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No 1 August 1990
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Now with this easy to fit upgrade you can add:

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7. *LROMS – to lock all sideways RAM banks found.
8. *UNLOCK – to unlock a sideways RAM bank in ABR, AQR, AP7.
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10. *SAVEROM – saves a copy of a ROM image to the current filing system.
11. *LOADRUN – loads a ROM image from the current FS into a RAM bank.
12. *FORMAT – will format an ADFS disc for Plus 3 or AP3.
13. *VERIFY – reads and tests every sector on an ADFS disc.
14. *VFORM – formats and verifies an ADFS disc in one command.
15. *BUILD – creates a text file that can be used by *EXEC (ie !BOOT).
16. *LIST – displays a numbered listing of a text file.
17. *TYPE – displays a file on screen with no line numbers.
18. *DUMP – to view a file's contents on screen.
19. *LANG – selects a default language to be booted on <CTRL-BREAK>
20. *HELP – provides a full 'help' list on all the ROM's commands.

Now there is no need to search for your utilities disc every time you want to format/Verify a disc, Build a !Boot file or Lock/unlock/Load a ROM image into ABR PLUS much more . . . the ideal companion from the company that produces the Acorn Plus 1.

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We are offering four of these beauties to the first four readers to come up with the correct answers to these questions:

1: Which animals were the heroes in Watership Down?
2: In which country was the teddy bear first discovered?
3: Which creature did St George slay to rescue the princess?
4: Which creature in Alice in Wonderland had an enormous grin?
5: Which mythical horse-like creature has a horn on its head?

If you know the answers fill in the entry form and get it to us before August 31. And if you don't know the answers why not try an encyclopaedia?

ENTRY FORM

Name .....

Address .....

.....

.....

Post Code .....Age.....

ANSWERS

1 .....

2 .....

3 .....

4 .....

5 .....

Send your completed entry form to: *Let's Compute!* Europa House, Adlington Park, Macclesfield SK10 4NP.

Watch out for all the winners' names in Let's Compute!

GAMES

Mike Goldberg, ace artist and brilliant games designer, lets you into the big secret. How to turn out your own mega games with a touch of Mike's Magic!

Have you ever wanted to produce your own action-packed game but wondered where to start? Well here's an ace way of conjuring up a unique game that no one's ever played before.

It's up to you to put in the bits you want and kick out those you don't. If something's nearly what you want you'll be able to change it to suit yourself.

You'll find it the easiest computing job you've ever tackled.

Piece by piece you'll build up a game – or even several different games. Each will be to your own design. And each month as your program grows and grows you'll face new and exciting challenges.

We'll start the ball rolling this month with the first bit of the game. And a screen editor so you can design your own mazes for it. There's also a monster for you to guide round the maze.

This means that if you construct a tricky maze you'll already have written a *find your way out* type of game.

Let's start with the game itself. Type it in, SAVE it and RUN it. If you don't know how to enter or save listings there's help on Page 38.

If it doesn't work first time you've probably made a typing mistake. So check your version thoroughly – again refer to page 38 for help. Once you've corrected your program, remember to save it again before running it.

Now you can just move the monster around the screen using these keys:

ASPL

Press the spacebar to move to another screen.

If you press the spacebar a few times you'll discover that there are three mazes built into the game.

But you can easily add your own or change the ones that are there so Let's

MAGIC!

Monster modifications

The bricks for the maze and the monster are made up from characters defined by VDU23 statements in lines 220 to 250.

If you already know how to define shapes yourself you can change them now.

● If you don't know how to do that yet, you soon will – Just keep reading *Let's Compute!*

look at how to do this. First, press Escape, type LIST and press Return.

Right at the end of the program you'll see four statements where the first word after the line number is DATA. The first three of these – lines 800 to 820 – are the ones that design the screens.

We could have explained how you could work out your own data. But we've gone one better. We've provided you with an editor that does it for you in no time.

Just type NEW followed by Return so the micro knows you want to go on to another program. Then type in the Editor Program, SAVE it and RUN it.

If you've saved it before, all you need to do is CHAIN it. Remember, help on typing in, loading and saving is on page 38.

Now design your own maze by following the instructions on the next page. You must put a solid border round the outside and it's best to do that first.

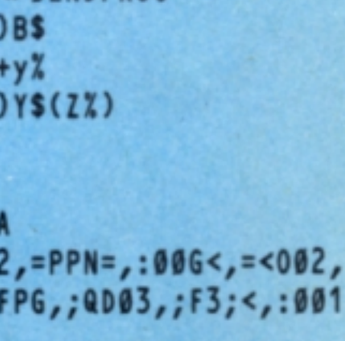
Once you're happy with your design press Q. The data line that will draw your maze on the screen will appear at the bottom.

Now you need to move this data into your game program.

But that's no problem. It's already been stored for you in function key 5.

It will remain there providing you don't press Control+Break. Pressing f5 will automatically type the whole lot in one

```
10 REM Game Building
20 REM (c)Let's Compute!
30 REM MAG 1990
40 MODE5
50 VDU23;8202;0;0;0;19,3,4;0;
60 DIMA$(3)
70 DIMY$(1)
80 PROCinit
90 PROCscreen
100 PROCstart
110 REPEAT
120 FORT=1TO90:NEXT:REM DELAY
130 PROCkeys
140 UNTILØ
150 END
160 REM INIT
170 DEFPROCinit
180 M%=1
190 N%=2
200 D$=CHR$8+CHR$10
210 K$=CHR$17
220 VDU23,224,126,171,213,171,213,171,
213,126: REM BRICKS
230 VDU23,240,102,165,126,255,255,153,
255,255: REM MONSTER TOP
240 VDU23,241,255,255,231,102,126,60,2
55,195: REM MONSTER BOTTOM (FRONT VIEW)
250 VDU23,242,255,255,255,126,126,60,2
4,60: REM MONSTER BOTTOM (SIDE VIEW)
260 VDU23,255,-1;-1;-1;-1;
270 Y$(Ø)=K$+CHR$2+CHR$240+D$+CHR$241
280 Y$(1)=K$+CHR$2+CHR$240+D$+CHR$242
290 B$=K$+CHR$Ø+CHR$255+D$+CHR$255
300 A$=CHR$224+D$+CHR$224
310 A$(Ø)=CHR$9+CHR$9
320 A$(1)=A$+CHR$9
330 A$(2)=CHR$9+A$
340 A$(3)=A$+CHR$11+A$
350 ENDPROC
360 REM SCREEN
370 DEFPROCscreen
375 CLS
380 A%=Ø
390 COLOUR1
400 COLOUR131
410 FORB%=4TO28STEP2
420 READX$:IFX$="STOP"RESTORE800:READX
$
430 FORI%=1TO5
440 Z$=STR$(ASCMID$(X$,I%,1)-48)
450 IFLENZ$<2Z$="Ø"+Z$
460 a%=VALLEFT$(Z$,1)
470 b%=VALRIGHT$(Z$,1)
480 PRINTTAB(A%,B%)A$(a%)
490 PRINTTAB(A%+2,B%)A$(b%)
500 A%=A%+4
510 NEXT
520 A%=Ø
530 NEXT
540 VDU4
550 ENDPROC
560 REM START
570 DEFPROCstart
580 COLOUR128
590 Z%=Ø
600 X%=1:Y%=6
610 PRINTTAB(X%,Y%)Y$(Ø)
620 ENDPROC
630 REM KEYS
640 DEFPROCkeys
650 IFINKEY-66PROCM(-M%,Ø)
660 IFINKEY-82PROCM(M%,Ø)
670 IFINKEY-56PROCM(Ø,-N%)
680 IFINKEY-87PROCM(Ø,N%)
685 IFINKEY-99PRINTTAB(X%,Y%)B$:PROCsc
reen:COLOUR128:PRINTTAB(X%,Y%)Y$(Z%)
690 ENDPROC
700 REM MOVE
710 DEFPROCM(x%,y%)
720 p%=(X%+x%)*64:q%=1020-((Y%+y%)*32)
730 IFPOINT(p%,q%)<>ØENDPROC
740 PRINTTAB(X%,Y%)B$
750 X%=X%+x%:Y%=Y%+y%
760 PRINTTAB(X%,Y%)Y$(Z%)
770 Z%=(Z%+1)MOD2
780 ENDPROC
790 REM SCREEN DATA
800 DATAQQQQQ,:0002,=PPN=,:00G<,=<002,
;01FP,;PQF2,::DF3,;ØFPG,;QD03,;F3;<,:001
2,QQQQQ
810 DATAQQQQQ,:0002,=EP=F,=ØN32,:E2:F,
=EP=F,=ØN32,:E2:F,=EP=F,=ØN32,:E2:F,=ØN3
2,QQQQQ
820 DATAQQQQQ,:0002,:0002,=0002,;;002,
;;;02,;;0:<,:0;;<,:0002,:000<,:0002,:000
2,QQQQQ
1000 DATA STOP
```



```
 10 REM Editor (screens)
 20 REM (c) Let's Compute!
 30 REM MAG 1990
 40 MODE1
 50 VDU23,1,0;0;0;0;
 60 VDU19,3,4;0;
 70 DIMF%(260)
 80 REPEAT
 90 PROCinit
100 REPEAT
110 FORT=1TO50:NEXT
120 PROCkeys
130 UNTILINKEY-520RQuit%=1
140 IFquit%=1PROCquit
150 UNTILquit%=1
160 END
170 REM INIT
180 DEFPROCinit
190 quit%=0
200 VDU4
210 COLOUR2
220 PRINTTAB(24,4)"CURSOR KEYS"
230 COLOUR1
240 PRINTTAB(24,5)"A = LEFT"
250 PRINTTAB(24,6)"S = RIGHT"
260 PRINTTAB(24,7)"P = UP"
270 PRINTTAB(24,8)"L = DOWN"
280 PRINTTAB(24,10)"RETURN = FIX"
290 PRINTTAB(24,11)" SPACE = UNFIX"
300 PRINTTAB(24,13)"C = CALCULATE"
310 PRINTTAB(24,14)"R = RESTART"
320 COLOUR3
330 PRINTTAB(24,16)"1 = LOAD SCREEN"
340 PRINTTAB(24,17)"2 = SAVE SCREEN"
350 COLOUR2
360 PRINTTAB(24,19)"Q = QUIT"
370 f%=0
380 FORI%=0TO260:F%(I%)=0:NEXT
390 VDU24,64;452;700;864;
400 GCOL0,131:CLG
410 VDU26
420 VDU23,224,255,129,129,129,129,129,
129,255
430 VDU23,225,-1;-1;-1;-1;
440 A$=CHR$224
450 B$=CHR$225
460 M%=32
470 X%=64:Y%=864
480 GCOL3,1
490 VDU5:MOVEX%,Y%:PRINTA$
500 ENDPROC
510 REM KEYS
520 DEFPROCkeys
530 IFINKEY-66PROCM(-M%,0,-1)
540 IFINKEY-82PROCM(M%,0,1)
550 IFINKEY-56PROCM(0,M%,-20)
560 IFINKEY-87PROCM(0,-M%,20)
570 IFINKEY-74PROCfix(1)
580 IFINKEY-99PROCfix(3)
590 IFINKEY-83PROCcalc
600 IFINKEY-50PROCsave
610 IFINKEY-49PROCload
620 IFINKEY-17quit%=1
630 ENDPROC
640 REM FIX
650 DEFPROCfix(C%)
660 GCOL3,1:MOVEX%,Y%:PRINTA$
670 GCOL0,C%:MOVEX%,Y%:PRINTB$
680 GCOL3,1:MOVEX%,Y%:PRINTA$
690 IFC%=1F%(f%)=1
700 IFC%=3F%(f%)=0
710 ENDPROC
720 REM MOVE
730 DEFPROCM(x%,y%,z%)
740 IFPOINT(X%+x%,Y%+y%)=0ENDPROC
750 f%=f%+z%
760 GCOL3,1
770 MOVEX%,Y%:PRINTA$
780 X%=X%+x%:Y%=Y%+y%
790 MOVEX%,Y%:PRINTA$
800 ENDPROC
810 REM CALCULATE
820 DEFPROCcalc
830 Q$=""
840 GCOL3,1:MOVEX%,Y%:PRINTA$
850 VDU4
860 PRINTTAB(0,24);
870 COLOUR2
880 A%=64:B%=864
890 FORJ%=864TO452STEP-32
900 I%=64
910 FORT%=1TO5
920 PROCwhich1
930 N$=V$
940 I%=I%+64
950 PROCwhich1
960 N$=N$+V$:N%=VAL(N$)+48:N$=CHR$N%:P
RINTN$;
970 Q$=Q$+N$
980 I%=I%+64
990 NEXT
1000 PRINT",";
1010 Q$=Q$+","
1020 NEXT
1030 VDU127
1040 Q$=MID$(Q$,1,LEN(Q$)-1)
1050 VDU5
1060 GCOL3,1:MOVEX%,Y%:PRINTA$
1070 ENDPROC
1080 REM WHICH
1090 DEFPROCwhich1-
1100 IFPOINT(I%,J%)=3ANDPOINT(I%+32,J%)
=3V%=0
1110 IFPOINT(I%,J%)=1ANDPOINT(I%+32,J%)
=3V%=1
1120 IFPOINT(I%,J%)=3ANDPOINT(I%+32,J%)
=1V%=2
1130 IFPOINT(I%,J%)=1ANDPOINT(I%+32,J%)
=1V%=3
1140 V$=STR$(V%)
1150 ENDPROC
1160 REMSAVE SCREEN
1170 DEFPROCsave
1180 *FX15
1190 GCOL3,1:MOVEX%,Y%:PRINTA$
1200 VDU4
1210 INPUTTAB(0,28)"SAVE NAME? "name$
1220 X=OPENOUT name$
1230 FORI%=0TO259
1240 PRINT#X,F%(I%)
1250 NEXT
1260 CLOSE#X
1270 PRINTTAB(0,28)SPC20
1280 VDU5
1290 GCOL3,1:MOVEX%,Y%:PRINTA$
1300 ENDPROC
1310 REM LOAD
1320 DEFPROCload
1330 *FX15
1340 GCOL3,1:MOVEX%,Y%:PRINTA$
1350 VDU4
1360 INPUTTAB(0,28)"LOAD NAME? "name$
1370 X=OPENUP name$
1380 FORI%=0TO259
1390 INPUT#X,F%(I%)
1400 NEXT
1410 CLOSE#X
1420 PRINTTAB(0,28)SPC20
1430 VDU5
1440 g%=0
1450 FORJ%=864TO452STEP-32
1460 FORI%=64TO672STEP32
1470 IFF%(g%)=1GCOL0,1:MOVEI%,J%:PRINTB
$
1480 IFF%(g%)=0GCOL0,3:MOVEI%,J%:PRINTB
$
1490 g%=g%+1
1500 NEXT
1510 NEXT
1520 GCOL3,1:MOVEX%,Y%:PRINTA$
1530 ENDPROC
1540 REM QUIT
1550 DEFPROCquit
1560 *FX21,0
1570 PROCcalc
1580 VDU4:PRINTTAB(0,26)
1590 LOCALX%,Y%
1600 $&700="KEY5 DATA"+Q$
1610 Y%=7:CALL&FFF7
1620 ENDPROC
```

☞

go. With this data still in memory, LOAD the game back into your micro, but don't RUN it. LIST it.

You now have to add a new line containing your data. Type in any number that is between the last two line numbers – do not press Return. If this is the first new screen you're adding use the number 830. Press f5 and the data line you need will automatically appear after the line number. Press Return to enter it.

Now RUN the game and use the spacebar to cycle through the screens until you reach your own.

Remember to save the game with your new screen included. You can also replace all or any of the built-in screens with your own by using one of the line numbers 800, 810 or 820 in front of your data.

How to use the Editor

CALCULATE
To see the numbers that make up the DATA statement press C. You can jot them down ready to type in to the game later.

MOVEMENT KEYS
Move the square marker around the screen with A,S,P and L

FIX
Use Return to place a red square on the map. This will become a brick in the final maze.

LOAD SCREEN
Allows you to load a screen saved by the Save Screen option.

