these can be set for input or output individually. The method of doing so is to place a number in the DDR - &FE62 (&FD62). Each pin corresponds to one binary bit of the number used, with a 0 representing input and a 1 representing output. Here is an example:

You want to set pins 1,5 and 7 as input, and the rest as output. That means that bits 1,5 and 7 should be set to 0, and the rest set to 1. Write this down as a binary number - 01011101. Convert this to decimal notation - 93. This is the number to poke into the DDR - in BASIC, use? &FE62=93. (?&FD=93)

Now you want to read the port. This is done in BASIC by the command PRINT?&FE60. (PRINT?&FD60). The number returned will have a bit set if the corresponding pin was set to input and a pulse was read. Thus to see if pin 3,

for example, had received a pulse, test to see whether bit three of the number was set. (Use BASICS OR statement - If (?&FE60 OR 4)=?&FE60 THEN PROCbitset Else PROCbitunset will do it in this case).

Next Month.

Interface circuits of the user port from 1/2 AMP. to 100 AMPS.

Please note:

BROADWAY'S service department is now at 55 Tavistock Street and all repairs should be taken there.

This move has been made with the customer in mind, and we hope that we will now be able to offer an even better service than before.

DO YOU HAVE SOMETHING TO SAY?

A letter, short story, article or just a moan or suggestion.

Write to the editor and let us all know.

The Editor, Mushroom Magazine,
55, Tavistock Street, Bedford, MK42 0LJ.

Rumour has it that Chris Curry took a dislike to someone in the workshop. He is reported as having said: "I hate you. How much do you earn?" The victim replied nervously: "One hundred pounds sir". Mr Curry was heard to reply: "Here's two hundred quid. Get out!" He later found out he'd just fired the BT Engineer.

IN USE BY HUNDREDS OF SCHOOLS AND COLLEGES DAILY

WOT NO FILE SERVER

Super Level One File Server
Powerful new Mushroom software which enhances Acorn's Econet system has been produced by Broadway Electronics.

Super Level 1 has most of the features of Acorn's Level 2, but does not require a costly second processor. At only 125.00 plus VAT, it is very cost effective way of running a network. Super Level 1 will run WORDWISE, WORDWISE PLUS, VIEW and EDWORD. It requires a DNFS ROM and BASIC II to be present in the filesaver.

Features:

- * Supports all BASIC's random access capabilities
- * Provides unlimited file length
- * Versatile and secure directory structure
- * Comes fully documented

Versions are also available for standard disc filing systems. Hardware is the same as required for Acorn Level One - a 32k BBC with Econet interface and disc drive.

ENHANCED COMMANDS INCLUDE:

- * I AM <file server station number>
- * DIR <directory letter>
- * DRIVE <drive number>
- * ACCESS <file spec> [L]
- * INFO <file spec>
- * DELETE <file spec>
- * RENAME <file spec> <file spec>
- * CAT [<drive number>] [<directory letter>]
- * LOAD <file spec> [<addresses ->]
- * SAVE <file spec> addresses
- * RUN <file spec>
- * <file spec> or ?/<file spec>
- * BYE

No file size limit on *LOADed or *SAVEd files. Proper file specifications, allowing inclusion of <drive number> and <directory letter> as in DFS.

Also utilities:

- * NOTIFY <station number> <message>
- * VIEW <station number> [B], allows continuous viewing of another station's screen as well as a 'snapshot' of its screen
- * REMOTE <station number>
- * PS <station number>
- * PROT
- * UNPROT

A MASTER program allows the network manager to take control of more than one station at a time - ideal for classroom situations!

Also available - NET NURSE. This ROM based software adds 16 command to your network. It allows you to view other stations screens, halt them in mid operation and even force them to run a program of your choice - ALL WITHOUT A FILESERVER! NET NURSE requires only ECONET hardware and the DNFS in order to work, although it will perform just as well with ANY ECONET filesaver running! only £29.95 inc. VAT.

Mushroom SOFTWARE LIMITED Aston Road, Bedford, Beds MK42 0LJ. Telephone: (0834) 58305.
Another Mushroom product from Broadway Electronics.

letters



Dear Sir,

I am writing to express the school's gratitude for all the help you gave us concerning the staff Conference last weekend. We had, quite simply, an excellent weekend, and that excellence would not have been possible without the equipment and utensils that were available for our use. We all learnt a great deal, and the future importance to the school cannot be overstated.

Thank you again. I am sure that it will be our pleasure to continue to deal with you extensively in the future.

B. H. Smith
Headmaster,
John Bunyan School,
Mile Road,
Bedford.

Dear Sir,

On Thursday 13th December, I telephoned one of your Sales Staff in your shop, and using my access card, ordered twelve off 12 volt SPCO relays, which you were selling at 50p each.

