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Spectrum program Bowl googlies – and hit them

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Copied tapes seized judge told

Cassette copying equipment was seized in a raid on a doctor's home, a High Court judge was told.

Microdeal, the Cornish-based software company, had been granted a "search and seize" order at a private hearing.

It enabled the company to search the premises of Dr T. Mohamed in Blackburn and take away any offending copyright material.

Microdeal alleges that Dr Mohamed and Mr T. Mohsan believed to be Dr Mohamed's 14-year-old brother - have been copying Dragon games such as Eight Ball, Katerpillar Attack, Scarfman and Space War.

Miss Mary Victoria, for Microdeal, told Mr Justice Mervyn Davies that the company had obtained "quite a lot of interesting material" when the order was executed.

She read a sworn statement Continued on page 5

School's over for Chris

A schoolboy is dropping his 'A' level course to invent computer games. Christopher Kerry, 17, of Batemoor, Sheffield, wrote the game Jack and the Beanstalk, currently high in the charts.

The game achieved top status and popularity even without advertising. And the company marketing the game, Liver-pool's House of Thor, is now planning a massive promotion for it.

Now Christopher, who feared he would be joining the dole queue, may earn tens of thousands of pounds in royalties.

Christopher was studying physics, chemistry and computer studies at Jordanthorpe school. He left before the end of the summer term of his first year in the sixth form. Assistant head, Mr Heath said: 'Christopher is a very capable young man with plenty of initiative. We wish him well."

Christopher is now signed up Continued on page 5





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HOME COMPUTING WEEKLY TAIN'S BRIGHTI



MSX COMPUTING

Here's the third issue of MSX Computing, presented to you free with Home Computing Weekly. This is what's in store for you:

- Insight into who's planning what when
- Start learning how to program MSX BASIC

Get ahead and stay ahead with Home Computing Weekly.

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Tapes

From front page

by the solicitor who carried out the order in which he said that Dr Mohamed had "readily admitted" copying Microdeal's tapes and that he had found recording equipment, blank tapes and tapes which had been copied.

Nothing, however, had been found at the boy's home.

Neither Dr Mohamed or Mr Mohsan were present or represented in court.

But Miss Vitoria said Microdeal's solicitors had received a phone call from Dr Mohamed denving all knowledge of the matter.

The judge agreed to continue an order banning Dr Mohamed from infringing Microdeal's copyrights until a further hearing last Friday. He refused to make any order against Mr Mohsan.

Chris

From front page

as a freelance for Thor and he will receive royalties for Jack and the Beanstalk. His brother, Steven, helped with the graphics, an outstanding feature of the game.

Christopher came up with the idea of Jack and the Beanstalk because he thought people were getting fed up with space games and shoot-outs. Now he is going to think up some more new games.

Jack and the Beanstalk received a five-star rating when reviewed in Home Computing Weekly. "Frustrating but challenging; if you want a difficult action game this can certainly be recommended'; our reviewer wrote.

Headmaster Ken Cook says he is not worried about Christopher dropping 'A' levels and he is sure he will be a big success in computers.

No longer in the dark

Broadway Electronics chose to herald its mushrooming expansion plans by sending mushrooms to numerous computer personalities. Halfpound punnets of fresh mushrooms were delivered to their desks following the opening of new high tech headquarters in Bedford in March. Plans have been kept in the dark while new marketing strategies were formed.

Mushroom Computers becomes the parent company, responsible for marketing and manufacturing BBC/Electron add-ons. Broadway Electronics becomes a subsidiary and continues as Mushroom's retail arm. Mushroom Software and Mushroom Electronics are two other subsidiaries.

Paul Vaughan, managing director, said: "While continuing to manufacture peripherals for Acorn, we will develop independent products to an increasing degree."

Broadway Electronics, Aston Rd, Bedford, Beds MK42 0LJ

PSS track success

Kevin Bowes, the motorcyclist sponsored by PSS, is having a successful season. He is currently lying fifth in the Marlboro Clubman's Championship. This is only his second season, yet he has completed over 30 races.

Kevin is a 23-year-old Coventry printer, who took up racing motor bikes as a hobby. His progress against local rivals was quick, and PSS decided to back him in is career on the track.

Kevin has qualified for the Marlboro Clubman's Championships at Silverstone on September 22 and 23. PSS, 452 Stoney Stanton Rd,

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Run for fun

The third annual Cambridge half-marathon, festival sponsored by Sinclair Research, has attracted a record 2,599 entries, including British Olympic marathan hope, Joyce Smith.