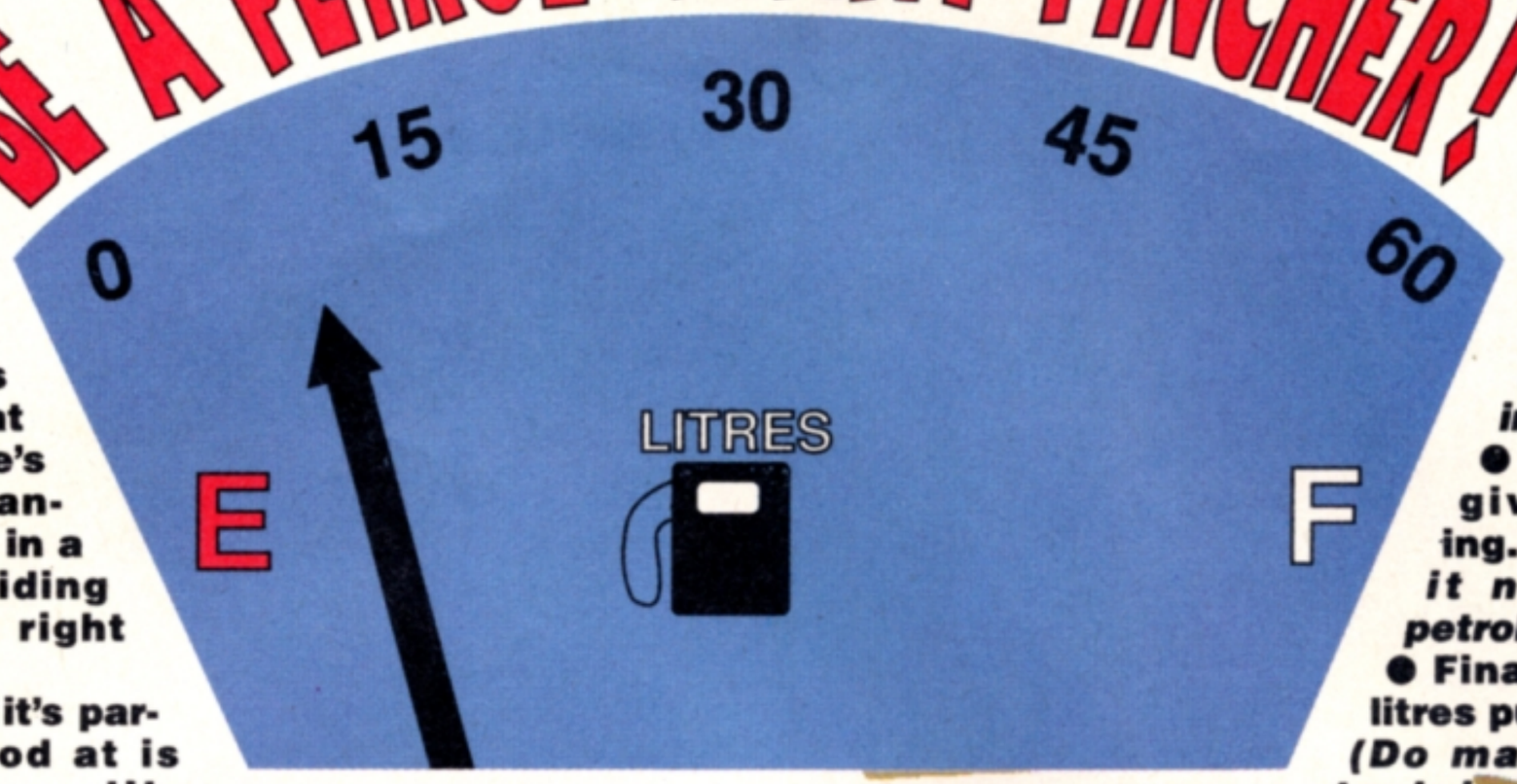
NOTE
You can hold Return down together with one of the movement keys to draw a complete wall. Remember to put a border round the whole display.

UNFIX
If you put a brick in the wrong place move the marker over it and use the spacebar to erase it.

SAVE SCREEN
Lets you save the current display so it can be loaded back and edited further at some other time. It doesn't save data for the game program.

Next month we'll add some really unpleasant monsters to make life difficult. And watch for more surprises!

BE A PETROL PENNY PINCHER!



Your micro is a real whiz at figures. There's nothing it cannot work out in a flash – providing you ask the right questions.

One thing it's particularly good at is conversions, like yards into metres or pints into litres. And it's even happier if you make it do some extra calculating at the same time.

Here's a program that uses a computer to do just that. And it is handy in real life situations, not just for pure maths in school or homework.

Motorists are very keen to know how many miles their car is doing for each gallon of petrol.

But how can you work this out when today petrol is bought in litres?

To use this program you need to start with three figures:

- **You are asked to key in the old mileometer reading. *(This was the figure on the mileometer when it last went to a filling station).***
- **Then you have to give the new reading.*(The reading when it next goes in for petrol.)***
- **Finally, the number of litres put in the tank. *(Do make sure that the tank is filled completely each time.)* Now it's the computer's turn.**

In a fraction of a second it works out how many miles have been travelled between fillings, how many gallons it used, and tells you how many miles the car has travelled for each gallon of petrol

The result can be compared to the manufacturer's own figure.

And it could be an eye-opener.

If the car is using more petrol than it should, either the driver is too heavy footed on the accelerator, or the car is out of tune.

In which case a quick visit to the garage is called for. Whichever the reason, by highlighting the problem your computer is helping to save money.

HOW THE PROGRAM WORKS

There are three main parts to the program and each can be used alone in your own programs.

Here's what the various bits do:

Lines 40 to 110 use *windows* and *logical colour defining* to make a colourful display. That may sound a bit tricky but we will be explaining what it means in a future issue of *Let's Compute!* For the time being, you can use those few lines to brighten up your own programs even if you don't understand how they operate.

Lines 140 to 230 contain the part that calculates the mpg. Be warned: If you use this on its own it will still work but the screen display is naff.

Lines 240 to 270 contain the code that asks if you want another go. Note that the program accepts capital or lower case responses. In conjunction with **Lines 130 and 280** it keeps repeating the calculation part of the program until you answer N or n.

As for **Line 120** this is a really clever part of the program. We'll let you into its secret another time.

```
10 REM MPG Calculator
20 REM (c) Let's Compute!
30 REM By Mike Ramsbottom
40 MODE6
50 VDU28,4,20,35,4
60 VDU19,0,3,0,0,0
70 VDU19,1,4,0,0,0
80 COLOUR129:COLOUR0:CLS
90 VDU28,5,19,34,5
100 PRINTTAB(8)"MPG Calculator"
110 VDU28,5,19,34,7
```

Use this section to brighten up your own programs

```
120 a%=&20105:REM Set 1 decimal place
130 REPEAT:REM Main loop start
140 CLS
150 INPUT'"Old mileometer figure? "old
160 INPUT'"Mileometer figure now? "new
170 INPUT'"How many litres? "lit
180 dist=new-old
190 IFdist<0GOTO150
200 gall=lit/4.55
210 IFgall=0GOTO190
220 mpg=dist/gall
230 PRINT''"Miles per gallon ="mpg
```

This is the actual calculation part and it works on its own

```
240 PRINT''"Another go (Y/N)?";
250 REPEAT
260 key$=GET$
270 UNTILINSTR("YNyn",key$)
280 UNTILINSTR("Nn",key$):REM End loop
290 VDU20,26,12: REM Reset screen
```

Here's a useful routine to check for capital or lower case answers

Your own logo disc or tape for £1!

By far the most famous part of Logo is Turtle Graphics. And that's what you can get for JUST £1 – when you send for the *Let's Compute!* Turtle Logo disc or tape.

You can order it on the coupon below.

However, if you join the *Let's Compute!* Club the program will come to you for nothing – as part of your Club Members' Pack.

BIRTH OF A LANGUAGE

WHAT is Logo?
Logo is a language like Basic. To run a Logo program your micro needs to understand it. But unlike Basic, Logo isn't usually built in to your computer when you get it. You need to load it in from disc or tape. There are several versions of the Logo language. Perhaps the most popular is the Logotron one. There's a cut-price offer for it in the *Let's Compute!* Club Members' Pack.

WHO invented Logo?
It was written between 1966 and 1968 by Seymour Papert, a maths expert at the Massachusetts Institute of Technology in the USA. It is based on an idea from a Swiss psychologist, Jean Piaget.

WHAT does Logo mean?
It is derived from the Greek word *logos*, meaning *word* or *thought*.

WHAT have turtles to do with Logo?
When Logo was first invented children found it easier than any other language but it was still too hard for many of them. So to make it more friendly Papert called in the turtles.

Today they exist in three forms: There are small robotic ones that crawl around the floor drawing as they go. There is a variety that have become a well known shape on a computer screen. And now – after over 20 years of evolution – there's a whole new family of *Let's Compute!* turtles.

Following from the original concept that a turtle would make Logo easier to understand, the *Let's Compute!* turtles teach Logo in the most fun way ever devised.

WHY bother to learn a program?
Many experts say there is no need to program a computer (except professional computer programmers). However, learning to control a computer develops other mental skills, such as logical thinking. Logo is an ideal language for this.

ORDER FORM

Please send me the *Let's Compute!* Turtle Logo. I enclose cheque, postal order or stamps the the value of £1

Name .....

Address .....

.....

.....

Post code .....

Age .....

Please send it on:

- ☐ 5.25in 40T disc
- ☐ 5.25in 80T disc
- ☐ 3.5in disc
- ☐ Cassette

SEND TO:

Logo Offer,
Let's Compute!
Europa House
Adlington Park
Macclesfield
SK10 5NY

KNOT LOGO? Oh yes it is!

We've decided to start our monthly step-by-step guide to Logo, that exciting turtle-trotting language, by looking at this knotty little program devised by Martin Sann. The twisting knot pictured here is just one of many fascinating patterns you'll be able to create with it. But first you have to run the Logo language.

If you haven't got it yet see our special offer on the left. After running it key in the program on the right and then type:

```
KNOT 50
```

Now watch the knot being drawn. The number – 50 in our example – can be changed to make the knot bigger or smaller. Try it!

If you already know how to program in Logo could you draw your own special kind of knot using the language?

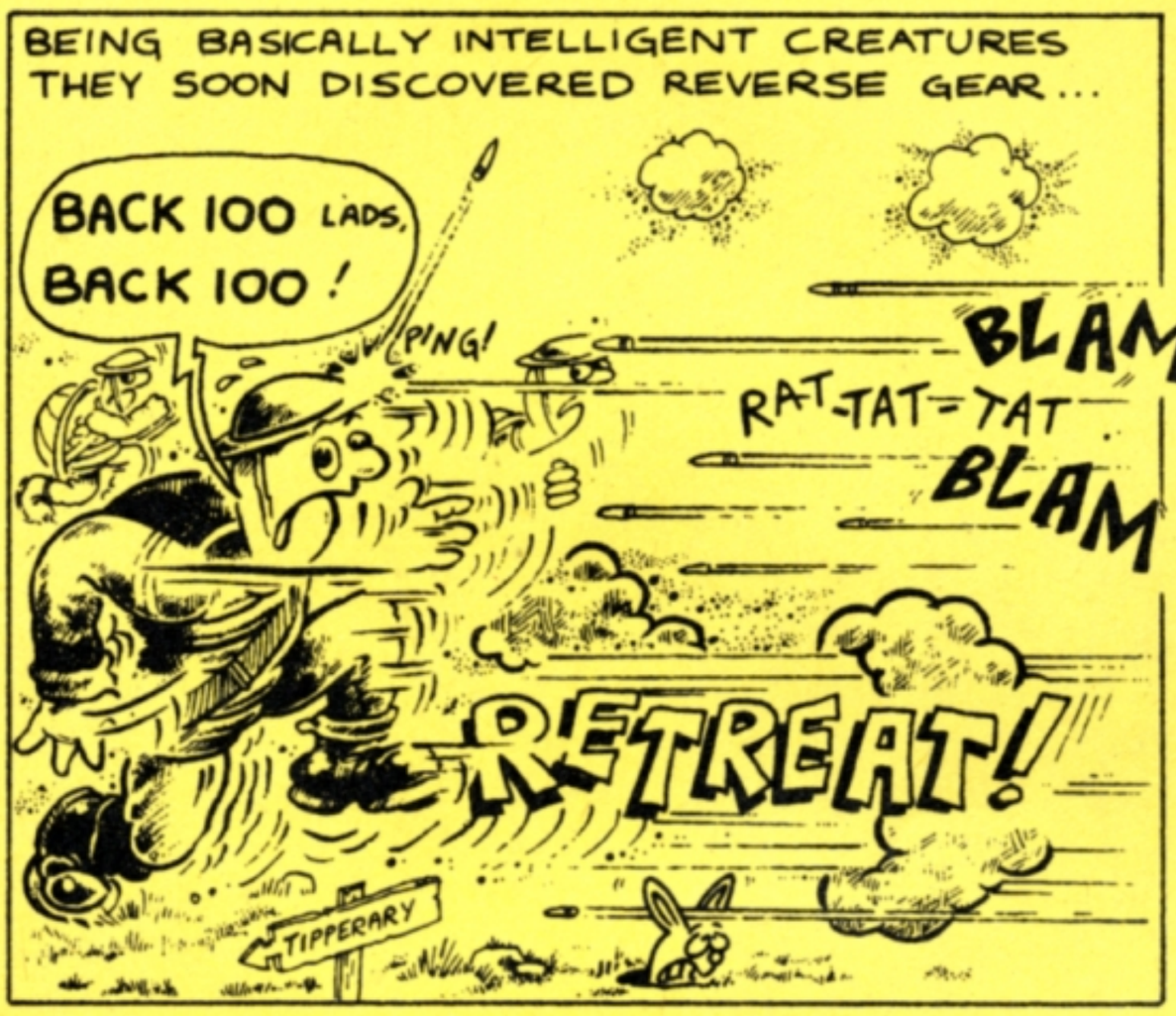
If you can, send it to *Let's Compute!* Adlington Park, Macclesfield SK10 4NP. There's a handsome *Let's Compute!* baseball cap for the writer of every one we print.

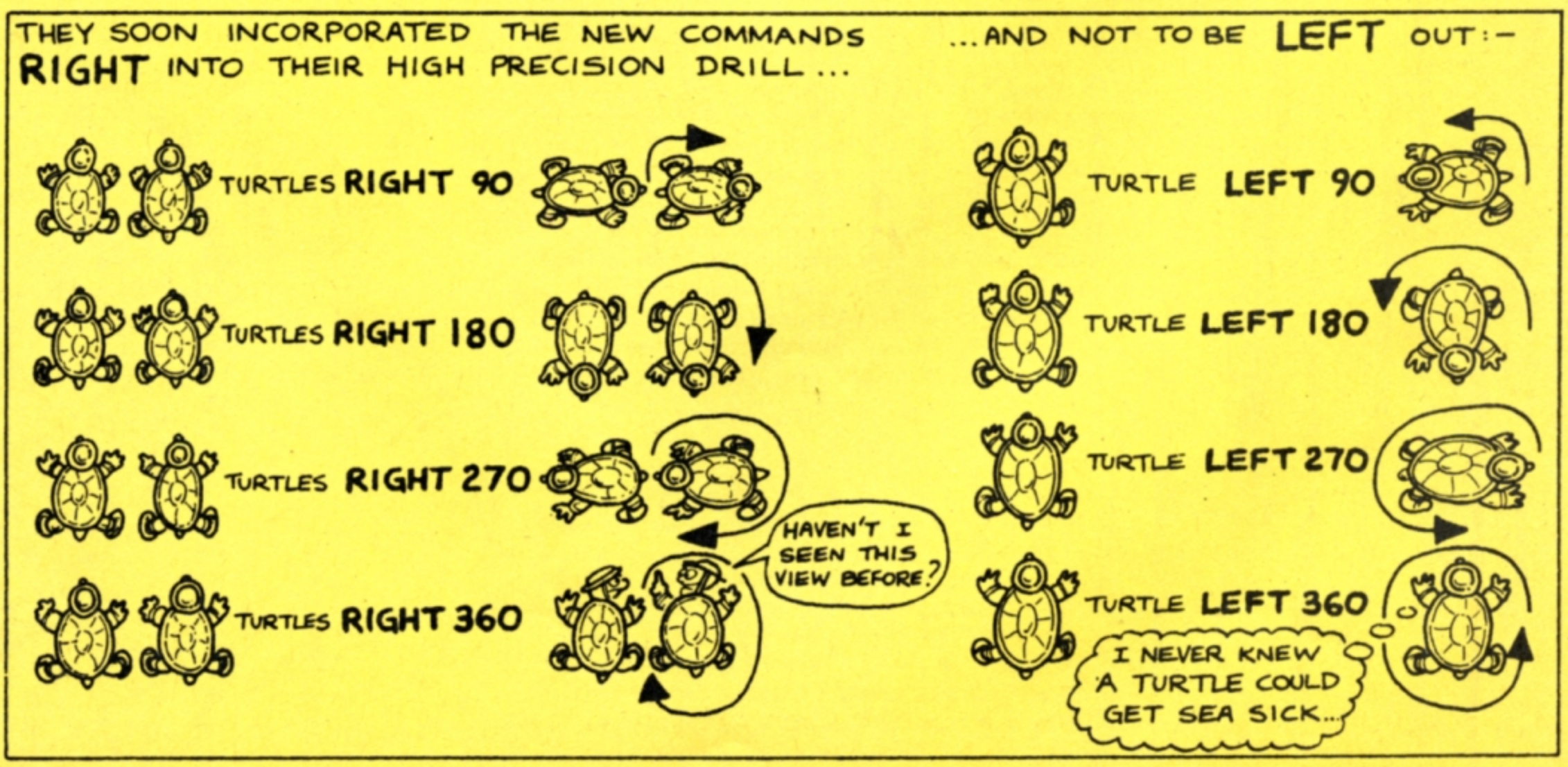
```
TO CORNER2 :DIST
FD :DIST
JUMP :DIST
REPEAT 2 [FD :DIST
RT 90]
FD :DIST * 3
END

TO INNER :DIST
FD :DIST * 2
CORNER2 :DIST
RT 90
CORNER2 :DIST
JUMP :DIST
END

TO JUMP :DIST
PU FD :DIST PD
END

TO CORNER1 :DIST
FD :DIST * 2
JUMP :DIST
FD :DIST * 2
RT 90
FD :DIST * 3
RT 90
FD :DIST * 4
END

TO OUTER :DIST
FD :DIST * 1
CORNER1 :DIST
FD :DIST RT 90
CORNER1 :DIST
JUMP :DIST
END

TO KNOT :DIST
ST
REPEAT 4 [OUTER
:DIST]
RT 90 JUMP :DIST LT
90
REPEAT 4 [INNER
:DIST]
LT 90
FD :DIST
RT 90
HT
END
```

LOGO LOWDOWN

BY MICHAEL NOELS

AMONGST THE RANKS OF TURTLE HEROS NONE STAND OUT SO MUCH AS THE *TURTLE TERRITORIALS!*





ALL THIS DRILLING TURNED THEM INTO THE ULTIMATE FIGHTING MACHINES

FORWARD 1000

THE SOMME

HAZEL GROVE 4m

ALL THE NEW COMMANDS MEANT...