You have erroneously charged me a total of £25! So please can you promptly return to me the excess of £18 you have overcharged me by. A personal cheque made out to Mr P. J. Thorne will be quite acceptable.

P. J. Thorne
Dartford,
Kent

P.S. Apart from the above cock-up, thanks for your quick service.

Dear Sir,

After purchasing the PRINTER AND USER PORT INTERFACE I find that I cannot relocate the DRIVE program and as there are no instructions showing you how to do this, I was wondering whether you could show me how to do this as I have a program which uses Page & D00.

Martin Burke
Bell Green,
Coventry

Dear Mr Burke,

The DRIVE program is fully relocatable by using the *LOAD command. If, for example, you wanted to put the code at page C00, just use *LOAD DRIVE C00 then type CALL C00.

Note that the DRIVE program will drive a printer with exactly the same effect as the first program on the tape "Driver", but will not print any instructions.

I hope this has been of assistance.

Tim Hardingham
Software Manager

Dear Sir,

I rang the other day to ask about ROMs that will work with the Electron and I was sent information that did not tell me any more than I did not know already. However, I did request whether computer concepts print master ROM, does this work on an Epson or does it require the Electron, as I cannot get any information from computer concepts themselves.

Can you tell me, to what degree does it work and what will not work with the Electron?

Also, exactly what utilities ROM will you be bringing out. Print ROM? Graphics Dump ROM? Toolkit ROM? ROM to List Bad Prog ROM Basic, etc.

Mr G. R. Morris
Chelmsford,
Essex

Dear Mr Morris,

In answer to your specific enquiries, firstly, Computer Concepts' PRINTMASTER ROM will work on the Electron exactly as shown in its manual with an Epson printer.

As far as a graphics dump goes, PRINTMASTER itself contains a screen dump for all modes, both graphics and text. There is not as yet a fully working BASIC toolkit ROM, this is something that we ourselves hope to remedy in the near future.

Other ROMs known to work effectively with our interface include Computer Concepts' GRAPHICS ROM, System's SPY ROM and Acornsoft's VIEW (with slight reservations).

If you have any further queries, please do not hesitate to contact me.

Tim Hardingham
Software Manager

The results of a recent survey showed that in processor terms, Sinclair Research was an eight bit company, whilst Atari and Commodore were sixteen bit companies. Acorn are working on their other thirty bits.

Sign seen on Acorn's front door on new multi-billion lire factory.

"WILL EVERYONE PLEASE REPORT TO RECEPTION. (except employees)

Quote from ACORN service department.

"WE EXPECT OUR DEALERS ONLY TO MAKE A MODEST LOSS ON WARRANTY WORK!"

DESERT ISLAND DISK—LIKES

by Paul Vaughan.

Imagine being cast away on a desert island. What would be five things that you would hate to have with you each month asks a person in the news for their answers. This month it's the turn of Sim Harris, reporter and presenter of Chiltern Radio's "On Line" programme.

Sim. I have this hatred of drivers who hog the outside lane of motorways at 60 mph and just stay there when I'm in a hurry.

P.V. That surprises me, because I wouldn't have thought that your banger would go as fast as that.

Sim. Next I would ban hangovers. I would have this fear of not being able to find any Aspirins on my desert island.

P.V. I would have thought that you would have got used to that by now after so long.

Sim. Tinned potatoes is another thing. I just can't see how anyone can buy them.

P.V. Yes I can see your point. And anyhow they don't make very good chips.

Sim. Politicians. Need I say more? **P.V.** Who?

Sim. Finally Electronic Organ music. Whilst I am partial to most forms of music from Handel to Led Zeppelin, I loath organs from the Wurlitzer downwards.

P.V. Thank you Sim. Lastly, what one luxury item would you like (assuming you have a BBC micro to hand and a power station) and who would you prefer to be rescued by?

Sim. That's easy! I would like a cassette recorder to play music on and also for use in the event of my Broadway Disc drives failing!!!!. I can't think of a better person to rescue me than John Cleese. He always looks in such pain that my problems of being castaway would pale into insignificance.

HONEST AL

by SPIV



Expand your Electron.

NEW
ELECTRON INTERFACE UNIT

Now you can use your Electron computer with any standard printer using MUSHROOM's new printer and user-port interface.

Bring your Electron up to the same standard as the BBC Model B computer printer and user-port into which you can plug robot arms, joy sticks or any BBC user-port module.

On the whole range of MUSHROOM modules and interfaces, the Electron edge connector is extended to give you unrestricted compatibility with any other Electron interface.