The half-marathon will take place on Sunday 15 July. Leading Sinclair staff have been persuaded to take part and Sir Clive and managing director Nigel Searle plan to jog along with the rest.

The fun run starts at 8.30 a.m. and the course is from Parkers Piece, Cambridge, through Fen Causeway, Grantchester and Trumpington. If you would like to participate, call Eddie Sharp at Cambridge City Council on 0223 358977.

Stop those headaches

Do you see spots before your eyes or feel a pounding in your ears after spending hours in front of your trusty micro? If so, you could be suffering from vision disorders or headaches, known to be problems faced by TV computer users.

You may find relief from

your ailments if you invest in an anti-glare filter, available from Romag. CEAF is a laminated filter combined with a diffused etched face which dissipates unwanted reflections. CEAF fits the curvature of the screen and is fixed on by velcro.

CEAF will retail for under £20 and should be in stock at your major high street computer dealer.

Romag, Patterson St, Blaydon on Tyne, Tyne and Wear NE21

Scary monsters

Just out on the Commodore 64: Bonzo, from Audiogenic. Audiogenic says that Bonzo features brilliant full-screen graphics and "some of the most devious and vicious monsters ever devised?

You're a workman who must collect boxes from different levels of the screen. You must climb up and down ladders, avoiding monsters who are guarding the boxes. The monsters react intelligently and try to trap you on a particular level. Price: £5.95.

Audiogenic, B PO Box 88, Reading, Berks

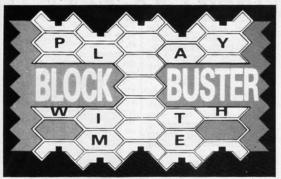
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Our top prize in this week's competition is a weekend for two in Paris. Paris is an exciting city; the Parisians are stylish and elegant and enjoy the French tradition of drinking at roadside cafes and watching the world go by. You'll soon get into the swing of it.

Stroll along the Champs Elysées, climb the Eiffel Tower and take a boat ride down the Seine. Wander round the Galeries Lafayettes and spend an hour or so in the Louvre. While Paris is rich in cultural heritage, it's also up to the minute in fashion and design.

There's so much to do in Paris that a weekend can only give you the taste of this city at the heart of France. The cuisine is justly world famous and wine is cheap. And now you have the chance of visiting Paris — at Option's expense.

now you have the chance of visiting Paris — at Option's expense. The top prizewinner of this week's competition will be flown out to Paris, courtesy of Options, and will stay in a hotel at Option's expense together with his or her companion. This is an ideal opportunity to enjoy an off-season weekend break in the French capital.

Fifty additional prizewinners will receive one of Option's range of educational software, which runs on the BBC and Commodore 64. In the shops each tape costs £8.95 (£9.95 for disc) so the prizes are worth £500.

All you have to do is suggest three applications for adult software. Options is planning to release non-technical software for Mums and Dads and wants you to send in your brainwaves on what would keep them fascinated.

Options is currently preparing a birthday book package, in which the user can retain all necessary dates, as well as a gardening program. What can you think of?

Options' educational software also involves parents. Each program has the facility for addition of data and questions. For example, after the demo program has been run, an adult could type in questions which are relevant to the child's school syllabus. That's one way of involving both parents and children.

Options is a new company formed in June 1984. Options wants to encourage adults to use home computers. David Collins, manager, said: "In 99 out of 100 cases Mum and Dad bought a computer for their child and hoped it would provide help with homework. Our educational packages are ideal for their."

are ideal for that?"
He continued: "What we want now is to provide software for their own use. There's really nothing on the market at the moment for adult leisure. There's only games and technical packages like spreadsheets."

So put on your thinking caps and send us three original ideas — and you could find yourself on that plane winging its way to Paris!

How to enter

Write on the coupon, in order of importance, three original ideas for adult software. Explain clearly and concisely your reasons why each program would interest adults. Your ideas should be non-technical programs for adults with little or no knowledge of computing. Please do not include the names of any arcade or non-arcade games.

Complete the sentence "I'd like to go to Paris because..." in not more than 20 words. This will be used as a tie-breaker, in the event of more than one person being eligible for the top raize.

for the top prize.

Write in your name and address and computer (Commodore or BBC). Complete the coupon clearly and fully — it will be used as a label if you are a prizewinner. Please include your age: if you are a top prizewinner and are under 18 you will need to be accompanied by an adult companion.

Send the coupon to Options Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Entries close at first post on Friday August 10, 1984

Take off for a weekend in Paris courtesy of Options. And we're also giving away 50 tapes from Options

You may enter as many times as you wish, but each entry must be on an official coupon — not a copy — and sealed in a separate envelope. Important: please follow carefully the guidelines on entering — incomplete coupons cannot be considered.