RIGHT 180
FORWARD 1000

1/2 TURN

SWING

HE LOOKS LOST TO ME!

...THEY COULD SEE WHERE THEY WERE RUNNING

NOW ALL TINY TURTLE TOTS ARE TAUGHT THE COMMANDS...

I DIDN'T KNOW TURTLES COULD ABBREVIATE!

FORWARD (FD)
BACK (BK)
LEFT (LT)
RIGHT (RT)

USE THE ABBREVIATIONS FOR **BRIEF** COMMANDS

MISS, ISN'T THE FORWARD AT THE FRONT OF A BOOK?

...AND LEARN THEM FOR THEIR HOMEWORK

HOWMWURK

TURTLESHELL BUTTERFLY

LT 90

RT 180

LT 270

RT 360

quarter turn

half turn left

three quarters turn

full circle

P.S. I luv Miss Teech...

Tim Turtle!

MAG 1990

THEY EVEN USE THEM FOR FUN:

I DO LOVE SQUARE DANCING

```
FD 100
RT  90
FD 100
RT  90
FD 100
RT  90
```

AND AWAY WE GO AGAIN...

TYPE THESE IN AT THE ? PROMPT AND PRESS RETURN AFTER EACH LINE

OF COURSE THE LITTLE ONES NEVER QUITE LISTEN...

```
FD 100
RT  90
FD 150
RT  90
FD 100
RT  90
FD 150
```

NICE TERRY. BUT IT'S ONE SIDE SHORT.. IT'S A TRIANGLE

NO TANIA, THAT'S A RECTANGLE — ONE SET OF SIDES LONGER THAN THE OTHER...

```
RT 60
FD 100
RT 120
FD 100
RT 120
FD 100
```

Q What's a turtle's favourite Beatles tune?
A Me-shell!

MAKING PATTERNS WITH **LOGO** IS TURTLES' PLAY

FD MOVES US **FORWARD**
BK MOVES US **BACK**

DON'T FORGET THE SPACE BETWEEN **FD** AND THE NUMBER

FD 100

BOING!

BK 100

AND YOU CAN TURN TURTLE WITH

RIGHT (OR **RT**)
LEFT (OR **LT**)

THIS ROTATES OR TWISTS THE TURTLE AROUND

LT 90

RT 90

TELL THEM **90** IS A QUARTER TURN MISS

SOME TURTLES ARE SHY- USE **HT** (**HIDETURTLE**) TO CONCEAL AND **ST** (**SHOWTURTLE**) TO REVEAL THEM

CAN A TURTLE BLUSH?

PU WILL STOP YOUR TURTLE LEAVING A TRAIL - **PD** WILL START IT AGAIN

PU... PD...
..PU...PD...
PU... PD...

TEAR ALONG THE DOTTED LINE

IF YOUR TURTLE MAKES YOUR SCREEN MESSY TRY **CLEAN**

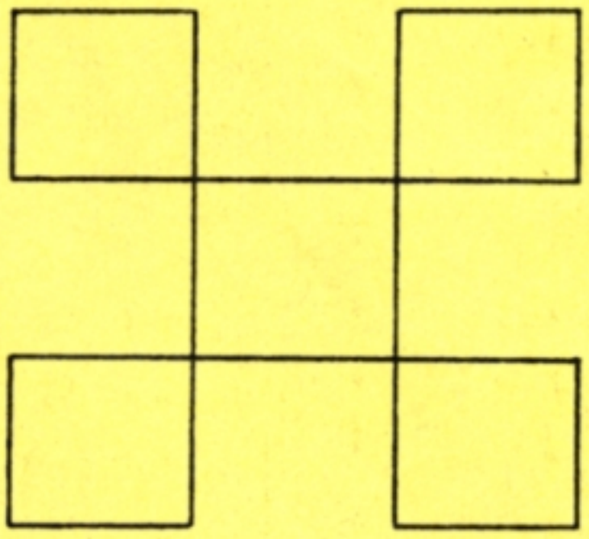
OOPS!

AND IF HE GETS LOST SEND HIM **HOME**

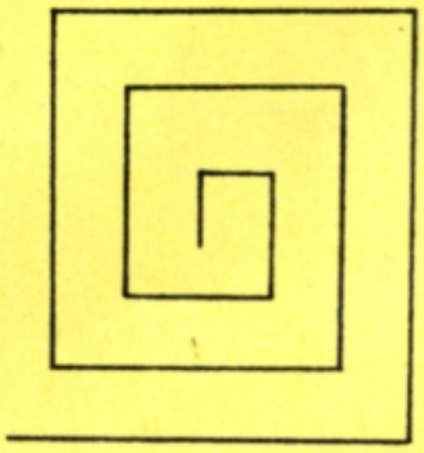
THERE THERE

WHERE AM I ? I WANT TO GO HOME !

HERE ARE SOME OF THE PATTERNS OUR TURTLE TOTS CAME UP WITH



by Tania



Squiral by Terry

Miss Teech by Tesza

NEXT MONTH
TERRY TRIANGULATES AND TOMMY TURNS INTO A HELITURTLE !

The search is on to find the top...

ALPHA

Artist

Look how easy it is to draw on your micro!

```
  #########
  #       #
  I  0 0  I
  I   ^   I
  I       I
  I   =   I
    _____
```

Mrs Jones

```
    _____
  &&     &&
  &&  OO &&
   !  ..  !
   !      !
   ! '__' !
    _____
```

Mr Jones

```
     %%%%%%
   %%      %%
   %%  OO  %%
   %!      !%
 %  !  ..   !  %
 %  !      !  %
    !  []  !
     ____
```

Sarah

You can use any word processor to draw your picture. Or you can use a simple program like this one:

```
10 CLS
20 PRINT "   )   "
30 PRINT " '''''' "
40 PRINT "'      '"
50 PRINT "' 0 0  '"
60 PRINT "'  ^   '"
70 PRINT "'  0   '"
80 PRINT "'____  '"
90 PRINT "John"
```

What this does when you run it is to clear the screen and then print out the picture you have drawn, line by line, to the right of the word PRINT. Don't forget to include the quote marks.

If you would like your picture to appear near the centre of your screen add this extra line:

```
5 VDU28, 10 20, 25, 4
```

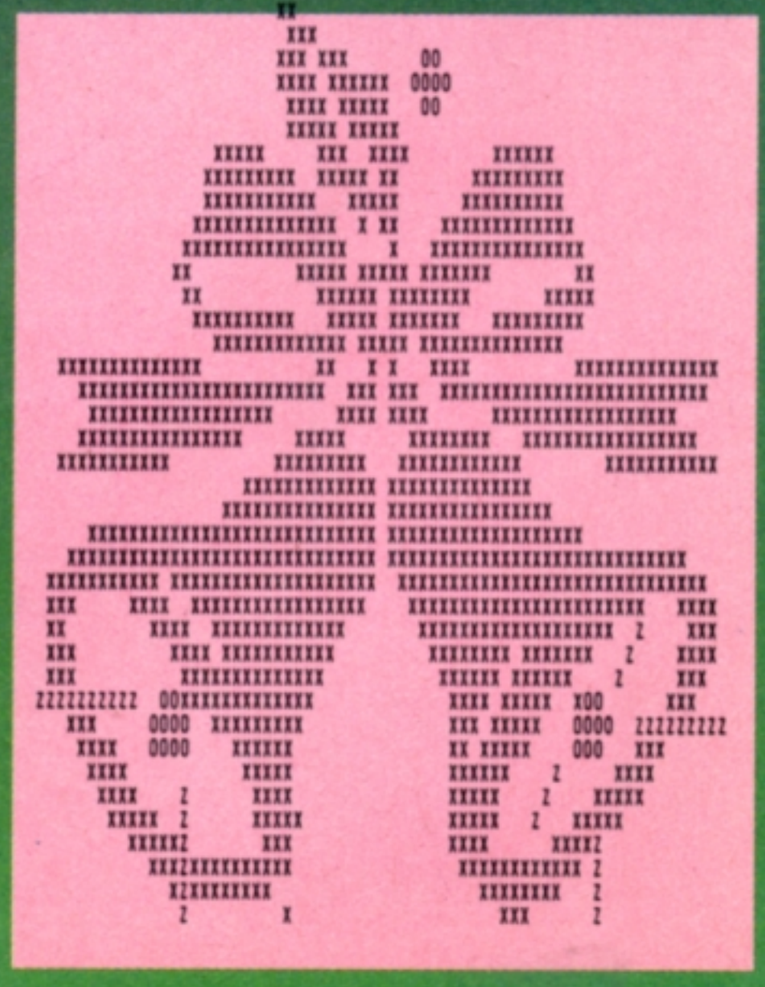
Anyone can draw pictures on a computer screen. And you don't have to buy special software to do it.

All you need to use are the keys on your keyboard. You build up your picture by using the ones you think are best – letters of the alphabet, numbers, even full stops and other punctuation marks.

It's amazing what you can do with a little imagination. Anything from the simple faces Janet drew of her friends *(see panel on the left)* to really superb pictures such as the one below, which uses only the letters Z, X and O.

Experiment with the different keys to see what the effect is on the screen. Full stops, commas, colons, dashes and apostrophies can be used to shade in light areas, while denser parts of your picture may call for keys such as *, @ or #.

Keep trying until you find



BET

JANET McKNIGHT, who has fun making faces the electronic way, launches a nationwide contest

WHAT YOU CAN WIN

Every month the sponsor of this great competition, Impact Software, will present FIVE copies of its popular drawing package – Art Studio. It's reviewed in this issue of *Let's Compute!* and will move you from the world of alphabet art into the dizzy world of computer graphics.

PLUS lots more prizes! For the best entry received before November 30 there will be an extra gift from Impact – a voucher worth £50 you can spend as you wish. And there will be TWENTY more vouchers worth £5 each for the next 20 best.

AND £100 FOR YOUR SCHOOL

Impact is also presenting £100 for the best picture we receive that has a school name and teacher's signature on the entry form.

(Please note that you do not need to complete the school section of the coupon if you do not think it applies to you.)

which ones give you the result you are looking for. We would like to print lots of readers' pictures in future issues of *Let's Compute!* So the more the merrier.

Don't worry if you're not all that good at art. What we are interested in are novel and unusual ways of using the computer's keys to create pictures.

We've plenty of super prizes to give away – and there's even an impressive certificate your for EVERYONE who enters.

Just save your picture on disc or tape and send it in – preferably together with a printout. Make sure you include the entry form, or a copy of it. And also enclose a stamped addressed envelope if you want us to send the certificate, as well as to return your tape or disc.

SEND THIS COUPON WITH YOUR ENTRY

I would like to enter the Alphabet Artist contest

Name .....

Address.....

.....

.....

Post code .....Age.....

Please complete this section should you wish your school to benefit from our top winner's prize each month.

My school is .....

Signature of teacher .....

POST TO: Alphabet Artist, Let's Compute!, Europa House, Adlington Park, Macclesfield SK10 4NP

The Gadget Shop

Come into the Gadget Shop, the place where you'll find lots of exciting ways of using your micro to link up with outside world . . .

Building fun-to-use gadgets that work by remote control is easy. And safe. And they can't harm your micro! Let Gadget Shop proprietor Mike Cook tell you all about it

TO start the ball rolling, this month we'll make a cable with a connector on the end which will be used in future projects to get signals into and out of our micro.

Most computers come equipped with a User Port or can easily have one added. *Details for your own micro are in the panel below.*

The connector on the micro has 20 pins and to fit it you need a 20 way IDC plug. On the right we explain how you should connect it to the cable.

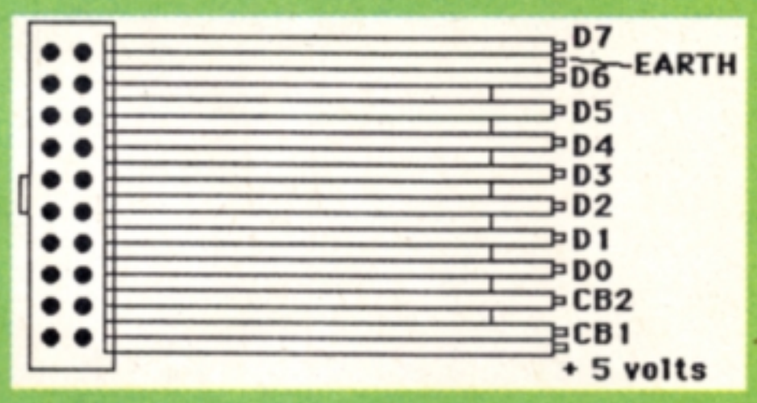
Make sure the lead is the right way round. The bump on the plug should be pointing away from the end of the cable.

Then when it is fitted the cable is wrapped over the back of the clip and held in place with the strain relief clip. This is simply pushed on to hold the cable in place.

At this stage the cable itself is not much use to us, as at the other end we have 20 wires that all look the same. We need a way of identifying them.

To do this we separate each strand for about 15cm. Start off with a little nick from some scissors and tear back. Look at the diagram below and cut short the eight wires shown. These are the ones we don't need.

We must connect the remaining wires to a screw block terminal – often called a chock block. To do this we need to strip



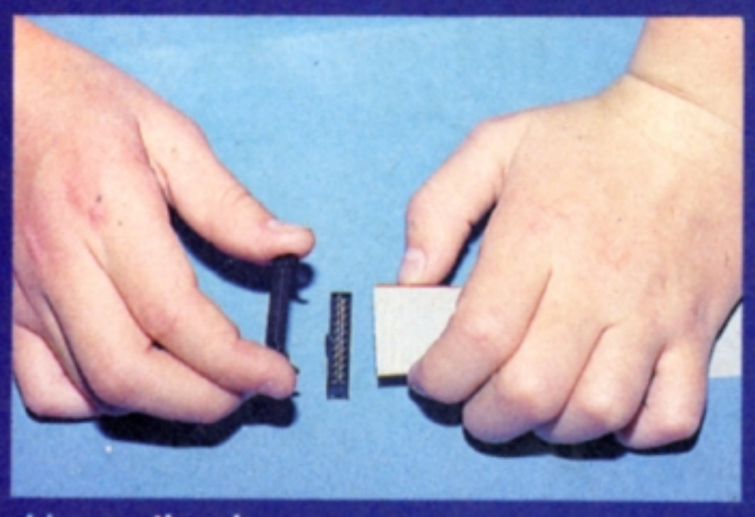
Fitting the cable to your micro

BBC Micro and Master: Both have a 20 pin User Port underneath ready for use.

Master Compact: The Joystick/Mouse socket has some of the same signals as a User Port so you can use it for the majority of the projects. A special kit is available – see the order form – and differences in the connections are explained with the pack.

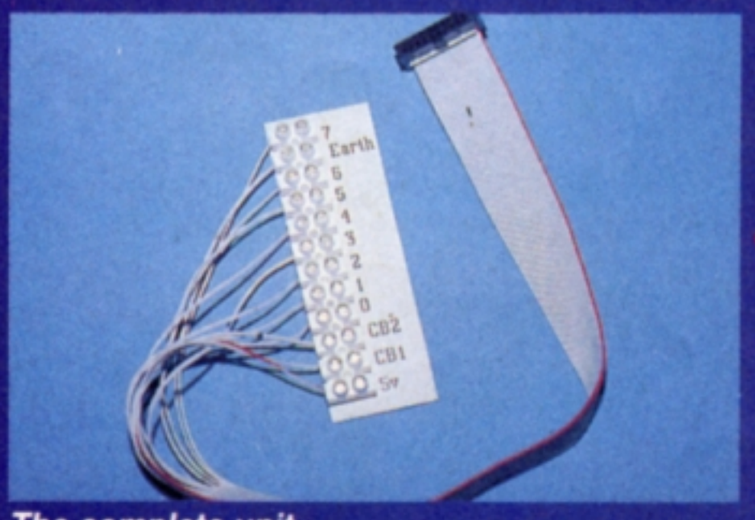
Archimedes and A3000: You need an I/O podule which is available as an optional extra from several suppliers – you'll find them advertised in this issue

Electron: You need a Plus 1 and User Port cartridge, both available from Pres (0276 72046).