All MUSHROOM interfaces can be used separately or can be combined into the unique MUSHROOM ELECTRO-RAK which is conveniently connected to the Acorn Electron by a short cable.

This greatly enhances the performance of the Electron and turns the system into a computer comparable with many larger mini systems and as you grow your computer can grow with you!

Ask for details on:

- * SIDEWAYS ROM CARD
- * A-D JOYSTICK INTERFACE
- * EPROM PROGRAMMER
- * MUSHROOM ELECTRO-RAK

- * FULLY CENTRONICS COMPATIBLE
- * FULL SOFTWARE PACKAGE (including screen-dump routine)
- * BBC COMPATIBLE 8-BIT USER PORT

£39.95 EX VAT



Mushroom

COMPUTERS LIMITED Aston Road, Bedford, Beds MK42 0LJ. Telephone: (0234) 88303.
Another Mushroom product from Broadway Electronics.



TO PRINT OR NOT TO PRINT

One of the most frequently met problems that we come across with computer owners is the question "Where do I go from here?" The answer varies according to the type of use to which the computer is put – in some circumstances a disc drive might be the answer, or a modem, or some utility package. But the one peripheral that seems to fit the bill more often than almost any other is a printer.

Whether you are programming (in any language) or running your own business, a printer is almost invaluable. Listings make it so much easier to debug your programs, while any business needs letters, invoices and statements printing. On the leisure side, it is perfectly possible to generate "Computer Art" on a printer, or indeed make maps, charts etc. Really, the only limit is your imagination – but which printer should you buy?

Let me first explain a couple of pieces of terminology that do tend to confuse the first time buyer. The first is the difference between a printer and a plotter. A plotter may be of several types, but all plotters have some sort of drawing apparatus. This will consist of a number of specially made pens pencils or even ordinary biros! The plotter will accept commands from the computer, and then move a frame containing the pens to draw lines on a piece of paper. As you can see, this is hardly a suitable method of producing text – it would be very slow for one thing – but it is ideal for drawings, coloured or otherwise. So the first decision is whether graphs, charts, etc. are important. If so, and colour is a serious consideration, then you should consider a plotter.

There are a number of plotters on the market for the BBC machine – they start at about sixty pounds and go on up to a thousand pounds and more! The more money you pay, the greater the accuracy of the plot, the more colours you can use, and the larger the size of paper possible. But about a hundred pounds will buy you a simple and useful plotter.

If you have decided that text is more important than pictures, then you must think about a printer. Just to confuse things, there are two general types of printer on the market – the "Daisywheel" and "Dot Matrix".

A daisywheel printer is probably the most familiar – it often will look (and sound!) like a typewriter, and the quality of text produced will be typewriter standard. Often, the printer will be available without a keyboard, or will have the keyboard as an optional extra – this will keep cost down if nothing else. So why the need for dot matrix printers? Well,

a daisywheel has limitations too. Cost for one thing. Although (as in any market) you can buy cheap daisywheel printers, an outlay of five hundred pounds or more should really be considered in order to obtain a printer of sufficiently high quality not to break down within a month.

A second disadvantage is that of typestyle – the printer will be able to produce all of the alphabet (obviously!) and probably a range of special symbols as well. But what if you want one word in italics? Or in bold case? Or double height? And what about a table of figures, with lines separating the rows and columns? Try producing these things on a typewriter, and you'll see the problems involved. This is where a dot matrix printer comes into its own.

A dot matrix printer – even the very cheapest – will be able to produce some sort of graphics, and will be able to produce a range of typestyles. It will also be able to produce text at a much faster rate than a daisywheel – speeds of one hundred characters a second, as opposed to twelve to twenty on a daisywheel are quite normal. A dot matrix printer will also be able to produce graphs, charts and pictures that are exact reproductions of what you see on your computer screen, sometimes in colour. (At a price.) The disadvantage of the dot matrix is that of the quality of the text, although recent advances in printer technology have led to very acceptable typefaces.

Obviously, the problems outlined are not insurmountable. Extra daisywheels can be bought, each with a different sort of typeface on it. But that means changing the wheel everytime you want that typeface, and changing back afterwards. Not very practical. And dot matrix printers can be made to produce letter quality text, but the cost of the printer becomes very high.

To sum up then, a plotter will suit the artist, draughtsman or cartographer who needs highly detailed colour pictures, with text consisting mainly of titles or labels. A daisywheel is for the businessman to whom the quality of text is important, with less emphasis on speed or diagrams. The dot matrix is for the enthusiast, hobbyist or programmer who wants a range of typestyles as well as the ability to produce quite acceptable pictures. But within this range, there is something for all – a printer will be an excellent buy, and will enhance your computing beyond measure!