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Entries will not be accepted from employees of Argus Specialist Publications, Options and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies. The How to Enter section forms part of the rules.

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10 PAPER 4: BORDER 4: RANDOMIZE 0
  20 GD SUB 1409: GD SUB 1040
 22 GO TO 30
  29 CLS : BORDER 4: GO SUB 1390
 30 PAPER 7: GO SUB 1580
  31 GO SUB 2000
  40 DIM v(11): LET 1=0
 45 LET bw=INT (RND*5)+1
 50 LET 1w=0
 60 LET wkt=0: LET tot=0: LET ov=0: LET pl=0: LET no=1
  70 LET bal=0: PRINT AT 10,15;ov: PRINT INVERSE 1;AT bw+5,27;" ": PRINT AT 18
5; hi
 80 LET v=0
  90 LET v=INT (RND*270)+1+(p1/30)+(bw-3)+(2-INT (no/2))
 91 IF v<1 THEN LET v=1
 92 IF v>270 THEN LET v=270
 100 PAUSE 0
 110 IF INKEY$<>"1" AND INKEY$<>"2" AND INKEY$<>"3" AND INKEY$<>"r" AND INKEY$<>
"R" THEN GO TO 100
 120 IF INKEY$="1" THEN
                         GO TO 160
 130 IF INKEY$="2" THEN
                         GO TO 220
 140 IF INKEY$="3" THEN
                         GO TO 290
 150 IF INKEY$="r" OR INKEY$="R" THEN GO TO 350
 160 IF v>=1 AND v<=5 THEN GO TO 510
 170 IF
       v>=6 AND v<=132 THEN GO TO 500
 180 IF
       v>=133 AND v<=232 THEN
                                GO TO 520
 190 IF v>=233 AND v<=266 THEN
                                GO TO 530
 200 IF v>=267 AND v<=268 THEN
                                GO TO 540
 210 IF v>=269 AND v<=270 THEN
                                GO TO 550
```

Will you be a cricketing sta

You stand nervously at the crease as an expectant hush falls over the crowd...

That's how One Day Cricket, for the 48K Spectrum, begins. Your challenge is to get the best high score or beat a random high score.

The program holds Essex and England teams and choice is made depending on whether you select 40 or 50 overs.

These may be changed by altering the following lines (where x\$ is Essex/England and f\$ is the opposition):

802 & 812 venue (county/ 809 & 819 data (county/ international)

2002 & 2501 data (county/international)

2004 & 2503 x\$ Essex/England

The opposition is randomly chosen for cosmetic purposes and does not affect the outcome of the game.

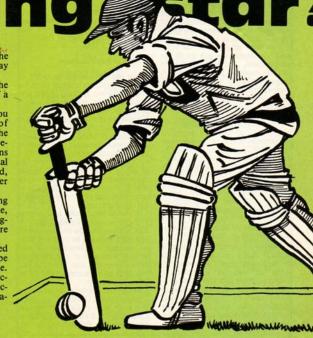
At the end of the innings the scoreboard and score card may be copied on the ZX Printer.

Spectators on each side of the scoreboard raise their arms if a six is hit or a wicket falls.

At the end of each over you are given the option of obtaining the run rate and the required run rate. The score-board keeps track of total runs scored, batsman's runs, total when wicket fell, overs bowled, wickets fallen and bowler number bowling.

You play the game using three keys: 1 defensive stroke, 2 attacking/solid stroke, 3 aggressive stroke. Full details are in the program.

Capitals which are underlined are UDGs and should be entered in GRAPHICS mode. They are: A-M wicket, N spectators, O arms aloft, P spectators with arms aloft, Q indicator for bowlers.



M PROGRAM