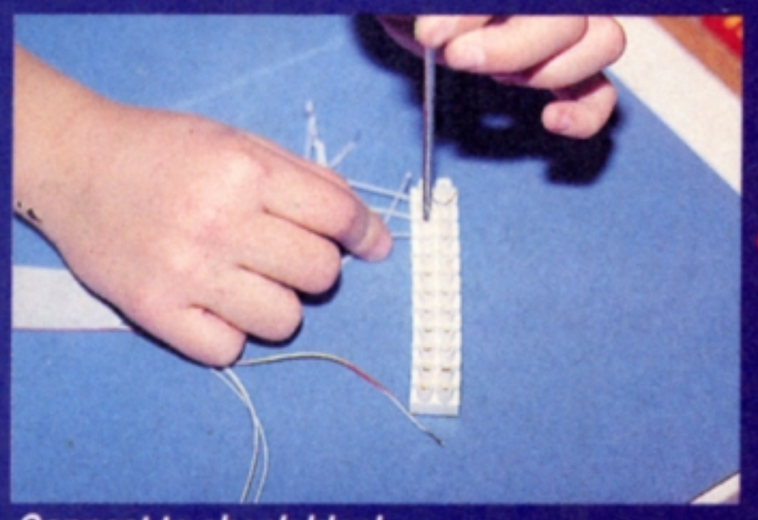


Line up the plug

Put it on the lead



The complete unit



Connect to chock block

IN THE SHOP SOON: DIY BURGLER ALARMS ●

Insulation Displacement Plug

This plug get its name from the way the cable is attached to it. It just pushes on so the insulation is displaced and the connection made automatically.

It would be a bit of a drag having to connect wires to each one of the plug's connectors individually, so the wires come in the form of ribbon cable.

This consists of 20 strands of insulated wire all joined together along their edges.

The IDC plug has small blades on the back of its connectors. These are pushed through the plastic insulation on the cable until they grip the wire.

To attach the plug just line up the cable with the back of the plug, clip the plastic back cover on and **gently** squeeze the whole thing together.

There are special tools to do this, but a vice works just as well. Tighten it so that the plug and clip are as close as possible and there you have it – 20 perfect connections made in one fell swoop. If you haven't got a vice you can connect an IDC using pliers.

But take care to squeeze it carefully and keep the back parallel to the plug.

away the insulation from about 1cm of the end of each wire. This is best done by using some insulation strippers.

You will find that there are many strands making up each individual wire. Hold each set between your finger and thumb and twist the strands together, then bend each small bundle in half.

When you have done this attach each wire to the chock block. Push the wires into the holes and tighten the screws.

Finally you can stick the chock block down to a solid piece of cardboard, using a pair of sticky foam pads.

To round off the job you'll have to write the name of each signal on the cardboard base, as in the photograph below of the finished unit.

All the parts to make this connector should be available at your local electronics store. Should you have trouble getting any of them you can buy them all in a special Gadget Shop pack – see the coupon on this page for details.

If you don't want to cut your copy of *Let's Compute!* just send your name, address and payment to the address shown and say you want Gadget Shop Pack 1.

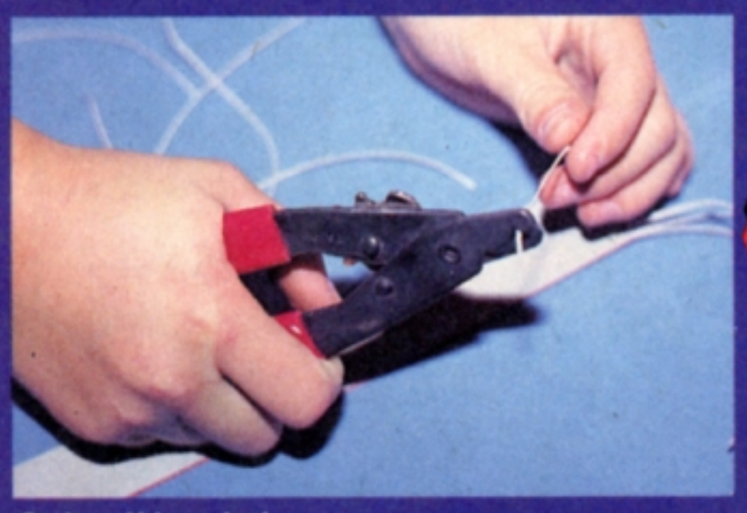
Now we have a safe and convenient way of getting at the signals from your micro, you're well on your way to making lots of easy add-ons – games, tame turtles and burgler alarms to name just a few.

They'll all need to use the connector cable. So make sure you keep it safe.

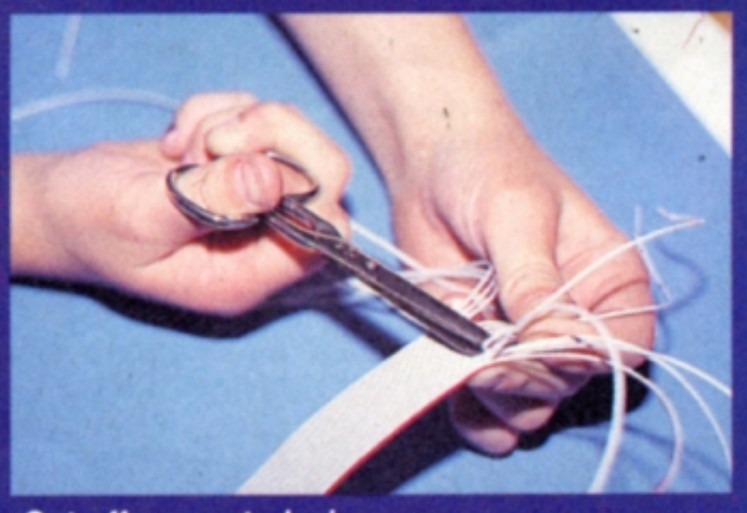
The projects we are preparing for you are all easy to make – and lots of fun for all ages!

Clamp it in vice

Nick and tear wires



Strip off insulation



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Make a game that tests the steadiness of your hand. All you need is the cable you've made this month, two connectors, a resistor – all of which come with the pack – and a wire coat-hanger.

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Access

VISA

It's turtle tune time!

YOU don't need software that costs a fortune or long listings that take hours to type in to make your own music.

And here's proof!

This short routine converts your micro keyboard into a musical one – the keys are shown below. All you have to do is type it in, run it and get playing.

There's a lot of lovely music in your micro – so let it all hang out!

If you're a budding programmer you could use it as a basis for your own more sophisticated programs. You could add Record and Playback routines for a start.

And to prevent losing your valuable composition, how about arranging for Load and Save routines?

You could even pull out all the stops and tuck in Envelopes too. Then you can simulate real instruments. We'll be looking at envelopes soon in *Let's Compute!*

Things you can change:

D% **This variable, set in line 5Ø, is the duration of the note in centi-seconds. Try increasing it for longer notes.**

V%**: In the same line is the variable that controls the volume. You can use any negative number from -1 to -15 (the latter being the loudest).**

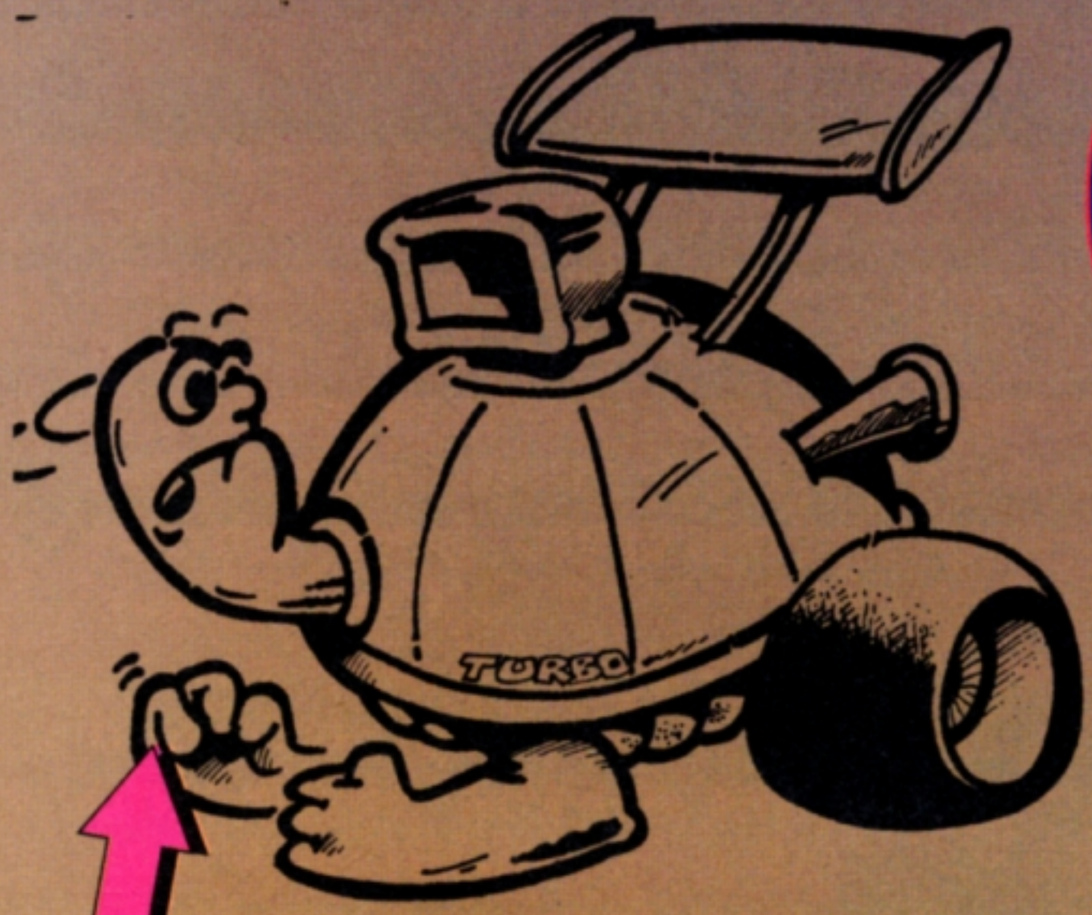
```
   10 REM Music Maker
   20 REM by Teri Paul
   30 REM (c) Let's Compute!
   40
k$="!ZzSsXxDdCcVvGgBbHhNnJjMm<,Ll>.
+;?/"
   50 V%=-8:D%=10
   60C%=&11:O%=49
   70 REPEAT i$=INKEY$0:K%=0
   80 IF i$>"" K%=INSTR(k$,i$)DIV2
   90 IF K%
SOUNDC%,V%,O%+K%*4,D%:C%=C%+1
:IF C%=&14 C%=&11
  100 UNTILFALSE
```

SOUND on an Archimedes is controlled in a different way. However the routine above will still work if it is run under the latest !65Host emulator.

This is supplied with the Archimedes on Applications disc 2. But in case *Let's Compute!* Club members have an older version there's a copy on the disc they get when they join the Club.

THE MIKE GOLDBERG

DESIGN YOUR OWN TURTLE



BEFORE

This puzzled turtle started its life on Mike's drawing board

AFTER

. . . and this is how he ended up!

Now it's YOUR turn

ATTACH THIS COUPON TO YOUR PICTURE

This is my entry for the Design a Turtle Contest

Post before August 31

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.....

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SEND TO Turtle Contest, Let's Compute! Europa House Adlington Park, Macclesfield SK10 5NP

. . . then have your 3D masterpiece by

CHALLENGE!

Time to get out your pens, pencils and paints, all you budding turtle designers! Mike Goldberg challenges you to better his design of a Supa TurboTurtle!

What you have to do is start with the plain turtle you see over on the left...Then add your own bits and pieces to turn him into the most nimble-footed, ultra-fast, rip-roaring, supercharged, tyre-screeching turtle of them all.

And when you've done all that explain what each bit is called and what it is supposed to do, and what you had for breakfast this morning *(OK, you can forget the last bit!)*

Then send it in and keep your fingers crossed. For the winning entry will be given the exclusive Mike Goldberg treatment – ending up in glowing colour and vibrant 3D, mounted in a fab frame and presented to you for hanging in a place of honour in your own home!

And there's more! The sender of EACH entry we consider suitable for printing in *Let's Compute!* will receive a smart *Let's Compute!* baseball cap!

Entries can be to any size and on any material. But remember that Mike will be looking for the most original IDEAS. So you don't have to be a clever artist to be among the many winners

creation turned into a stunning Britain's top turtle cartoonist!

Watch out for all the winners' names in *Let's Compute!*

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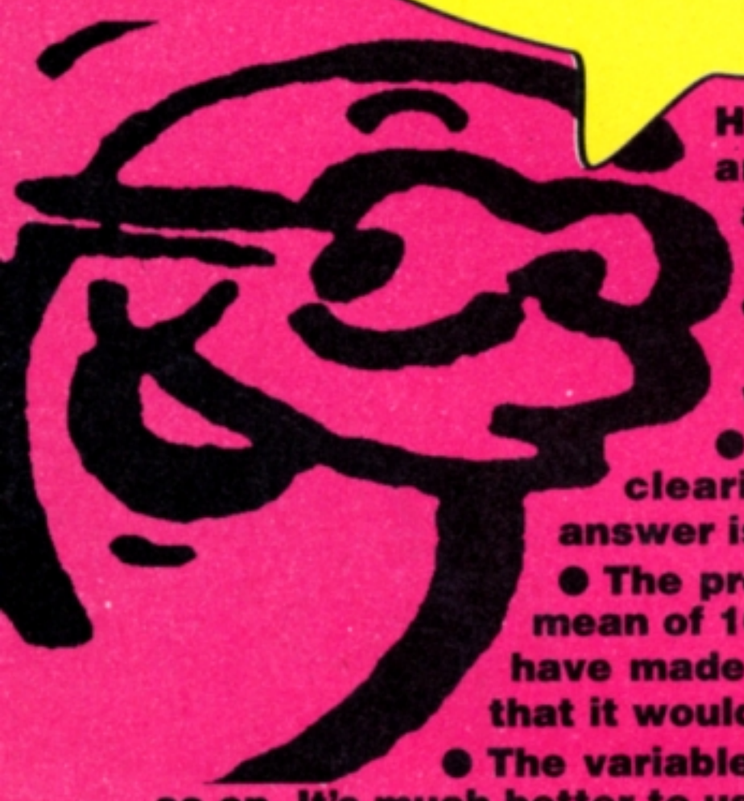
VISA

THE PROGRAM DOCTOR

There's always a better way of doing things – and this program we've come across is a real dilly. So we passed it over to *Let's Compute's* resident micro medic to give it a big ideas transplant.



Here's a program written by a student in an examination. It finds the mean – the average, that is – of 10 numbers.

Type it in and try it. It works OK, but can it be improved?

Here are just some of the things wrong with it:

● The screen layout is utterly naff. No clearing of the screen. No prompts. And the answer is just printed anywhere without thought.

● The problem was to write a program to find the mean of 10 numbers. But a good programmer would have made it more general and easier to change so that it would work with more or fewer numbers.

● The variables have meaningless names – A, B, C and so on. It's much better to use names like *mean* and *total*.

● Using A to J to store 10 numbers is bad practice. It's even worse if you try to store, say, 1,000 numbers the same way

The doc decided to re-write the program completely. The result is shown here. It's a longer listing – but it's well worth the effort of typing it in. Try it now.

See how much easier it is to use. You can't go wrong because you are prompted at every stage. Also note that you can now input any number of values. This makes it much more useful.

```
10 INPUTA,B,C,D,E,F,G,H,I,J
20 K=A+B+C+D+E+F+G+H+I+J
30 L=K/10
40 PRINT L
```

The original program

```
10MODE6
20REPEAT
30INPUT"How many numbers (2 or more)"
,numbers
40UNTIL numbers>1
50DIM value(numbers)
60FOR N%=1 TO numbers
70 PRINT"Input number: ";N%
80INPUT value(N%)
90NEXT
100total=0
110FOR N%=1 TO numbers
120total=total+value(N%)
130NEXT
140PRINT'"Average is ";total/numbers
```

How the Program Doc would do it

Do you think YOU'VE written a program that can't be improved? Then send it along to the Program Doctor. He LOVES a challenge!

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Don't let your pack get away!

(Should you prefer to buy* Let's Compute! *from your newsagent each month, you can still join the Club by paying the normal joining fee of £5. You can do this by filling in the appropriate part of the form below.)

SEND IN THIS FORM NOW!

YES PLEASE!

Tick as required

☐ *3101* Send me the next 12 issues of *Let's Compute* for the special introductory price of £12 (including postage and packing).

☐ *3102* I'd also like to become a founder member of the *Let's Compute!* Club for the special price of £3 (instead of the regular £5) – so please send me the bumper Club pack with my first issue.

☐ *3103* I'll order *Let's Compute!* from my newsagent, but I'd still like to join the Club and receive my bumper member's pack for £5.

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MESSING ABOUT WITH MOLECULES

The Safe Scientist introduces a series that will explain how to perform simple experiments on your micro

Did you know you can use your computer to study the way those very tiny particles called atoms and molecules move about?

The trouble with the little beasts is that they can't be seen, which makes studying them a bit of a problem.

But what you CAN see is the way they bash into other larger particles.

A standard school experiment is to put some smoke into a small and brightly lit container.

This is then viewed through a microscope to give you a better chance of making out the single bits of smoke dust. Even this experiment is not very easy to do. Often only about one pupil in 20 sees the dancing smoke particles. This is where the computer simulation comes in.

Knowing how atoms and molecules move around is one of the target areas of the National Curriculum. Science teachers call it Attainment Target Eight – Explaining How Materials Behave.

The program gives you a tool for examining this movement. The unseen molecules of air can be seen pushing a smoke particle around in a clear and simple manner, making it perform a random dance around the screen. A computer, though, can sometimes improve on the real thing. Here, in the Moving Molecules program, you can arrange for the smoke particle to leave a trail behind it – and very artistic it can be. You can also freeze time, or restart at the press of a key.

More importantly, the temperature of the air can also be altered.

This is what real scientists need to do when carrying out their own investigations.