CHOOSE

Charles King

For Quality & Care
with Cash to Spare



SERVICE/REPAIRS
MoT Testing only £6
 While-U-Wait

PARTS & ACCESSORIES
 at discount prices

BODYSHOP
 Insurance approved
 accident repairs
 Customising – Resprays

24 HR. RECOVERY SERVICE

OPEN SATURDAYS
'til 4pm

CHARLES KING MOTORS LIMITED
 SERVICE/PARTS CENTRE, HUDSON ROAD, BEDFORD. TEL: 40041

FORD MAIN DEALER 



BROADWAY WANTS TO KNOW

In our constant on-going search for the truth, Broadway asks . . . Can you explain the answer to Question E9??

If no, welcome to the land of the living.

Q: I can't find my printer in the list of printers in the manual, what do I do?

A: Read carefully the section on printer configuration (p303 onwards). You should be able to set up your printer after reading the printer manual in conjunction with this section. Most of the printers use a two's complement nibble shifted mantissa on the accumulator so you will have to index indirect through HL micas off the IX register after saving BC and AF on the stack. Reset the decimal half carry flag, and do a restart to the non-maskable interrupt location before attempting to rotate the refresh register left two bits. In case of difficulty, contact your TORCH dealer.

Extract from TORCH 280 Manual

Q: I have recently purchased an Electron Home Computer. Everything was fine for the first few months, but now I find that I cannot load programs in from the cassette machine. I have tried the tapes on a friends machine and they work perfectly. do I have a fault on my Electron, or am I doing something wrong?

A: One of the big problems with any home computer is often the cassette interface. The whole idea of loading programs from tape at high speed is one fraught with difficulties, and as such it is more than advisable to make sure that the process is as easy as possible for your computer. This involves simple maintenance of your cassette recorder as much as anything - first, have you cleaned the heads? (I'll assume that you haven't). Proceed as follows: buy a bottle of tape cleaning fluid and a packet of Cotton Buds or similar. These will work much better than a cleaning cassette. Open the lid of your tape machine and press play. Two heads will appear. The metal one is the one to worry about - gently rub it with a cotton bud soaked in solution. That should remove any oxide that may have accumulated. Then you must clean the pinch wheel - simply place another bud against it as it spins to clean it. Obviously, in both these operations take extreme care not to get cotton caught up in the mechanism. This procedure should be carried out on a weekly basis, especially when using

new tapes that may well have excess oxide on them.

Should this fail to work, there is a further adjustment you can make. Play a program cassette and listen to it. If the sound is dull or blurred, it may be necessary to adjust the azimuth of the heads. This is simply an adjustment of the angle of the heads against the tape - the best contact possible is the most desirable. Above the control keys on the cassette, there will be a small hole. Place a screwdriver in here, and turn it while the cassette is playing. The sound of the tape will change - you are aiming to get this as sharp and clear as possible.

If either of these solutions do not clear the problem, take the whole set up back to your dealer, who will test it and if necessary repair it for you.

Q: I have purchased one of your Side-ways Rom expansion packs for my Electron, and am very happy with it. However, I have found that certain chips are a very tight fit, and I have to force the lid home after insertion. Is this as it should be? Also, how do I use RAM in the pack?

A: It has been brought to our attention that very few roms do cause this problem - most do not. However, you should be able to close the lid with a little pressure - and it will do no harm to do so.

To fit RAM, it is necessary to change two links on the PCB. You can then use two of the sockets for 16k Ram chips. I will send you a circuit diagram and further details in the post.

Q: I am user of your Super Level One File-server. What a relief it is to have Random Access on the network - wordprocessing is a joy. However, I have come across a certain number of commercial programs that will not run on the net. Why?

A: It is certainly true that some programs do not run on Econet. There are two main reasons for this. Firstly, a BBC machine with an Econet interface loses a small amount of RAM for network use. For the technical, PAGE is now set to &1B00, instead of &1900 for a disc machine, or &E00 for a tape based computer. In the worst case then, you have lost &1B00-&E00, which is 13 pages, or three and a quarter K of RAM. Obviously, programs that need the full memory of the BBC are going to have problems. The way around this is difficult, but can be done. It consists of loading the program either in pieces, and the moving them in memory, or of using memory not normally allowed - such as screen memory - to load the program, and then

moving it to the appropriate place in memory in order to run it.