```
v>=1 AND v<=15 THEN
 230
        v>=16 AND v<=146 THEN
                                GO TO 500
 240
        v>=147 AND v<=201
                           THEN
                                 GO TO 520
        v>=202
               AND
                           THEN
        v>=232
               AND
                   v<=234
                          THEN
                                 GO TO 540
                          THEN
                                 GO TO 550
 270
     IF
        v>=235 AND
                   v<=269
 280
        v=270 THEN
                    GD TD 560
     IF
 290
     IF
        v>=1 AND
                 v<=45 THEN
                             GO TO 510
 300
        v>=46 AND v<=123 THEN
                                GD TO 500
        v>=124 AND
                   v<=181
                           THEN
                                 GO TO 520
               AND
                                   TO
                                       530
 320
        v>=182
                   v<=201
                           THEN
                                 GO
 325
        v>=202 AND
                   v<=205
                          THEN
                                 GO
                                    TO
                                       540
 330
        v>=206 AND
                   v<=230 THEN
                                 GO TO
                                       550
        v>=231 AND
                   v<=270 THEN
                                 GO TO
 350
        OV=0 THEN
                   GO TO 100
 360 IF bal >0 THEN
                    GO TO 100
    LET r=tot/ov: LET r$=STR$ r: PRINT AT 21,1; "Run Rate "
 370
        LEN r$<3 THEN
                       PRINT AT 21,11;r$+".0": 60 TO 410
 380
     IF
                                 21,11;r$: GO TO 410
                        PRINT AT
        LEN r$=3 THEN
        LEN r$>3 THEN
                       PRINT AT
 400
                                 21,11;r$( TO 4): GO TO 410
 410
     IF tot>=hi THEN
                     GO TO 490
    LET q=hi-tot+1
 420
 425
       ovs=50 THEN
                     GO TO 435
 430
    LET p=40-ov: LET t=q/p: GO TO 440
 435
    LET p=50-ov: LET t=q/p
    LET t$=STR$ t: PRINT AT 21,17; "Reqd.R/R "
 440
                       PRINT AT 21,27;t$+".0": GD TD 480
 450 IF LEN t$<3 THEN
                       PRINT AT 21,27;t$: 60 TO 480
        LEN t$=3 THEN
 460
    IF
 470
    IF LEN t$>3 THEN
                       PRINT AT 21,27;t$( TO 4): GO TO 480
     PAUSE 0
 480
 481 IF INKEY$<>"r" AND INKEY$<>"R" THEN
                                            GO TO 480
            INK 4; AT 21,0; "
                                                                            GO TO 1
 482 PRINT
00
```



Variables

V(1) scores for player on scoreboard

1 variable for player, no score bw current bowler's number

score at which last wicket fell wkt number of wickets fallen tot total runs at current time

overs elapsed current player's score current batman's number

bal ball number of current over random number plus formula r run rate (total - over)
q high total (for required run

rate) ovs number of overs chosen (40

or 50) 40-over (for required run

rate) t 9 ÷ p (for require run rate) z (bal*4+1) position for display hi initial total to aim for

(updated if chosen) tot-hi, rs hi tot. For "won by runs" on scoreboard

sk skill factor chosen

STRSS r

STR\$ t

keyboard response (copy board)

players' names

home team

away team

keyboard responses: 22

another innings copy card

same match details

instructions instructions again

details correct

Choose a county match or face some of the best international teams in One Day Cricket, a Spectrum game by R. Butcher

How it works

40-92 set variables

110-150 check keyboard for input

160-340 result for that particular

ball

350-360 stops run rate/required run rate midway through over 370-400 works out/prints run rate

410 checks total behind so run rate may be printed

420-470 work out/print required run rate

480-493 reprints over required run rate and run rate, returns

to game 500-560 a add wickets/runs to total/player's score 570-630 print result of ball at

appropriate position 640-670 increment variables

690-720 print new data, updated if necessary after each ball 730 checks if wickets equal 10 for end of game

740 checks if more balls to over,

if so returns to game

750-751 check if BAL = 1, if so "end of over;" deletes dis-

752-760 check if end of over has been reached, if not return to

game "end of innings" printed.

Asks if copy wanted 800-921 prints out scorecard 930-958 card copy option, match

details option 970 end screen 1000-1030 if wicket falls specta-

tors raise arms 1040-1260 title screen

1290-1370 instructions 1390-1408 input details

1409-1565 UDGs 1580-1720 set up screen display 2000-2002 if overs equal 40 picks

county team 2500 if overs equal 50 picks national team

2502-2552 screen displays