This is one of a series of simulations which, because of danger or difficulty in performing the real one, are better carried out on your micro.

```
   10 REM MOVING MOLECULES
   20 REM By Safe Scientist
   30 REM (c) Let's Compute!
   40 MODE6:VDU19,0,4;0;
   50 PRINTTAB(8,1)"PARTICLE MOVEMENT"TA
B(8,2)"----------------"
   60 VDU28,1,24,38,3
   70 PRINT'"A single particle of smoke
moves."'"It is pushed by collisions with
"'"unseen air molecules."
   80 PRINT'"You can alter the temperatu
re by"'"pressing < to cool things down"'
"or use > to warm it up."
   90 PRINT'"Hold Z to stop the smoke p
article"'"leaving a trail."
  100 PRINT'"Press P to pause the progra
m and"'"R to restart it."
  110 PRINT'"Use the spacebar to begin a
gain."
  120 PRINT''"Press Space to continue."
  130 REPEATUNTILINKEY-99
  140 T%=100
  150 REPEAT:MODE5
  160 VDU23,225,56,56,122,255,255,122,56
,56
  170 VDU23;8202;0;0;0;0;
  180 VDU19,0,4;0;
  190 GCOL0,1:MOVE0,80:DRAW1279,80:DRAW1
279,980:DRAW0,980:DRAW0,80
  200 COLOUR2
  210 PRINTTAB(0,0)"<- COLD"TAB(14,0)"HO
T ->"
  220 PRINTTAB(4,30)"TIME=    SECS"
  230 GCOL4,0
  240 X%=640:Y%=512
  250 TIME=0
  260 REPEAT
  270 VDU4:PRINTTAB(9,0)"   "TAB(9,0);T%
  280 PRINTTAB(9,30);TIME DIV 100:VDU5
```

The National Curriculum for science says skill in investigations is just as important as acquiring knowledge. In fact, Attainment Target One is based on the exploration of science. This is the area pupils are likely to find themselves being tested on around the age of 14

Now, using this program you can easily change the temperature and see the effect it has on the smoke particles.

Built into the program is a timer which counts in seconds. You will also hear a sound when the particle of smoke hits the edge of the screen.

Use these two features together to record and compare your data. A scientist might well decide to maintain records based on different temperatures and the time it takes for the smoke to reach the edge of the screen.

HAVE A GO

Using the programs in this series you'll soon build up both your knowledge and investigative skills.

A good scientist would take a lot of different readings and would repeat each one until he had got it correct.

He would then plot the results on a graph, looking for a pattern that links the time it takes for the event to happen with the temperature.

If you know how to write programs yourself you may be able to add to the listing below to make it keep your records and draw a graph automatically.

Write and tell us how you get on.

```
  290 MOVEX%,Y%:PRINT;CHR$225
  300 IF INKEY-98 MOVEX%,Y%:PRINT;CHR$22
5
  310 X%=X%+RND(T%)-RND(T%):Y%=Y%+RND(T%
)-RND(T%)
  320 IF X%<10 X%=10:VDU7 ELSE IF X%>121
5 X%=1215:VDU7 ELSE IF Y%<115 Y%=115:VDU
7 ELSE IF Y%>975 Y%=975:VDU7
  330 IF INKEY-103 AND T%>0 T%=T%-2 ELSE
 IF INKEY-104 AND T%<999 T%=T%+2
  340 IF INKEY-56 ti%=TIME:REPEATUNTILIN
KEY-52:TIME=ti%
  350 UNTIL INKEY(0)=32
  360 UNTIL0
```

Noticeboard

Since the preview issue of Let's Compute! was distributed our mailbag has been bulging with letters. Keep them coming in! On the Noticeboard this month are just a few of the ones we've received so far.

If you have any tips for other readers, send them in. If you have any questions about your micro or software just ask us. We'll try to answer them on the Noticeboard.

Let us know what you want to see in future issues. And if we use your letter or ideas we'll send you a *Let's Compute!* baseball hat!

Send your letters to *Let's Compute!* Europa House, Adlington Park, Macclesfield SK10 4NP. Remember to tell us your age.

I saw the preview issue of Let's Compute! *today. It looks as if it will be a great comic.*

I tried all the short programs and they all work (as I expected). The competition prize looks great and I can't wait to enter it.

The best prize in the first issue sounds like the Computer Critters. I've never heard of anything like them before. I wonder what my BBC would look like with one attached?

The club looks super – it's all bright and colourful like the comic and you get lots of things. I can't wait to join it.

I'm really looking forward to seeing the first issue of Let's Compute!

Janet Hammond, Lincolnshire

We have worked through Perpelexity from Superior and have found it great fun. Perhaps you would like to pass on these passwords:

Level	Password
2	Croupier
3	Deceive
4	Contend
5	Lacerate
6	Vanguard
7	Business
8	Reason
9	Osmium
10	Dubious
11	Stubborn
12	Xylocarp
13	Stimulus
14	Wardrobe
15	Sparkle
16	Volcano

The DuttonFamily, Leytonstone

Is there anyone out there who wishes they could take more cargo on Elite?

Well, if you buy 35 tonnes of cargo – preferably computers or radioactives – then you may find you can buy out the entire stock of gold, minerals and platinum.

If you can do this at a number of the hi-tech planets you can stock up to 255 tonnes. Your trusted computer will then tell you that you can't sell anything.

Does anyone have a cheat or advice for Ravage? I have played this game for a long time, but can't get past the sixth status.

James Siddle (age 14), Leeds

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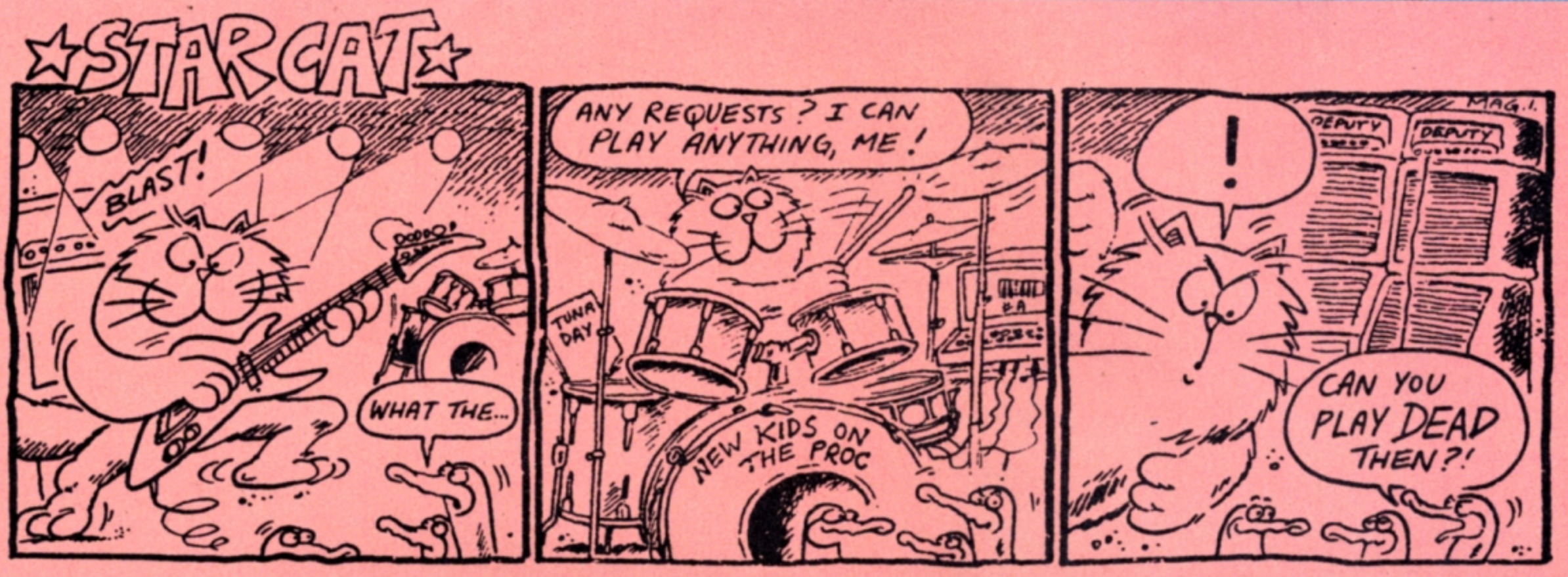
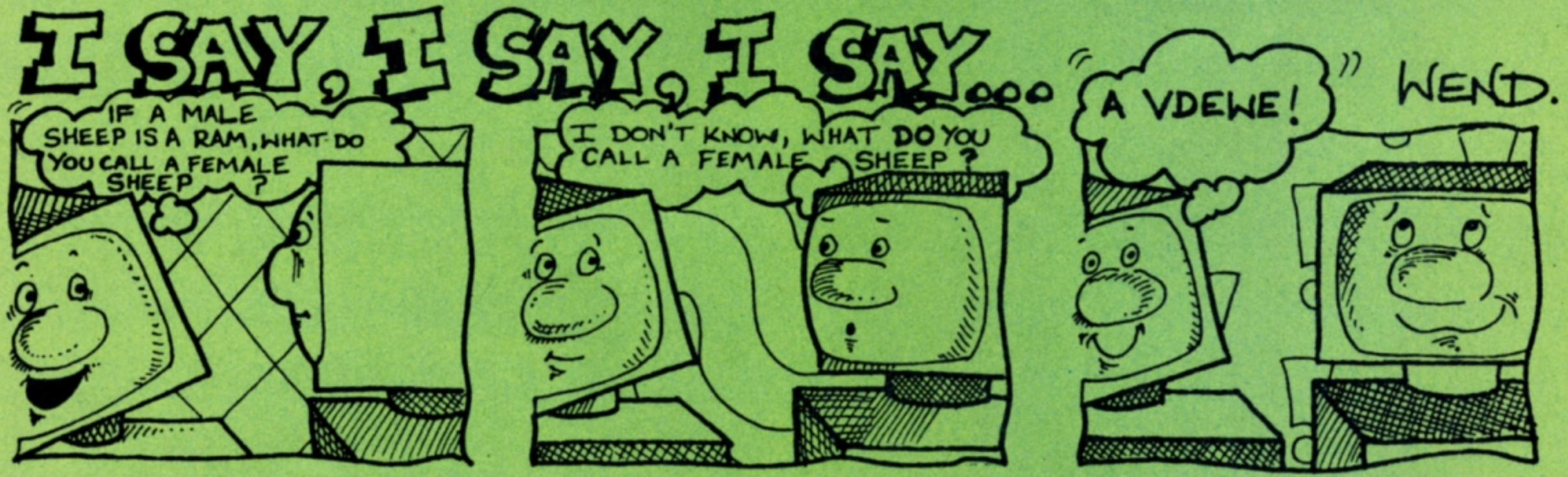


I SAY, I SAY, I SAY...



The Micro Kid

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How a junior detective agency uses a micro to track down its quarry

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Want to try your hand at Desktop Publishing? But do you fear that for DTP you need a powerful computer and expensive software?

Worry not – it's something you can do with ANY micro and the most basic software.

A group of Manchester schoolgirls decided to try it themselves after they'd set up a club called the FDA – Free Detective Agency.

Their aim was to solve local mysteries. So what better way to tell the public what they were doing than produce their own newsletter, using a

"Going round investigating is fun, but now we add realism to the job by printing our own newsletter" – LOUISE

F.D.A
NEWSLETT

MISSING DUCKLIN

On the pond near Alwinton Avenue three ducks were usually seen swimming around.
There we
and

A few days later
went missing as
next day it was
About a week aft
female ducks

ks we
emale
ut al
her
found
pond
eem t
ducks
later

KEEP OUT! Louise Davidson and Louise Hamnett at the entrance of the 'tec headquarters

BBC Micro, word processor and a dot matrix printer. The agency has been in action for the last two months and so far there are three members: Louise Hamnett, Louise Davidson and Freya Gibson, aged 9, 11 and 13.

Let's Compute! sent its own investigators to find out more and they met the two Louises – Freya was out solving another case.

We found that the FDA's headquarters is a converted loft above a garage where they often listen to police radio messages to find out what's going on in their neighbourhood.

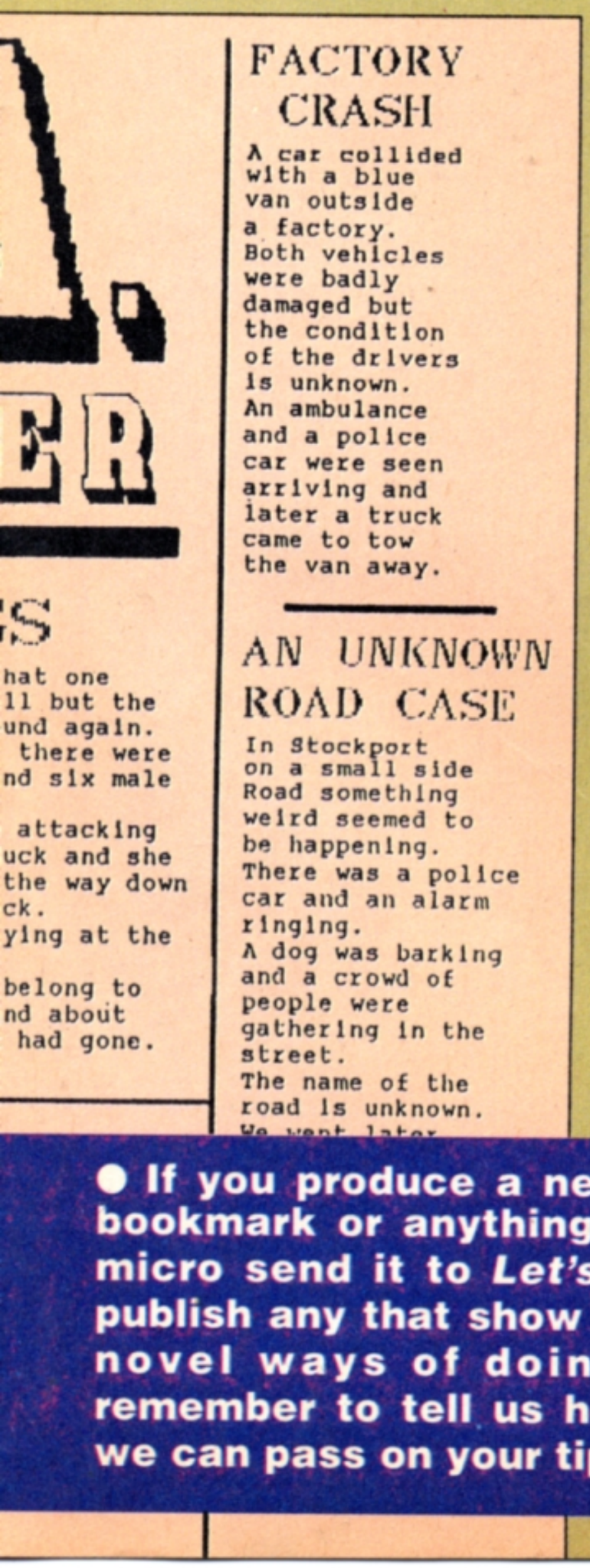
Their computer and printer are based in a study – where they let parents get at them occasionally! As you can see from one of their newsletters (shown here produced entirely by the trio with no adult help) even with just a simple word processor and plenty of imagination you can turn out some really interesting printouts.

But the FDA girls want to try their hand at much more, such as diaries, bookmarks and other personalised products. They also aim to put their case studies on a database.

They say that even with less equipment than they have it's still possible to produce really super results.They use Pendown to print enlarged letters, such as for headlines. But you can always use stencils instead.

Or you can carve the letters on half potatoes to make your own headline stamping kit. The only other thing you need is an ink pad.

If you have access to a photocopier that will enlarge, type out the alphabet a few times and make the letters any size you want. You then have a selection of letters to cut out and stick down.



L.

ER

S

hat one
ll but the
und again.
there were
nd six male

attacking
uck and she
the way down
ck.
ying at the

belong to
nd about
had gone.

FACTORY CRASH

A car collided with a blue van outside a factory. Both vehicles were badly damaged but the condition of the drivers is unknown. An ambulance and a police car were seen arriving and later a truck came to tow the van away.

AN UNKNOWN ROAD CASE

In Stockport on a small side Road something weird seemed to be happening. There was a police car and an alarm ringing. A dog was barking and a crowd of people were gathering in the street. The name of the road is unknown. We went later

● If you produce a newsletter, poster, bookmark or anything else using your micro send it to *Let's Compute!* We'll publish any that show unusual ideas or novel ways of doing things – but remember to tell us how you did it so we can pass on your tips to others.

TERRY'S TIPS

Lose it!

When you key in listings from magazines or books, never type the space between the line number and the start of the text. A line printed as:

```
10 PRINT "HELLO"
```

should be typed as:

```
10PRINT "HELLO"
```

Missing out the space saves a byte of memory – which can be valuable in long programs. But remember to include all other spaces in the line or your program may not work.

If you want to view your program with the lines separated from the numbers although you haven't put a space there, type LISTO1 before you type LIST.

Shift it!

The standard typing options on your micro are Caps Lock and Shift Lock. When neither are selected all keys give lower case letters or the lower marked symbol.

But there is a fourth option not everyone knows about. Hold down Shift. Press Caps Lock and the Caps Lock light will show. Now letters will, as you expect, appear as capitals as you type, but if you press one with Shift held it will be lower case.