The second and more serious problem is that some manufacturers build protection into their programs. This will often check to see if a BBC is operating a cassette system, or is loading from tape. If not, the machine performs a BREAK. The solution here is firstly to find out whether there is a network version of the program available. In the case of Educational programs, this is often so, but in other cases there may well be no recourse other than to rewrite the protection routine. (If you are a competent machine code programmer that is!). Have no compunction about doing this - it's your program and as long as your do not copy it and give it away, you can do what you like with it!

Q: I have been experiencing some problems with my BBC when using the function keys. I have used a friends identical machine, and when I use SHIFT with a function key on that, it will give me colours in mode 7. Mine doesn't. Is this likely to be a serious fault, or would it be something I can cure myself? Also, is there any way that I can find out what is programmed onto the function keys. I can't find any reference to this in the User Guide.

A: It is highly unlikely that you have a fault on your keyboard at all. It is much more likely that you have an early operating system - version 0.1. This could not support the feature that you mention, along with some other things. The way to find out your OS is to type HELP - this will tell you the version. The current version is 1.2, and if you do not have it you can buy it from your dealer for ten pounds plus VAT. Incidentally, the SHIFT plus function key feature will show you what characters that you have defined using VDU23.

There is no way to find out what is programmed into the keys. If you purchase one of the ROMS available to help you with your programming, you may well find that it will have the feature you want.

Q: I have just bought a BBC model B from Broadway Electronics, and I am a novice. I have followed all the instructions for using the tape as shown in the User Book. But my programs won't load! HELP!

A: Regrettably, there is an error in the User Guide. The diagram on page 8 fig. 1 does not show the mains lead from the tape recorder. Try connecting this for best results.

Gareth Woodfine and Partners

Solicitors and Commissioners for Oaths

Solicitors for the computer age.

15 St Cuthberts Street

Bedford

Bedfordshire MK40 3JH

Telex 825326

Telephone Bedford (0234) 217921

Michael Marlow

Insurance Brokers

Albert Terrace, 9 Union Street, Bedford MK40 2 SF.

Tel: (0234) 40961.

Corporate and domestic computer insurance.

B.I.B.A.

The British Insurance Brokers' Association



Mushroom



A BYTE ABOUT BEDS

By "BEDFORDSHIRE ON SUNDAY"
EDITOR FRANK BRANSTON

I am in strange company in these pages. I loathe computers. I bought a BBC machine for my two daughters at Christmas and by lunchtime none of the family was talking to anybody else as we struggled to make sense of the instructions and at one point I was intent on introducing some unofficial modifications with an axe.

And despite his protestations that if I needed help all I had to do was phone him. Paul Vaughan refused to come out and help on the flimsy enough excuse that he was sitting down to his Christmas lunch and would be too drunk when he got up to drive round to my place. Six months after Christmas, we still can't make sense of the pestilential thing.

I run a business which manages to do

without computers, except in the typesetting area, and nobody has yet convinced me that it is worth changing from our manual system.

So what can I write about in a magazine devoted to computer buffs?

Well, we all need to eat, so I will give a swift rundown on restaurants in the Bedfordshire area, a kind of mini restaurant column. And such is my aversion to chips that none of those listed serve them.

Sorrentino's: Italian Restaurant, branches in Rushden and Winslow, Bucks and La Fontana, in Bedford. Cosy restaurant in Ram Yard, Bedford. Decent food but menu changes only once every couple of years so can get sick of it. Respectable house wines; fixed price menu but supplements on special items can bump up price, allow £15 per head.

La Fontana, Bromham Road, Bedford. Little used at lunchtime, good place for functions, menu different from Sorrentino's mainly by addition of lamb dishes, slightly less pricey, allow £12 per head including wine.

La Scala, Park Road North. Italian again. If you still want to eat Italian food but are fed up with Sorrentino's try La Scala. Pollo Mafioso, chicken with chesse and ham, is a

speciality, as is spaghetti Kilroy. As name implies it is Chris Kilroy's favourite dish and is basically spaghetti with everything on it. More expensive than the Sorrentino Restaurants, allow £20 per head.

Bengal Restaurant, Broadway, better than other Indian restaurants in my book and cheaper than the Magna which I think is somewhat overpriced. £10 per head.

Sirdar, Midland Road, cheapest take-away in town. Only does meat dishes on Friday and Saturday. £2.50 a head if you're a glutton.

Flitwick Manor, Church Lane, Flitwick. Run by Somerset Moore. Amusingly pretentious.... if somebody else is paying. He does a buffet lunch club for which you pay an annual subscription and eat as much as you want from the buffet, for £7.50 plus wine which is good value.

La Cachette, Hitchin Street, Biggleswade, best food, best value in Bedfordshire. Menu always changing according to what's in season. Scottish chef cooks, dutch wife runs the place, allow £17 per head, book at least two weeks in advance. Best thing to have happened in Biggleswade since the great fire in the 18th century.