```
491 PAUSE 0
 492 IF INKEY$<>"r" AND INKEY$<>"R" THEN GO TO 491
 493 PRINT
            INK 4; AT 21,1; " GO TO 100
 500 LET tot=tot+0: GO SUB 980: GO TO 570
 510 LET wkt=wkt+1: GO SUB 660: GO SUB 1000: LET pl=0: LET no=no+1: GO SUB 980:
GO TO 580
 520 LET tot=tot+1: LET pl=pl+1: GO SUB 980: GO TO 590
 530 LET tot=tot+2: LET p1=p1+2: GO SUB 980: GO TO 600
 540 LET tot=tot+3: LET p1=p1+3: GO SUB 980: GO TO 610
 550 LET tot=tot+4: LET p1=p1+4: GO SUB 980: GO TO 620
 560 LET tot=tot+6: LET p1=p1+6: GO SUB 980: GO TO 630
 570 GO SUB 640: PRINT BRIGHT 1; INK 2;AT 12,z; " #### ";AT 13,z; " # # ";AT 14,z; " #
"; AT 15,z;" " ": GO TO 690
 580 GO SUB 640: PRINT BRIGHT 1; AT 12, z; "BD "; AT 13, z; "BD "; AT 14, z; "BD "; AT
15
,z;"89 ": PAUSE 15: BEEP .01,0: PRINT BRIGHT 1;AT 12,z;"EEM";AT 13,z;"89K";A
4,z;"윤노보";AT 15,z;"윤번토": GO SUB 1030: GO TO 690
 590 GO SUB 640: PRINT BRIGHT 1; INK 4; AT 12, z; " = "; AT 13, z; " # "; AT 14, z; "
"; AT 15,z;" " GO TO 690
 600 GO SUB 640: PRINT BRIGHT 1; INK 3;AT 12,z;" " ";AT 13,z;" "AT 14,z;" |
"; AT 15,z;" " ": GO TO 690
 610 GO SUB 640: PRINT BRIGHT 1; INK 5; AT 12, z; " some "; AT 13, z; " sol "; AT 14, z; "
";AT 15,z;" *** ": GO TO 690
 620 GO SUB 640: PRINT BRIGHT 1; INK 6; AT 12, z; " # "; AT 13, z; " # "; AT 14, z; "
";AT 15,z;" " ": GO TO 690
630 GO SUB 640: PRINT BRIGHT 1; INK 1; AT 12, z; " "; AT 13, z; " | "; AT 14, z; " |
"; AT 15,z; " " ": GO SUB 1020: GO TO 690
 640 LET z=(bal*4+1)
 650 RETURN
 660 LET 1=1+1
 670 LET v(1)=p1
 680 RETURN
 690 PRINT AT 6,14; tot
 700 PRINT AT 8,15;; wkt
 710 PRINT AT 5,22:no
 720 PRINT AT 7,21;pl
 730 IF wkt=10 THEN GD TD 770
 740 IF bal<6 THEN GO TO 80
 750 IF bal=6 THEN PRINT FLASH 1; AT 21,0; "END OF OVER": PAUSE 50: PRINT INK 4
;AT 21,0;" FOR a=5 TO 25 STEP 4: FOR b=12 TO 15: PRINT AT b,a;"
: NEXT b: NEXT a: LET bal=0: LET ov=ov+1
751 LET bw=bw+1: PRINT INVERSE 1; AT bw+4,27; " ": IF bw=6 THEN LET bw=1
 752 IF ov<40 THEN GO TO 70
760 IF ov=40 AND ovs=40 THEN PRINT AT 10,15; "40": LET 1=1+1: LET v(1)=p1: GO T
0 770
761 IF ov<50 AND ovs=50 THEN GO TO 70
 762 IF ov=50 AND ovs=50 THEN PRINT AT 10,15; "50": LET 1=1+1: LET v(1)=p1
          FLASH 1; AT 21,18; "END OF INNINGS": PAUSE 200: PRINT INK 4; AT 21,18;
 770 PRINT
           100 200 200 200 200
 780 INPUT "ZX printer copy (y/n)?";c$
 790 IF c$="y" OR c$="Y" THEN GO SUB 2550: COPY: GO TO 780
791 IF c$<>"n" AND c$<>"N" THEN GO TO 780
800 IF gys=50 THEN GO TO 811
801 CLS : PRINT '''': FOR 1=1 TO 11: PRINT TAB (20); v(1): NEXT 1
802 PRINT AT 1,3; "Chelmsford"; AT 1,18; e$
803 PRINT AT 2,14-LEN x$; x$; AT 2,15; "v"; AT 2,17; f$: PRINT AT 5, INT 15-(LEN x$-1
)/2;x$
804 PRINT
```

M PROGRAM