This is an ideal mode to use when you type in listings, as all the keywords are in capitals and it's a good idea to use lower case for variables.

Gag it!

If you want to turn the sound of your micro off just type:

```
*FX210,1
```

To turn it back on again, either press Break or type:

```
*FX210,0
```

Note that as Break turns it back on you can't use Shift+Break to load disc. Instead try:

```
*EXEC !BOOT
```

This works in most cases, but if not you may find the following does:

```
*RUN !BOOT
```

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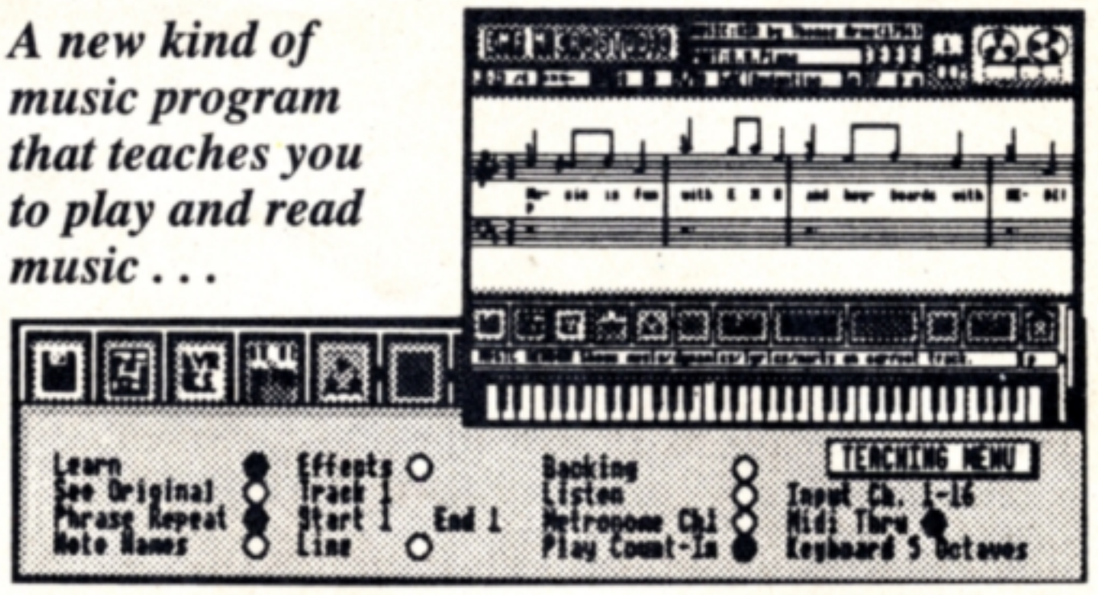

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***Includes original Small C code supplied at the cost of distribution.**

REACH FOR YOUR GUN, YOU RAT!

Fancy your chances as a Lone Ranger or Dirty Harry? Find out how you'd make out with the help of this easy-to-type-in routine dreamed up for you by Rog Frost

Programs that time reactions can range from the very short and simple to the long and complicated. Here's one of the first kind.

It's quick to type in but provides lots of fun, especially if there's a group of you competing with each other.

When you run the program a circle is drawn on the screen. This is then hidden and you are invited to hit the spacebar as fast as you can when it comes back.

As soon as it is shown again, a timer starts counting – in hundredths of a second. Then when the spacebar is hit the timer is stopped and the time taken is recorded.

A routine is built in to cope with cheats. Firstly, the auto-repeat is turned off so that pressing the spacebar before the circle is shown will not work.

Secondly, a minimum time of 0.1 seconds is built in, since most people have a reaction time which is more like double that.

So type in the program, save it and run it to see how good YOUR own reactions are!

```
  10 REM Reaction Timer
  20 REM By Rog Frost
  30 REM (c) Let's Compute!
  40 MODE5
  50 VDU23;8202;0;0;0;0;
  60 VDU19,0,4;0;
  70 VDU19,2,12;0;
  80 COLOUR2:PRINTTAB(3,1)"REACTION TIM
ER":COLOUR3
  90 a%=&02020A
 100 *FX11,0
 110 GCOL0,1
 120 VDU29,640;512;
 130 MOVE0,0
 140 FORN%=0TO360STEP5
 150 MOVE0,0:PLOT85,SINRADN%*300,COSRAD
N%*300
 160 NEXT
 170 REPEAT
 180 PRINTTAB(2,1)"Press Space when"TAB
(3,4)"the disc shows"
 190 VDU19,1,4;0;
 200 TIME=0:REPEATUNTILTIME>300+RND(300
)
 210 C%=RND(7):IF C%=4 C%=0
 220 VDU19,1,C%,0;0;
 230 *FX15,0
 240 TIME=0
 250 REPEATUNTILGET=32:T=TIME/100
 260 IF T <.1 PRINTTAB(2,26)"CHEAT":GOT
0250
 270 PRINTTAB(2,1);SPC(80)
 280 PRINTTAB(1,26)"TIME: ";T" seconds"
 290 TIME=0:REPEATUNTILTIME>200:COLOUR2
 300 *FX15,0
 310 PRINTTAB(5,28)"Press Return"
 320 REPEATUNTILGET=13:PRINTTAB(1,26);S
PC(60)
 330 COLOUR3
 340 UNTIL0
```

AL'S GORITHMS

THIS IS IT! The page where the budding artists among you can pick up a tip or two. And a chance for you to show what YOU can do yourself.

Making a lot of a few lines of code is what it's all about.

Here's Alan McLachlan to get you started on your way.

TRY BOXING CLEVER

I'VE never been particularly good at drawing. But when I got my BBC Micro I found it became so easy. Let me show you what we can do.

For starters let's use the DRAW command. We'll first draw a box, and then use several of them to make up a more complicated picture.

I prefer to get away from pretty, repetitive patterns. To draw something a little more imaginative a lot of planning will be needed. Let's draw a bungalow.

So that the whole picture can be easily moved, I've defined the position – known as the origin – of the lower left corner of the whole drawing using the variables xx and yy.

By altering these, the picture can be moved up or down, left or right without having to change any of the numbers in the rest of the program. The box is defined in the procedure PROCbox. The variables in brackets simply indicate:

x – *the location of the box's left side in relation to the origin.*
a – *how wide it is.*
y – *the location of the box's bottom edge in relation to the origin.*
b – *how high it is.*
c – *its colour.*

Each box is placed on the screen by calling **PROCbox** and passing details of these five variables.

When the drawing is finished, press any key and you'll see the garage doors open. Not exactly stunning animation, but it does show one of the techniques – that of redrawing in the background colour. The more experienced of you might have realised that parts of the drawing would have been made much easier using several single lines. Of course they would – but the object of this exercise was to use boxes only.

I've tried to keep the code as short as possible. Why not try expanding it? Perhaps you could create a drive, a moggie on the roof, or even a Rolls in the garage.

Better still, if you think that you can come up with something much better using the same rules – send it to *Let's Compute!* and let everyone see it.

● *Next month we'll see what we can do with circles.*

Try just a little bit..

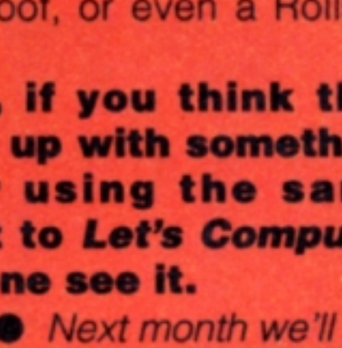
YOU don't need to type the whole of this listing to see something happen: PROCbox works on its own. Just type in lines 34Ø to 41Ø and then enter:

```
MODE 2:PROCbox(120,700,300,300,3)
```

You can incorporate PROCbox into any of your own programs that call for the drawing of rectangles .

Remember, it's designed to work in Mode 2.

```
  10 MODE 2
  20 xx=120:yy=300
  30 PROCbox(xx,700,yy,300,3): REM Main
walls
  40 PROCbox(xx+700,300,yy,300,3): REM
Garage
  50 PROCbox(xx+718,258,yy,250,3)
  60 PROCbox(xx+830,20,yy+130,4,3)
  70 REM Front door
  80 PROCbox(xx+300,100,yy+20,200,3)
  90 PROCbox(xx+280,140,yy,20,3)
 100 PROCbox(xx+312,78,yy+158,56,3)
 110 PROCbox(xx+312,78,yy+30,100,3)
 120 PROCbox(xx+340,20,yy+140,4,3)
 130 REM Windows
 140 PROCbox(xx+50,200,yy+100,150,3)
 150 PROCbox(xx+50,200,yy+200,44,3)
 160 PROCbox(xx+46,210,yy+94,6,3)
 170 PROCbox(xx+450,200,yy+100,150,3)
 180 PROCbox(xx+450,200,yy+200,44,3)
 190 PROCbox(xx+446,210,yy+94,6,3)
 200 REM Roof and chimney
 210 PROCbox(xx-40,1090,yy+300,120,1)
 220 PROCbox(xx+450,90,yy+420,40,1)
 230 PROCbox(xx+486,20,yy+460,40,1)
 240 REM Open garage door
 250 AA=GET
 260 PROCbox(xx+830,20,yy+130,4,0)
 270 FOR p=0 TO 200 STEP 20
 280 PROCbox(xx+720,250,yy+p,230-p,3)
 290 FOR delay=1 TO 200:NEXT
 300 PROCbox(xx+720,250,yy+p,230-p,0)
 310 NEXT
 320 PROCbox(xx+720,250,yy+230,230-p,3)
 330 END
 340 DEFPROCbox(x,a,y,b,c)
 350 GCOL 0,c
 360 MOVE x,y
 370 DRAW x,y+b
 380 DRAW x+a,y+b
 390 DRAW x+a,y
 400 DRAW x,y
 410 ENDPROC
```



BBC BASIC WITH ROM & RAM

I'M NOT GETTING ANYWHERE! LOOK, IT KEEPS SAYING MISTAKE!

>HTZ
Mistake
>ROM
Mistake
>WHY
Mistake
>_

WELL, LET'S START AGAIN. TYPE IN **CLS**

C...L...S

>HTZ
Mistake
>ROM
Mistake
>WHY
Mistake
>CL S_

TAP

THEN PRESS THE **RETURN** KEY

>_

CLS COMMANDS THE MICRO TO **CL**EAR THE **S**CREEN. PRESSING **RETURN** ENTERS THE COMMAND INTO THE MICRO

RIGHT! LET'S DO SOMETHING USEFUL...

...TRY ADDING A COUPLE OF NUMBERS. TRY 56+45

RUB

I TYPED IN 56+45... BUT WHERE'S THE ANSWER?

56+45_

YOU MUST TELL THE MICRO TO **PRINT** THE ANSWER. TRY **PRINT** 56+45 AND THEN PRESS **RETURN**

TAP

WHIZZ

>PRINT 56+45
101
>_

MAKE SURE YOU USE CAPITAL LETTERS.

SO WHY CAN'T IT MULTIPLY?

>PRINT 56x45
56
No such variable
>_

WHAT IS HE DOING?

CLUMSY

PROD

AH! THE MICRO USES * FOR MULTIPLYING, NOT X TRY **PRINT** 56*45

>PRINT 56*45
2520
>_

THAT'S IT! I'VE CRACKED IT!

PULL

PFFF

SO, TO ADD, USE +
TO MULTIPLY, USE *
TO DIVIDE, USE /
AND TO TAKE AWAY -

ORANGE

SLURP!

TRY THESE EXAMPLES:

PRINT 247*15
PRINT 97+537
PRINT 251/13
PRINT 84-26

TO DO 14 TIMES 5 PLUS 25 DIVIDED BY 2 MINUS 12 YOU CAN LUMP IT ALL TOGETHER...

TRY
PRINT 14*5+25/2-12

YOU SHOULD GET 70·5

NOW I KNOW HOW TO DO THAT, CAN I PLAY A GAME?

NOT YET! TRY PRINTING YOUR NAME.

EXCITED

WHAT?!

>PRINT ROM
No such variable
>_

WHAT YOU NEED TO PRINT WORDS ARE THESE:

" " QUOTE MARKS

I SEE!

TO PRINT ANY WORD PUT THE WORD BETWEEN QUOTE MARKS LIKE THIS –

PRINT"ROM"

TRY IT, LIKE THIS:
>PRINT "ROM"
ROM
>PRINT "RAM"
RAM
>_

YOU CAN ADD WORDS TOGETHER TOO! TRY
PRINT"PAT"+"RICK"

NOTE THAT EACH WORD MUST BE ENCLOSED IN ITS OWN SEPARATE SET OF QUOTE MARKS.

>PRINT"PAT"+"RICK"
PATRICK
>_

I LIKE IT!

THE SAME THING CAN BE DONE USING A SEMI-COLON ;
TRY:
PRINT"PAT";"RICK"

THEN PRESS RETURN

A SEMI-COLON MAKES THE MICRO PRINT THINGS NEXT TO EACH OTHER.

HERE'S SOMETHING FUN TO DO! HOW ABOUT PRINTING FOOTBALL SCORES?

TRY:
PRINT"UNITED"4"CITY"3

UNITED 4CITY 3

WE CAN DO THAT A WHOLE LOT BETTER

?

TRY:
PRINT"UNITED";4;"CITY";3
SPACE — SPACE - SPACE

UNITED 4 CITY 3

THAT'S BETTER

NOW LET'S SEE WHAT COMMAS CAN DO.

TRY THESE TWO EXAMPLES:
PRINT"DOG","CAT","FROG"

PRINT 1,2,3

PUTTING COMMAS BETWEEN ITEMS TO BE PRINTED FORCES THE MICRO TO PRINT IN SEPARATE COLUMNS

DOG CAT FROG
1 2 3
>_

NOTE THAT WORDS ARE PRINTED ON THE LEFT OF A COLUMN AND THAT NUMBERS ARE PRINTED ON THE RIGHT.

DON'T CONFUSE
PRINT 5,6
WITH
PRINT 5'6

>PRINT 5,6
5 6
>PRINT5'6
5
6
>_

PRINT' CAUSES THE MICRO TO MOVE TO THE NEXT LINE BEFORE IT PRINTS.

CAN I PLAY A GAME NOW? PLEASE! CAN I? CAN? PLEASE...

WHINE!

MEGA

SOON! HAVE A BAG OF CRISPS WHILE I SHOW YOU ONE MORE IMPORTANT THING, **TAB**

MEANIE..

MUNSTA KRISPS!

TRY
PRINT TAB(8)"ROM"
AND PRESS **RETURN**

>PRINT TAB(8)"ROM"
ROM
>_

MUNCH

THIS WILL PRINT **ROM** 8 PLACES FROM THE LEFT. GOOD EH?

SO ARE THESE CRISPS!

DON'T LEAVE A SPACE BETWEEN **TAB** AND THE FIRST BRACKET - OR YOU'LL GET AN ERROR.

O.K! O.K!

PINCH

MONSTA CRISPS

TO PRINT ANYWHERE ON SCREEN (SAY) TO PRINT FROM 5 COLUMNS ALONG AND 3 ROWS DOWN, TRY: **PRINTTAB**(5,3)"HELLO"

HELLO

YOU MAY LINK TAB STATEMENTS TOGETHER. SO TRY:
PRINTTAB(1,4)"ROM" TAB(2,5)"IS" TAB(1,6)"DAFT"

DON'T FORGET, TYPE IN **CLS** AND PRESS **RETURN** IF YOU'RE GETTING A FULL SCREEN

RIGHT! NOW THEN. TRY OUT WHAT YOU'VE LEARNT USING **PRINTTAB ; , '** UNTIL YOU'RE FAMILIAR WITH THEM.

WELL, AFTER ALL THAT WORK ROM, I RECKON IT'S O.K. TO PLAY A GAME.

AT LAST!

I'M OFF THEN..

WHERE'S ALL MY GAMES? COME TO THINK OF IT, WHO'S GOT MY CRISPS?

GONE

CRISPS

GRUBS

WHOOSH

FLOP

CRISPS

I **WONDERED** WHAT ALL THOSE ANIMALS WERE UP TO!!

ZOOM

CRISPS

WILL ROM GET HIS GAMES BACK? WILL HE GET HIS CRISPS BACK? WILL RAM TEACH ROM ANYTHING? FIND OUT NEXT MONTH WHEN ROM TRIES TO WRITE HIS FIRST **REAL** PROGRAM!

SWEAT NOT!

Keying in a program listing is easy. Or is it? Be warned there are lots of pitfalls. One simple mistake could stop the whole program from working. But you can make sure YOUR typing is error free by following this simple advice.

- Before you start entering a new program type NEW to empty the computer's memory
- A Basic *program line* begins with a line number. Don't press Return until you've typed the whole line. *(That doesn't mean the line as you see it in print.)* Pressing Return is the LAST thing you do before you get to the next line number.
- When you press Return after typing in a line nothing appears to happen. What you've done is store the line in the micro's memory. It will not be activated until you are ready to tell the program to RUN.
- Use the exact figures and letters that you see in the listing. Don't change ANYTHING.
- Capital letters MEAN capital letters (and lower case letters mean lower case letters).
- Take care with keys that can be mistaken for others. Examples are Ø (zero) instead of 0 or 1 instead of I.
- If you make a mistake while you're typing a line you can correct it if you haven't pressed Return. Use Delete to move back down the line and rub out the error. Then re-type the part you erased.
- If you notice a mistake AFTER you've pressed Return just retype the whole line – including the line number. It will replace the one you got wrong.
- If you want to clear the screen type CLS. This only wipes the display. Your program remains in the micro's memory.
- SAVE your program at frequent intervals while you type it in – don't wait until you've finished.
- To see the program stored in memory, type LIST.
- To make the program in memory work type RUN.