Typing. There is no other way.

★ Main distributors for Canon products



★ Stationery Furniture, and Word Processing equipment

AP 500

ELECTRONIC TYPEWRITER

Canon

The next step forward

C&M Office Equipment Ltd.

International House

Bunyan Road, Kempston, Bedford MK42 8HP

Telephone Bedford 855505



J.P. MAGNETICS LIMITED

Suppliers of High
Grade Audio/Computer
Cassettes to
Educational Users

**PRICE LIST AVAILABLE
ON REQUEST**

UNIT 4, 7 MARY STREET, BRADFORD
TELEPHONE 0274 731651 BD4 8SW



Cox's Aerials

Oakley 2006

All Types of Aerials
Installed by EXPERTS

The O.W. Electronics Service

For your electronic component requirements

D. W. Electronics, being specialists in electronic component distribution, offer a Service to the electronic industry that will put the 'Great' back into 'Britain'


D. W. Electronics has been established four years. In this time we have built a reputation for **Fast Delivery, Quality Products and Competitive prices.** We supply the Audio, Computer, Educational, P.O., Military and many more industries with our Service in component distribution.

If you are not using our service, why not give us a try? ...
Ring (0480) 67666/67892
Can you afford not to!!!

Being situated near Cambridge means we are ideally located to serve the heart of the electronic industry. We offer industry the following ...

- (1) A wide range of **ex-stock** items from our warehouse.
- (2) **Scheduled Orders** to our customers requirements. (We hold a minimum of three months stock to allow for customers' rescheduling)
- (3) Our **'You want it we'll get it'** service for the real problem items, when your production lines are at a standstill (We have direct lines to Europe, U.S.A. and the Far East.)

O.W. Electronics (Cambridge) Ltd.
Tudor House, High Street,
Fenstanton, Cambridge, PE18 9JZ
Telephone: (0480) 67892/67666



FARARA CIRCUITS LTD.

BOBBINGTON IND. EST. A
DROVE ROAD,
BIGGLESWADE, BEDS.
SG18 8HD
PHONE (0767) 313796

Long standing manufacturers
of high quality printed circuits

KINDLY MENTION

"MUSHROOM"

WHEN REPLYING TO

ADVERTISEMENTS



ELEMENT

EUROPES
MOST
SUCCESSFUL
SHELVING
SYSTEMS

SYSTEM[®]

SCHOOLS ● SHOPS ● OFFICES ●
PUBLIC BUILDINGS ●

35 BRUNEL ROAD BEDFORD
MK419TG (0234)213316

Mushroom Buy & Sell Form

To place your Mushroom ad, fill in the form on the left, with one word per space, up to a maximum of 24 words. Send the completed form, together with a cheque or postal order for £2.50 made payable to G+G Publishers, 44-46, Bunyan Road, Kempston, Bedford.

NOTE: We cannot guarantee that your ad appears in any specific issue, and that we cannot accept ads from commercial organisations of any sort.

Your name:

Address:

Telephone:

Broadway

JOYSTICKS

Voltmace Delta 14b £13.00
 " 3B Twin £19.95
 " Adaptor Box £12.92
 " Software £5.17

ACORN MUSIC 500

Turn your BBC 'B' into a REAL MUSIC SYNTHESISER. Incorporating many features only found in models costing hundreds of pounds more
 Come and hear now
ONLY £173.00

MICROVITEC COLOUR MONITORS

The Industry Standard
 CUB 1431 STD Res. £216
 CUB 1451 MED. Res. £260
 CUB 1441 HIGH Res. £440
 Zenith green scr. £82
 Zenith amber scr. £82

SUPER LEVEL 1 FILESERVER

For your EICONET system
 No random access files?
 12k file limit?
 Riddled with bugs?
 Super Level 1 cures your problems, already in use in hundreds of schools and colleges.
 ★ Requires NO second processor.
£125+VAT

★ BBC PLUS 64K... £433

BBC B. £346
 BBC B+DISC I/F £407
 ACORN ELECTRON. £112
 6502 Second Processor. £173
 Z80 £347
 Bit Stik. £326
 Teletext Receiver £195
 Data Recorder. £34

★ REMEMBER ★

BROADWAY IS
 ACORN COMPUTER'S
 ONLY APPROVED DEALER
 & SERVICE CENTRE
 IN BEDFORD

SOFTWARE

A vast range of business, utility & games software in stock. Order ANYTHING for prompt service & delivery. If we haven't got it, we'll get it!!