```
805 RESTORE 805: FOR a=1 TO 11
 806 READ w$
 807 PRINT TAB (6); w$
808 NEXT a
809 DATA "G.Gooch", "B.Hardie", "K.McEwan", "K.Fletcher", "K.Pont", "S.Turner", "D.Pr
ingle", "D. East", "N. Phillip", "N. Foster", "J. Lever"
810 GO TO 890
811 CLS : PRINT '''': FOR 1=1 TO 11: PRINT TAB (20); v(1): NEXT 1
812 PRINT AT 1,3; "Lords"; AT 1,18; e$
813 PRINT AT 2,14-LEN x$;x$;AT 2,15;"v";AT 2,17;f$: PRINT AT 5,INT 15-(LEN x$-1
)/2:x$
 814 PRINT '
815 RESTORE 815: FOR a=1 TO 11
816 READ w$
817 PRINT TAB (6); w$
818 NEXT a
819 DATA "G.Fowler", "C.Tavare", "D.Gower", "A.Lamb", "D.Randall", "I.Botham", "B.Tay
lor"
    ,"G.Dilley","N.Cowans","N.Foster","R.Willis"
890 PRINT AT 19,6; "TOTAL("; wkt; AT 19,14; "wkts)"; AT 19,20; tot 900 PRINT AT 20,8; ov; AT 20,10; "."; AT 20,11; bal; AT 20,13; "overs"
 901 LET rr=tot-hi: LET rs=hi-tot
 902 IF tot=hi THEN GO TO 910
 903 IF tot>hi THEN GO TO 911
 904 IF hi>tot THEN GO TO 912
 910 PRINT AT 4,10-LEN x$; x$; AT 4,11; "drew with "; AT 4,21; f$: GO TO 919
911 PRINT AT 4,11-LEN x$;x$;AT 4,12; "won by ";rr;AT 4,23; "runs": GO TO 919 912 PRINT AT 4,11-LEN f$;f$;AT 4,12; "won by ";rs;AT 4,23; "runs"
 919 PLOT 12,172: DRAW 230,0: DRAW 0,-169: DRAW -230,0: DRAW 0,169
 920 PLOT 159,31: DRAW 25,0
 921 IF tot>hi THEN LET hi=tot
 930 INPUT "ZX printer copy ?(y/n)";g$
 940 IF g$="y" OR g$="Y" THEN COPY : GO TO 930
 941 IF q$<>"n" AND g$<>"N" THEN GO TO 930
 950 INPUT "Do you want another innings?";s$
 951 IF s$="y" OR s$="Y" THEN GO TO 955
 952 IF s$<>"n" AND s$<>"N" THEN GO TO 950
 953 GO TO 970
 955 INPUT "Same match details ?";y$
 956 IF y$="y" OR y$="Y" THEN BORDER 4: GO TO 30
        y$<>"n" AND y$<>"N" THEN
 957 IF
                                   GO TO 955
 958 GO TO 29
 970 CLS : BORDER 4: PRINT " ...CLOSE OF PLAY...": PRINT '"As the sun slowl
y sets over the wicket, we must bid farewell to another day's exciting cricket.
                                                                     tomorrow - will
The teams, players and spectators will be here the same time
               record runs total, or be bowled out for a record low ?. Will one
                                 time record over 40 or 50 overs? Who knows what m
of your batsmen score an all
ay happen in
                 another game of..."
 971 PRINT AT 15,8; "ONE DAY CRICKET"
 972 PAUSE 0
 980 LET bal=bal+1
 990 RETURN
1000 PRINT AT 18,22; tot: PRINT INVERSE 1; AT 7,21; "
1010 RETURN
1020 PRINT AT 16,0; "EEEE"; AT 15,0; "9999": PAUSE 35: PRINT AT 15,0; "
                                                                               "; AT 1
6,0
;"MMMM": RETURN
                                                                              "; AT 16
1030 PRINT AT 16,29; "EEE"; AT 15,29; "QQQ": PAUSE 35: PRINT AT 15,29; "
9; "UUU": RETURN
1040 CLS : PAPER 4: BURDER 4
1050 PLOT 15,159: DRAW 15,0: DRAW 0,-22: DRAW -15,0: DRAW 0,22
1060 PLOT 38,137: DRAW 0,22: DRAW 15,-22: DRAW 0,22
1070 PLOT 76,137: DRAW -15,0: DRAW 0,22: DRAW 15,0: PLOT 61,148: DRAW 15,0
1080 PLOT 96,137: DRAW 0,22: DRAW 8,0: DRAW 8,-11: DRAW -8,-11: DRAW -8,0
1090 PLOT 120,137: DRAW 8,22: DRAW 8,-22: PLOT 124,147: DRAW 8,0
1100 PLOT 151,137: DRAW 0,14: DRAW -8,8: PLOT 151,151: DRAW 8,8
1110 PLOT 31,88: DRAW -15,0: DRAW 0,22: DRAW 15,0
```