SAVING AND LOADING

Make sure you SAVE your program at frequent intervals. Then if you have a power cut or the cat pulls out the plug you won't lose all your work.

First, decide on a short name for your program – say GAME – and then enter:

```
SAVE "GAME"
```

Notice that the program's name has quotes before and after it.

What happens next depends on whether you're using tape or disc. But the messages that appear on your screen are clear and you should have no problems if you follow them.

To put the program back into your micro's memory at the start of a new session, all you have to do is make sure the tape or disc is ready and then enter:

```
LOAD "GAME"
```

When it's loaded you can LIST it, RUN it or, if you haven't completed typing it all in, continue adding more lines.

Switching Into Basic

What we call a program is nothing more than a list of instructions to your micro.

Nearly all the programs in *Let's Compute!* are in Basic. As a rule, if each line of the listing starts with a number, it's Basic.

So to enter a program or listing you must first tell the micro what language to expect. When you switch on your BBC Micro or Electron it will normally be ready for Basic.In fact you'll almost certainly get the greeting:

```
BASIC
>
```

If you don't, try typing:

```
*BASIC
```

and then press the Return key. This should take you to Basic.

On the Archimedes and BBC A3000 you need to tell it you want Basic. From the *Desktop* press the F12 key. A new line beginning with a star will appear at the bottom of the screen. Type:

```
*BASIC
```

and press Return. You'll see:

```
ARM BBC BASIC V
>
```

LET'S COMPUTE! reviews a cut-price art package

Throw away your paint brush and look at what can be done on your own keyboard, says ROG FROST

Software: The Art Studio
Producer: Impact Software
Computer: Any 8 bit BBC Micro or Electron
Price: £9.95 cassette or £12.95 disc

Most art packages for the 8 bit BBC Micro or Electron need extra chips to be plugged into the computer and a mouse to operate them. They usually cost more than £50.

Now Impact has attempted what is almost impossible: To bring out a good art package for the price of a game.

The Art Studio works from the keyboard, so you don't need a mouse. But it helps if you have a standard joystick. You can choose between two modes. In Mode 4 you can draw in two colours with fine detail. In Mode 5 you have four colours but rather less detail.

Nine keys are used to operate the program. These move the drawing cursor, select which of the drawing options is required or change colour. It only takes a few minutes to get used to the keys.

A creation from the package

I would not use Art Studio in the school where I teach – I prefer to fork out for the more expensive mouse-based programs. But for schools with no art programs this software, plus a good operator, can produce first rate pictures.

At home, though, things are different. I have been using it there ever since it first came out because it is so easy to use. And it's so simple to transfer the software and pictures between my BBC Micro and Electron.

My children use the program for fun and sometimes to help with a school project. But I have to admit that it is not my son's favourite software. He much prefers the more powerful computers and art packages he uses at school.

Impact has come close to producing a good quality but cheap art program. However I would have liked to see one or two extra features in it even at this low price, such as a screen dump and a better manual. But if you need an art package this one is well worth considering.

SIMON SAYS

Here's what 13-year-old Simon Frost thinks of The Art Studio

I like the way I can chose between a sharp, two-colour screen or a coarser one using four colours. I also like being able to use a magnifying glass to put detail into my drawings.

I was pleased to find that I can copy parts of my pictures because I like making little cartoons. I also found the rubber and the paint sprayer useful. The control keys are all right but I wish I had used a joystick.

I found that some of the things it does are rather slow and need patience.

Another thing that is bad about the program is that you can't printout the pictures although you can load and save them.

This program is good for the price. But I much prefer the better ones I use at school.

What Art Studio will – and won't – do

● You can draw lines, circles and ellipses, rectangles or triangles. The shapes can be outline or filled and can be of any size.

● If you want to mess around with fine detail there's a magnifying glass that you can use to help.

● Sections of the screen can be marked and then copied, wiped out or just moved somewhere else. You can put text in your picture and there's a choice of normal or large sizes, which you can use with or without shadow or outline features.

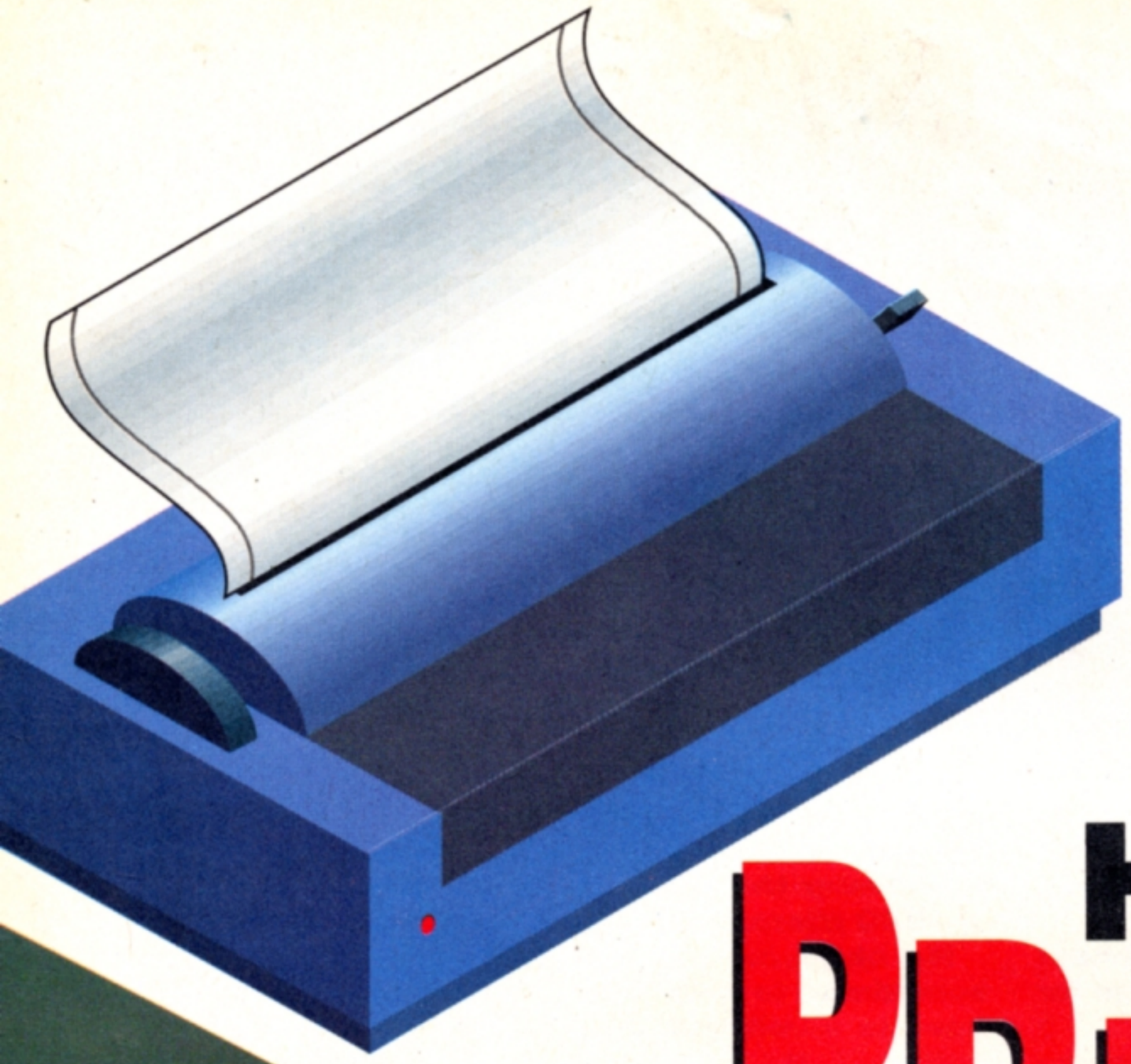
● To colour areas, you just pour the colour in – quite difficult shapes can be filled this way.

● Areas can be shaded by the spray tool. Or you can rub them out using the rubber. The screen colours can be changed. This means that the two or four that you use can be changed from any of the eight steady and eight flashing colours that the micro can display.

● There's an option that lets this colour be in vertical stripes. But this feature is not very easily explained.

● When you've spent a long time drawing a picture – or part of one – you can use the SAVE command to store it to either disc or tape. To bring it back there's also a LOAD feature. If things go completely wrong, the CLEAR SCREEN command allows you to start again.

● One thing I found The Art Studio lacked is the built-in ability to reproduce the screen picture on a printer. If you do want to print your creations you need to buy a separate screen dump program.



Thinking of buying a printer? JOE GILES tells what to look for

HOW TO PICK A PRINTER

How do you select from the hundreds of printers around? Well, although we won't be telling you exactly which make and model to buy, we'll give you lots of facts and tips to help you decide on the best one to fit your needs. But the final choice is still up to you.

The printer you should get depends on the quality of printing you need and what you can afford. There's an at-a-glance summary of the four main types on the opposite page, but let's take a look at them in more detail.

***Dot matrixs* are adequate if you have an Electron or BBC Micro but if you have an Archimedes it is worth looking at an *ink jet* or *laser* printer. The output from these is very high quality text and graphics – and some ink jets can even print in colour.**

You can print in colour on a dot matrix or daisy wheel, but you have to change the ribbon. It can be messy and not very successful.

A 9-pin dot matrix printer is the cheapest but 24-pin ones give a better looking page, are faster and have additional features like fonts – they can print different shaped letters.

***Daisywheels* used to be common in offices but are not very popular in homes. They are larger, bulkier, slower and noisier than dot matrix ones.**

But you can pick them up quite cheaply now – especially second hand.

They work in a similar way to an electric typewriter and sound just like one. The main problem with them is that if you want to do anything different – like print a word in italics – you have to pause the printer, change the wheel, and then change it back to the original when you have printed the word you want.

It is also impossible to use them to draw pictures or print large headlines. Despite this, they do give you a nice, professional looking text.

***Ink jets* that just print in black and white give a high quality output. But they're expensive and you're probably better paying a little more for a laser. However the price is falling so they may soon be the cheap way to high quality printing.**

There are a few colour ink jet printers around. If you're interested in producing art on your micro your aim must be to get an Archimedes with one of these – the results are superb.

***Lasers* are more expensive than any of the other types. They cost from about £1,000 upwards. But they give you much better quality printouts.**

While they can be connected to any micro – including the Electron and the BBC Micro – they are usually used with more powerful machines like the BBC A3000 or others in the Archimedes range. With suitable DTP software they allow you to produce printouts almost like this page of *Let's Compute!* but in black and white.

It's best to get a parallel printer rather than a serial one because, although the latter will usually work with Acorn micros, they are not popular and some software may not work with them.

Connecting a printer is easy. The cable from your printer will only fit into one place on your micro. On Electrons this is on the Plus 1. On the 8–bit BBC Micro and Master it is on the underside of the micro.

Once your printer is connected how do you get your micro to print? If you will be printing from a word processor, for instance, it's automatic: You just press the key to print.

If you are using your own program or are in Basic you can either type VDU2 or press Control+B and then everything you type in will appear on your printer as well as the screen.

However, to print a copy of the actual screen you need a screen dump. Most art packages have one built in – everyone with an Archimedes has !Paint so they can use that.

There are several screen dumps available for the 8 bit Acorn micros. In case you haven't already got one there's one on the disc or tape that goes to all *Let's Compute!* Club members.

The four printer families

Dot matrix: Usually the cheapest sort of printer. They use a block of 9 or 24 pins which press a ribbon against the paper.

Daisywheel: The letters are printed from a wheel containing them all. You have to change the wheel for different types of printing.

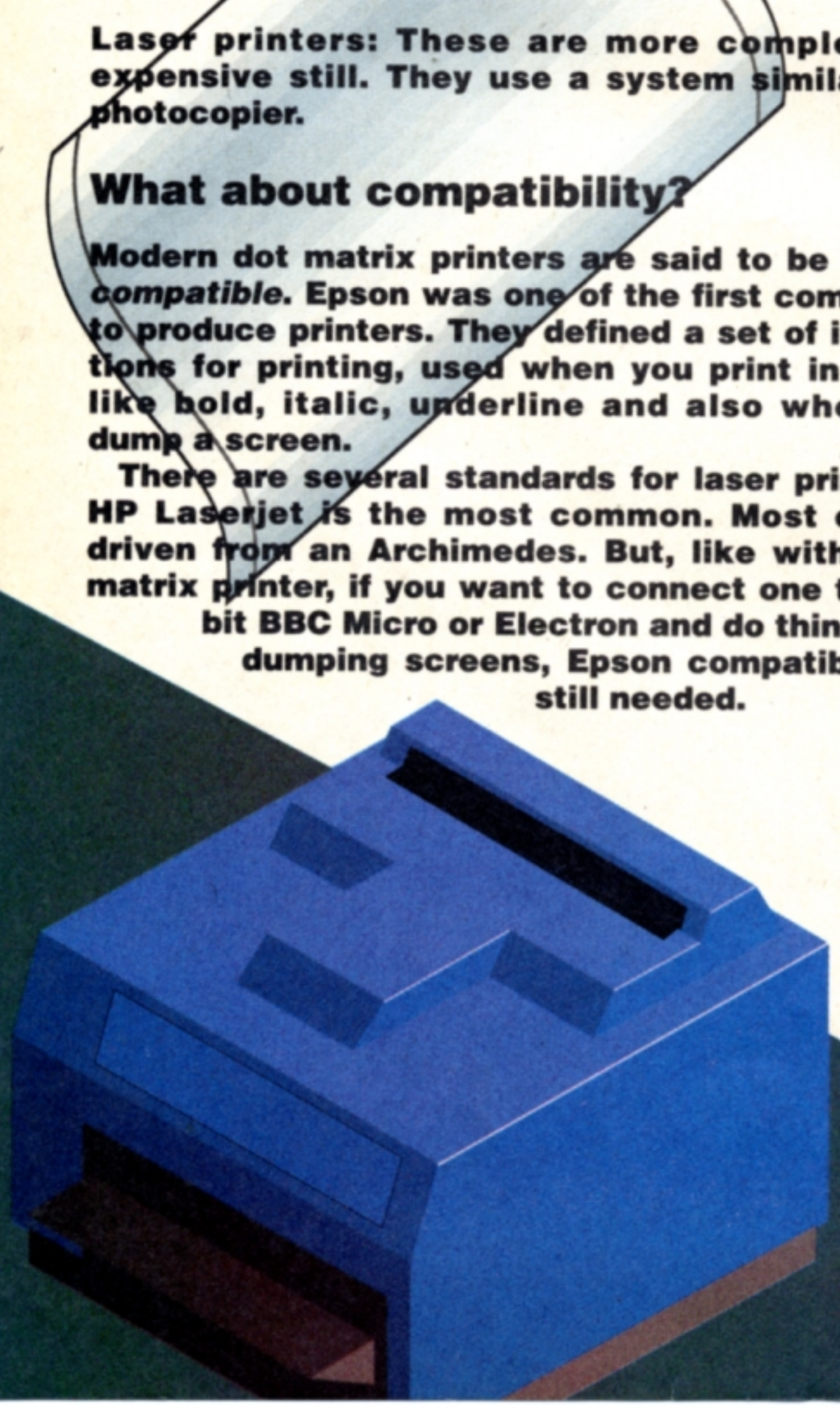
Inkjet: These are more expensive and don't have a ribbon at all. They use a fine nozzle of powdered ink. Colour versions are available.

Laser printers: These are more complex and expensive still. They use a system similar to a photocopier.

What about compatibility?

Modern dot matrix printers are said to be *Epson-compatible*. Epson was one of the first companies to produce printers. They defined a set of instructions for printing, used when you print in styles like bold, italic, underline and also when you dump a screen.

There are several standards for laser printers – HP Laserjet is the most common. Most can be driven from an Archimedes. But, like with a dot matrix printer, if you want to connect one to an 8 bit BBC Micro or Electron and do things like dumping screens, Epson compatibility is still needed.



PRINTER POWER

Many printer manuals are a joke. They're so badly translated into English from the original Japanese that they read more like double Dutch.

Try looking in one to find out how to print your text in different styles, such as bold type or large letters.It looks incredibly hard according to some manuals, but in fact it's quite easy.

In *Let's Compute!* over the next few months Stephen Wade will be giving a step-by-step guide on how to use some of the extra features built into an Epson–compatible printer.

Let's begin by looking at how you can print italic (sloping), bold (darker) and underlined text just using your own Basic programs.

For example: To print out the words *Let's Compute!* in italic text just type:

```
VDU 2:VDU 1,27,1,52:PRINT "Let's Compute!":VDU 3
```

We've highlighted each part of this line in a different colour to show what happens:

- Turn on output to the printer.
- Select italic type on the printer.
- Print the text.
- Turn off output to the printer.