FIDELITY

CM1400 TV/MONITOR

A superb TV/Monitor TTL, composite video & VHF inputs 14" portable with 8 TV channels.
Special purchase £173



THE NEW BROADWAY BD 800

800k each 40/80

The twin 800k each 40/80 disc drive that supports your V.D.U. Beautifully made with massive internal P.S.U., mains input filter and three mains outputs for BBC, monitor, etc.

Already widely acclaimed!
 Another innovation from BROADWAY!
 (Existing Broadway disc drive owners? Why not have your drives converted to BD 800 spec?)

TORCH GRADUATE

IBM or compatible at work?
 BBC at home?

You need to GRADUATE

Twin 40 track drives, IBM software compatibility bundled software — all for £999

RIBBONS, CABLES, ETC

Complete range of Epson ribbons in stock!
LEADS

BBC Monitor £2.95
 BBC Tape £3.95
 RS423 £8.65
Special leads made to order!

Listing paper — 2000 sheets fanfold £12.00

**3M 5¼" Diskettes
 20% DISCOUNT**

TORCH Z80 DISC PACK

Give your BBC the power of CP/M. Twin 80 track drives + Z80 second processor allowing WORDSTAR etc to be run on BBC.

BROADWAY DISC DRIVES

We have established ourselves as a major manufacturer of disc drives — supply universities, colleges, schools and the general public — the world over!

BROADWAY 100k single £99+VAT
 " 100k with P.S.U. £139+VAT
 " 200k Twin £199+VAT
 " 200k with P.S.U. £239+VAT
 " 400k 40/80 single £149+VAT
 " 400k 40/80 with P.S.U. £189+VAT
 " 800k 40/80 £299+VAT
 " 800k 40/80 with P.S.U. £375+VAT

All come complete with format disc, leads, manuals.

R.O.M.'s

We keep large quantities of all the BBC R.O.M.'s including:

Wordwise £40.00
 Wordwise plus £49.00
 View £52.00
 Viewsheet £52.00
 Disc Doctor £29.00
 Stardatabase £65.00
 Commstar £34.00
 etc, etc!!!

ELECTRON SIDEWAYS

Takes up to 4 sideways R.D.M.s in the Electron or 16k R.A.M.
£26.00

PRINTERS

Epson RX80 F/T. £219
 Epson FX 100 F/T £399
 Epson RX 100 F/F. £499
 Epson FX80 F/T. £319
 Mannesmann Tally MT80 (100 CPS) £173

BOOKS

A wide selection of technical books including the Babani range. Many with pictures (suits non-readers)

DID YOU KNOW?

We sell all sorts of goodies such as boxes, p.c. boards, keyboards, etching-kits, wire and cables, knobs, fuses, test meters, and connectors etc. etc.
 We are not just a shop — we give free advice and our technical staff are always on hand to help with problems

BROADWAY SUPER-DEAL

400K Disc Drive (40/80) plus Acorn DFS kit (fitted while you wait)

Only £199!!

COMPONENTS

As Bedford's oldest hobby electronics dealer we proudly offer a selection from our vast range!

50 NEW ITEMS ARRIVING DAILY!!

Transistors, diodes, 2000 types ex stock, TTL, CMOs full range, Vero, Antex, soldering irons, etc, etc.

★ Bargain bags — world famous, now with 20% better junk — £1

★ Electronic project kits — fed up with knitting or sumo-wrestling — try electronics kits start at — £1.

★ Tools — not happy with your present ones? We stock tools for all purposes!!

★ Loudspeakers — from 2" to 12" 100 watt — **BLOWS YOUR MIND!!**

★ HELPING HANDS

A new gadget which grabs your parts leaving you to hold your tools in both hands **£8.50**

EPROMS

Hitachi 250 ns 2764 **£5.95**
 Hitachi 250 ns 27128 **£8.95**

★ TELEPHONE EXTENSION CORDS

from **£2.00**
Now you can sit in the loo all day!

VALVES

We stock most popular Radio and TV valves

HONEST AL'S BARGAIN BASEMENT

Bit Print 24
 A cheaper printer, ideal for listings, centrionics VJ, fits your Beeb
£29.95