```
1120 PLOT 39,88: DRAW 0,22: DRAW 15,0: DRAW 0,-11: DRAW -15,0: DRAW 15,-11
1130 PLOT 67,88: DRAW 0,22
1140 PLOT 95,88: DRAW -15,0: DRAW 0,22: DRAW 15,0
1150 PLOT 103,88: DRAW 0,22: PLOT 119,88: DRAW -15,11: DRAW 15,11
1160 PLOT 143,88: DRAW -15,0: DRAW 0,22: DRAW 15,0: PLOT 143,99: DRAW -15,0
1170 PLOT 159,88: DRAW 0,22: PLOT 151,110: DRAW 15,0
1180 PLOT 223,144: DRAW 6,0: DRAW 0,-40: DRAW 7,0: DRAW ,-93: PLOT 216,11: DRAW
0,93: DRAW 7,0: DRAW 0,40: PLOT 216,11: DRAW 20,0,PI/2
1190 PLOT 224,144: DRAW 0,-40: PLOT 228,144: DRAW 0,-40: PLOT 226,87: DRAW 0,-62
: PLOT 220,95: DRAW 6,-8: PLOT 232,95: DRAW -6,-8
1200 PLOT 199,8: DRAW 0,80: DRAW -32,0: DRAW 0,-80: PLOT 183,8: DRAW 0,80
1210 CIRCLE 127,40,20: PLOT 127,20: DRAW 0,40: LET a=123: FOR b=20 TO 60 STEP 3:
 PLOT a,b: NEXT b: LET a=131: FOR b=20 TO 60 STEP 3: PLOT a,b: NEXT b
1220 PRINT AT 16,2; "by"; AT 18,2; "R. Butcher"
1230 PRINT AT 19,3; 1984"
1260 INPUT "Instructions ? (y/n)";a$
1270 IF a$="y" OR a$="Y" THEN GO TO 1290
1271 IF a$<>"n" AND a$<>"N" THEN GO TO 1260
1280 GO TO 1390
1290 INK 7: CLS : PRINT "INSTRUCTIONS FOR ONE DAY CRICKET": PRINT "
1300 PRINT "In this game you act for the — side batting. One Day Cricket
ists of 40 overs(County) or 50 overs(International); ending either at the end of
            allotted overs or the loss of 10wickets, whichever the sooner.": PRIN
T "The scoreboard keeps you
                                   informed of what is happening after every d
elivery.": PRINT "For a ball to be bowled press either the keys 1 2 OR 3.": PR
INT INVERSE 1; AT 19,10; "PRESS ANY KEY"
1310 PAUSE 0: CLS : PRINT "These keys also simulate the
                                                             batsmans stroke to th
at particular delivery. The keys
1320 PRINT '"1 DEFENSIVE STROKE"
                                           represent as follows..."
1330 PRINT "2 ATTACKING/SOLID STROKE"
1340 PRINT "3 AGGRESSIVE STROKE"
1350 PRINT '"By tactical use of these keys for each ball, you determine the out
come (ND-SCORE, RUNS SCORED, DUT).": PRINT "(e.g)Using the 1 key will not prouce as many runs as 2 DR 3 but there is less chance of being out.": PRINT
INVERSE 1; AT 19,10; "PRESS ANY KEY": PAUSE 0: CLS : PRINT "The following statisti
cs are
         also determined by the key
                                          chosen.
                                                     (RUNS/OVER: RUNS/WICKET OVERS/
WICKET)."
1360 PRINT "Apart from these set ratios, alsotaken into account are...
                                                                               (a) B
atsmans No [1-10]
                             (b) Bowlers No [1-5]
                                                              (c)Players current s
            For both (a)&(b) the best playershave the lowest No.
he bottom left corner of theScoreboard will be a team displayed at random,
along with their score that you are trying to beat. Before the first inningsthis
 score is determined by
                         choosing a SKILL FACTOR(1-5).": PRINT INVERSE 1; AT
19,10; "PRESS ANY KEY": PAUSE O: CLS
1361 PRINT "1 being the easiest. This score is then treated as a -hi score- bein
g updated with your hi totalif that is the case after every innings. After each i
nnings you have the option of changing the MATCH DATA which will result in a ne
w randomly chosen target independent of your hi-score."
1362 PRINT "By pressing the R key you are given your RUN RATE and the
IRED RUN RATE to beat the opponents total. This key will only operate at the
end of an over.Pressing R again will return you to the game.At the
of the innings you are offered the option of a COPY of both the SCOREBOARD
            SCORECARD ON THE ZX printer."
1370 INPUT "Instructions again ? (y/n)";b$
1380 IF b$="y"OR b$="Y" THEN GO TO 1290
1381 IF b$<>"n" AND b$<>"N" THEN GO TO 1370
1390 INK 0: PAPER 7: CLS : PAPER 7: PRINT AT 0,10; "MATCH DATA": PLOT 75,175: DRA
W 0,-11: DRAW 89,0: DRAW 0,11
1391 INPUT "Date";e$
1392 IF LEN e$>12 THEN GO TO 1391
1393 PRINT INVERSE 1;AT 3,3; "Date - ";e$
1394 INPUT "No of overs ";ovs
1395 IF ovs<>40 AND ovs<>50 THEN GO TO 1394
1396 PRINT INVERSE 1; AT 5,3: "Overs
                                             - "; ovs
1401 INPUT "Skill factor (1-5) ";sk
1402 IF sk<>1 AND sk<>2 AND sk<>3 AND sk<>4 AND sk<>5 THEN GO TO 1401
```

M PROGRAM