To stop any more italic printing turn off the italic using:

```
VDU 2,1,27,1,53,3
```

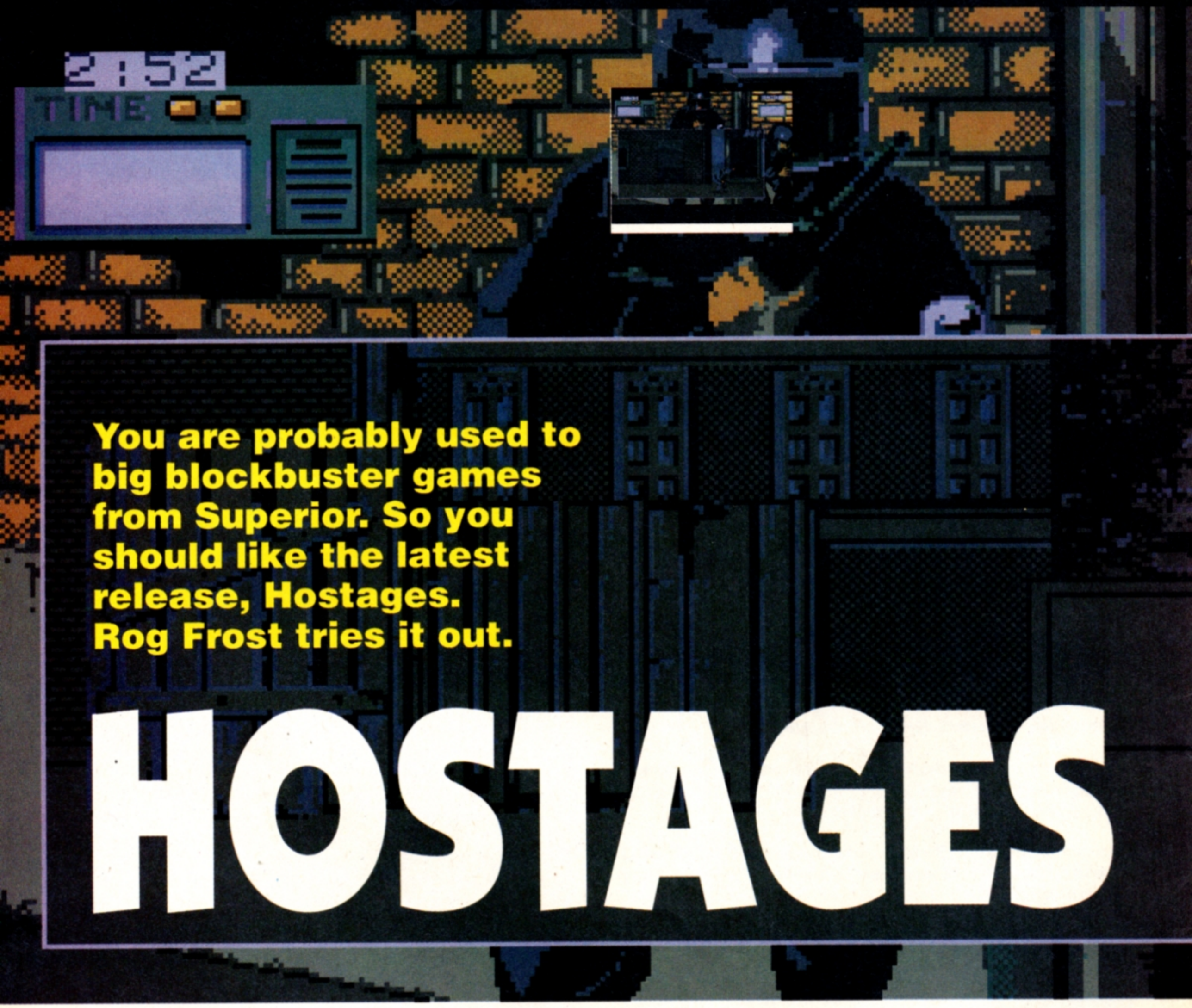
You can also switch it off, together with any other styles you may have set – like underlining – if you use:

```
VDU 2,1,27,1,64,3
```

The following table shows the numbers – they're called control codes – you use for italic, underlining and bold. Just replace the ones you want in the examples above.

VDU sequence	Function
1,27,1,52	Selects italic characters
1,27,1,53	Cancels italic characters
1,27,1,45,1,1	Selects underlining
1,27,1,45,1,0	Cancels underlining
1,27,1,71	Sets double printing (bold)
1,27,1,72	Cancels double printing
1,27,1,64	Resets printer

You can learn more about the power of your printer in next month's issue of Let's Compute!



You are probably used to big blockbuster games from Superior. So you should like the latest release, Hostages. Rog Frost tries it out.

HOSTAGES

YOUR mission is to storm a building in which some terrorists are holding hostages. These captives must be found and brought to safety – a task you have to carry out in three separate parts.

In the first, three snipers must be placed at suitable points around the building. The main display shows a sniper who can run, crawl or perform tumbling rolls.

All of the time he is being tracked by the terrorists' searchlight. If he is caught in the beam he must expect to face a hail of bullets.

Fortunately a sniper has an amazing ability to leap walls or enter any building. This can help him avoid being seen.

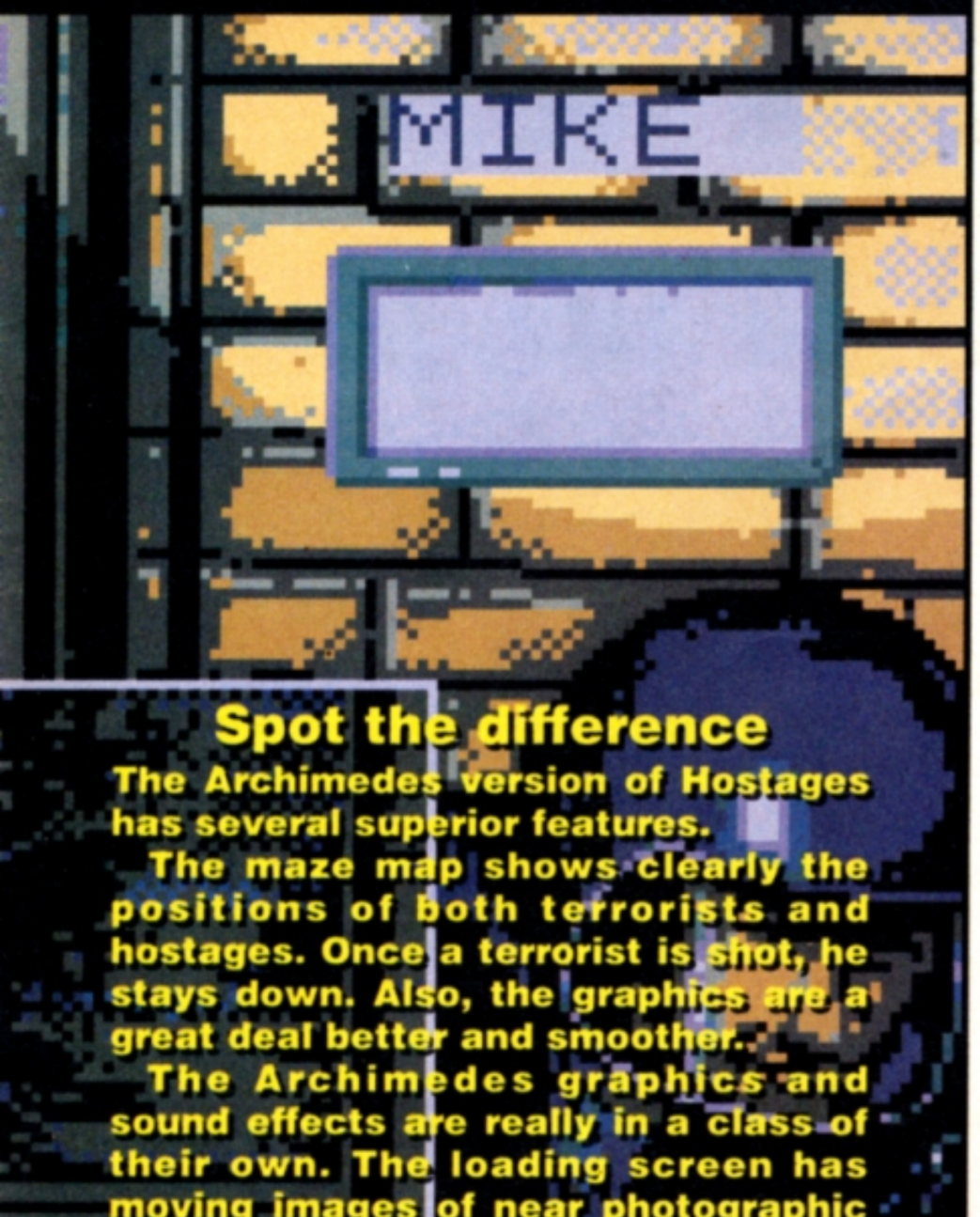
On the BBC Micro and Electron you can also see a plan view of the building showing the position of the sniper and suitable places to hide. The Archimedes version does not have a permanent map, but you can view it at almost any time by pressing the spacebar.

The whole action is accompanied by background music, which can be turned off, and suitable noises for gunfire and jumps. These sound effects are by far the best on the Archimedes and not quite so hot on the Electron.

Stage two of the game can be reached if only one sniper is put in position. But it is very useful to get three ready for action. They are then able to help support the assault team who now appear on the roof.

The Archimedes version, in fact, shows them arriving by helicopter and then gives you the option of placing these three new members of the team at suitable positions. For the other computers, the team are just there and able to go.

Their task is to abseil down the building and then kick so that they swing out and then back through a window. The snipers placed earlier can be used to prepare the way by shooting out the



Spot the difference

The Archimedes version of Hostages has several superior features.

The maze map shows clearly the positions of both terrorists and hostages. Once a terrorist is shot, he stays down. Also, the graphics are a great deal better and smoother.

The Archimedes graphics and sound effects are really in a class of their own. The loading screen has moving images of near photographic quality and this continues right through the program.

Some of the sound effects are very realistic. The scream of anguish as an abseiler falls is truly heart rending. But don't think that the BBC Micro and Electron versions are without graphic quality. While not in the Archimedes class they are still very good.

The gameplay is similar on all formats and only slightly slower on the Electron. It's quite hard to get started on the game but it certainly can grow on you and lead to that 'just one more go' syndrome.

THE PANEL'S VIEW

Three pupils from Pewsey Vale School, Wiltshire, give their expert verdicts on Hostages

Michael Farr (aged 12) on an Electron:

Hostages is a good game about rescuing hostages from a building. They are being held by terrorists.

I like it because it is different from other games I have played and you have to do more than one thing. I liked level one the best. You have to dodge the terrorists' searchlight by ducking and hiding in buildings. If you don't, you lose a life. It is just like being a commando.

Sarah Tarrant (aged 12) on an Archimedes:

The program is different from what I expected and at first it seemed rather complicated. After a bit, though, I found it competitive and fun. I think you would have to play the game a lot to be able to complete it.

I thought it was an excellent game and exciting as well. It was interesting and did not need too many keys. The graphics are fantastic and I really enjoyed them. I have never played a game like this before. I think it is original, exciting and very well put together.

Kevin Lancaster (aged 12) on a Master:

I found Hostages hard to understand at first but I soon picked up level one and I was able to hide all of my snipers and move on to level two.

I really enjoyed this section. An assault team have to abseil down a building and swing out to smash through a window.

This gets you into the building where the hostages are held. If you want to, you can control a sniper instead to get rid of terrorists. In level three you have a maze with lots of rooms. You have to find the hostages and lead them to safety. You need a lot of patience but I think all in all it is a good game.

glass first. Maybe even eliminating a terrorist or two.

Actually smashing a man through a window is a difficult task. First attempts will lead to many a man plunging earthwards. It is all based on sound effects and you have to release a key at the highest pitched note. Then, if the positioning is right you get a person through.

If you find the use of keys difficult you can use a joystick for the BBC Micro and Electron (Plus One or First Byte types) or the mouse for the Archimedes.

You can move on to level three with only one successful entrant in the building. But with about half a dozen terrorists spread over three floors and six hostages to get to safety, it's best to get all three abseilers through the windows.

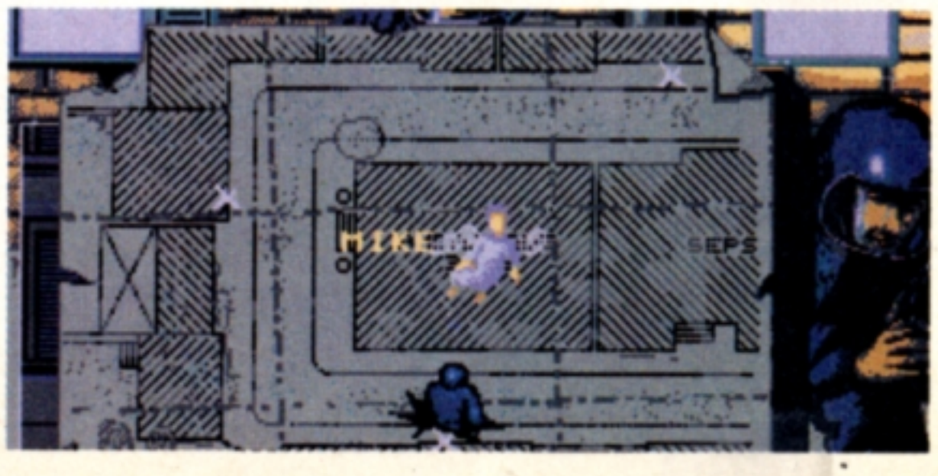
Level three is, in fact, a 3D maze. The terrorists can appear at any time and you must be quick on the trigger to survive. A nice touch – to stop the game becoming too violent – is that any shot terrorists are merely disabled.

You can imagine an ambulance arriving later to revive all the unfortunate people. But you can't really escape from the fact that this game is about violence against people with guns.

When hostages are found, they follow you to the safe room on the third floor. You must try to ensure that they are not shot at by your enemy. It helps if you have had some success with your snipers on level two.

If you don't mind the violence, then I can recommend Hostages on all formats. Owners of Archimedes and A3000 computers who buy this will be in for a graphical delight.

Product: HOSTAGES
Company: Superior Software
Machine: Archimedes series, all BBC Micros and Electron
Price: 19.95 (Archimedes disc), 11.95 (5.25in disc) and 9.95(tape)



So you want to be a fast cat typist?

The best way to improve your typing speed is to keep practising. Remember that practice makes prefect.

Here's a routine to keep track of how well you're doing.

Just type it in, save it – *there's help on Page 38 if you have problems* – and Run it.

```
D;GH

Characters typed 43

Mistakes 4

Words per minute 3.5

Score 35

Correct 39
```

Watch the top left of the screen and when a letter appears press the correct key as quickly as you can. The display (left) records your progress.

At first only letters on the middle row of your keyboard will be shown

When you're doing well enough you'll move to the bottom and then the top rows.

The program is set up for you to practise capital letters so it's a good idea to press Caps Lock before you start. Now type away and see how well you can do.

Carl Bateman has some crafty ideas to help you along

The program

```
  10 REM Typing tutor
  20 REM By Carl Bateman
  30 REM (c) Let's Compute!
  40 MODE4
  50 @%=&20A
  60 DIMk$(4)
  70 k$(0)="ASDFGHJKL;:"
  80 k$(1)="ZXCVBNM,./"
  90 k$(2)="QWERTYUIOP"
 100 k$(3)="1234567890-"
 110 k$(4)=k$(0)+k$(1)+k$(2)+k$(3)
 120 FORr=0 TO 4
 130 c=0:m=0:k=0:t=0:a=0
 140 l=LEN k$(r):d=100:P$=""
 150 CLS
 160 REPEAT
 170 R=RND(l)
 180 R$=MID$(k$(r),R,1)
 190 P$=P$+R$
 200 PRINT TAB(0,0);P$;
 210 TIME=0:s=0
 220 REPEAT
 230 PRINT TAB(10,10);"Characters typed
 ";k TAB(10,12);"Mistakes ";m; TAB(10,14
);"Words per minute ";a/7;" " TAB(10,16)
;"Score ";c-m TAB(10,18);"Correct ";c;
 240 A$=INKEY$(d)
 250 a=c/(TIME+t)*6000
 260 IF A$<>LEFT$(P$,1) AND A$<>""THEN
m=m+1:VDU 7
 270 IF A$=LEFT$(P$,1) THEN P$=RIGHT$(P
$,LEN P$-1):PRINTTAB(0,0);P$;" ";:s=-TIM
E*(s=0):c=c+1
 280 IF P$="" d=TIME
 290 IF A$<>"" k=k+1
 300 UNTIL TIME>=d
 310 IF P$="" THEN t=t+s:d=s/2 ELSE t=t
+TIME:IF s=0 THEN d=d-10*(d<200) ELSE d=
d+20*(d<200)+LEN P$
 320 t=t+TIME
 330 UNTIL c-m>50 AND a>20
 340 IF r=4 THEN PRINT'"Well done, inde
ed!!!"'''"You're pretty hot stuff with a
keyboard!":END
 350 VDU7,7
 360 PRINT'"Well done!"'''"You seem pret
ty familiar with those keys"'
 370 IF r<3 PRINT"Now let's try the ";k
$(r+1);" keys." ELSE PRINT"Now let's try
 ALL the keys!"
 380 PRINT'"Press the spacebar to conti
nue"
 390 REPEAT UNTIL GET=32
 400 NEXT
```

Fancy a change?

The keys you have to press are set up in lines 70 to 100. If you look at them you'll see they could easily be changed to anything you want – in fact any keyboard character.

In the listing they're set for the four rows of 8 bit Acorn machines. For a basic typing test on an Archimedes the last few characters on each line should be changed to match the keyboard – and don't forget to put a quote after them.

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