Broadway ELECTRONICS

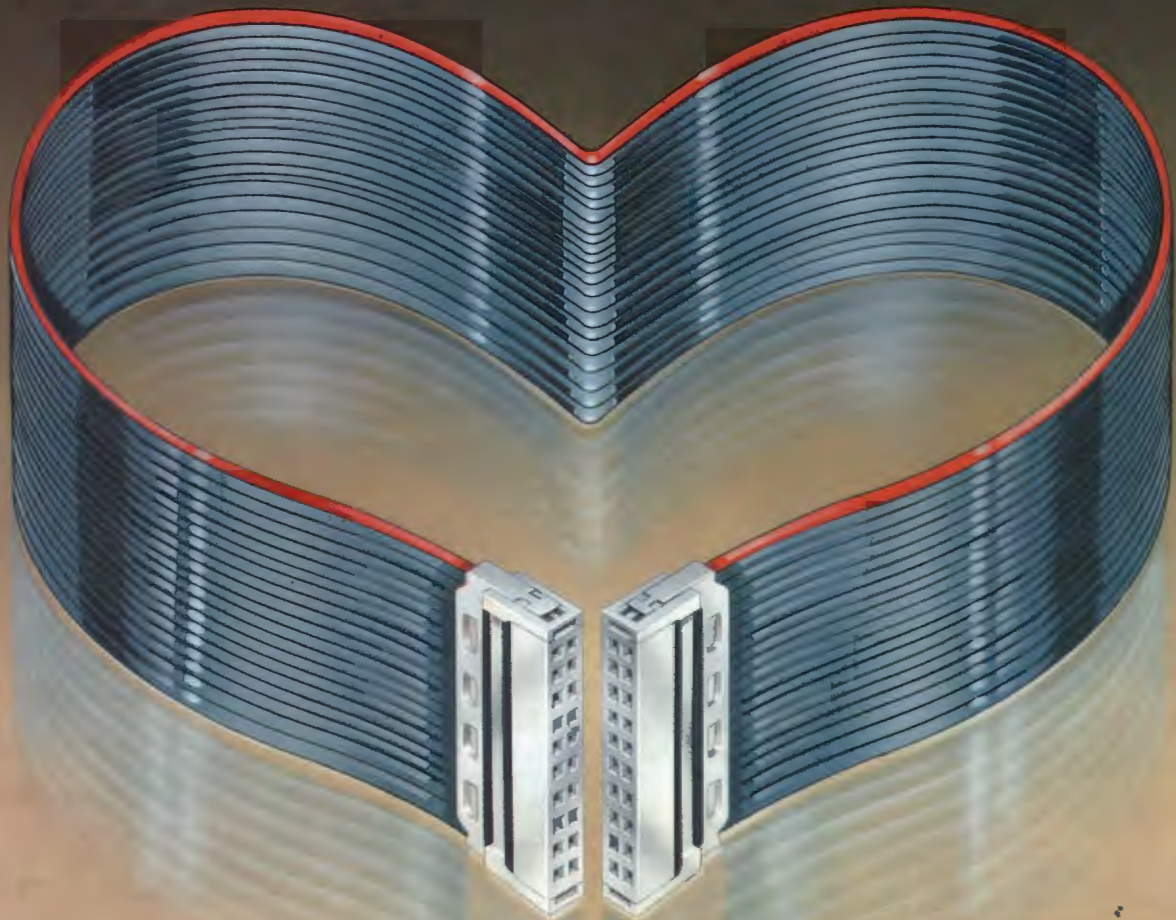
55 Tavistock Street, Bedford., MK42 0LJ. Telephone: (0234) 58303 Telex: 826112 MUSCOM G

OPENING HOURS: Mon-Sat — 9.00-5.30pm

We take Access and Barclaycard
 No Deposit Credit Terms!
 (Written details upon request)

OFFICIAL ORDERS ACCEPTED FROM SCHOOLS AND LOCAL AUTHORITIES!
 All prices ex-VAT.

WHY MICROS LOVE MT 80+



Most leading low cost Micros, e.g. BBC, Dragon and Sinclair QL love the MT 80+ printer from Mannesmann Tally. It is fully hardware compatible and with a range of cable options, gives trouble-free straight through plug-in facilities.

You'll love it too, for its sophisticated looks, and its range of standard features, which include 80 col. 100 cpl optimised bi-directional printing with dot addressable and line graphs, quick tear-off facility, friction and tractor feed, italics and down-loaded characters and all for an ex-VAT price of around £200.

Options include <55dBa sound reduction kit and 2K buffered serial interface.

The dealer who supplies you is supported by Mannesmann Tally, Europe's leading printer manufacturer. Your guarantee of continued support and assistance throughout the life of the printer.



Ask your nearest dealer for a demonstration, or phone us today for full details. Either Annie, Sue, Terry or Geoff will be only too pleased to help you.



MANNESMANN TALLY
THE FIRST NAME IN PRINTING

Mannesmann Tally, Molly Millar's Lane, Wokingham, Berkshire RG11 2QT
Telephone (0734) 791619/791533 Direct Lines or (0734) 788711 Switchboard

**MORE FEATURES
SAME PRICE**