```
1403 PRINT INVERSE 1; AT 7,3; "Skill factor - "; sk
1404 LET hi=(4*ovs)+(sk*25)-INT (RND*20)+1
1405 INPUT "Are the above correct"; i$
1406 IF i = "y" OR i = "Y" THEN RETURN
1407 IF i$<>"n" AND i$<>"N" THEN GO TO 1405
1408 GO TO 1390
1409 RESTORE 1409: FOR f=USR "a" TO USR "q"+7: READ x: POKE f,x: NEXT f
1410 DATA 24,24,24,24,24,24,24
1420 DATA 0,0,0,0,31,31,24,24
1430 DATA 198,198,198,198,198,198,198,198
1440 DATA 0,0,0,0,254,254,198,198
1450 DATA 0,24,56,112,96,0,24,24
1460 DATA 0,0,0,0,0,0,192,192
1470 DATA 192,206,223,223,223,206,192,192
1480 DATA 192,192,193,193,195,195,199,199
1490 DATA 192,192,128,128,0,0,0,0
1500 DATA 12,12,24,24,48,48,96,96
1510 DATA 0,0,0,0,3,3,7,6
1520 DATA 192,192,192,192,192,192,192,192
1530 DATA 0,0,192,224,112,48,0,0
1540 DATA 24,36,36,60,66,129,129,129
1550 DATA 0,0,36,36,66,66,66,66
1560 DATA 153,165,165,60,66,129,129,129
1565 DATA 0,56,124,124,124,56,0,0
1570 RETURN
1580 CLS : PAPER 7: BORDER 0
                          INK 5; AT a,0; " ... NEXT a
1590 FOR a=3 TO 14: PRINT
1600 FOR a=3 TO 14: PRINT INK 5; AT a, 29; " NEXT a
1610 FOR b=0 TO 2: FOR a=0 TO 31: PRINT INK 5; AT b, a; "M": NEXT a: NEXT b
1620 FOR b=21 TO 20 STEP -1: FOR a=0 TO 31: PRINT INK 4; AT b, a; "M": NEXT a: NE
1630 FOR a=4 TO 28: FOR b=3 TO 19: PRINT AT b,a;" : NEXT b: NEXT a
           INVERSE 1; AT 4,13; "TOTAL"; AT 5,20; "No
1640 PRINT
1641 PRINT INVERSE 1; AT 5, 25; "Bwl"
1642 PRINT INVERSE 1;AT 6,26; "1";AT 7,26; "2";AT 8,26; "3";AT 9,26; "4";AT 10,26; "
5"
1650 PRINT INVERSE 1; AT 6,14; "
1660 PRINT INVERSE 1; AT 8,10; "WKTS"; AT 8,15; "
1670 PRINT INVERSE 1; AT 10,9; "DVERS"; AT 10,15; " "
1680 FOR A=5 TO 25 STEP 4: FOR B=12 TO 15: PRINT AT B,A;" ": NEXT b: NEXT a
1690 PRINT INVERSE 1; AT 17, 18; "LAST"
1700 PRINT INVERSE 1; AT 18, 18; "WKT"; AT 18, 22; "
1710 FOR a=16 TO 19: PRINT AT a,0; "NNNN": NEXT a
1720 FOR a=16 TO 19: PRINT AT a,29; "NNN": NEXT a
1730 RETURN
2000 IF pvs=50 THEN GD TD 2500
2001 RESTORE 2001: FOR a=1 TO INT (RND*16)+1: READ f$: NEXT a
2002 DATA "Notts", "Sussex", "Somerset", "Middlesex", "Surrey", "Hampshire", "Leics", "
Kent", "Yorks", "Derbys", "Gloucs", "Glamorgan", "Northants", "Lancs", "Warwicks", "Worc
2003 PRINT INVERSE 1; AT 17,5; f$
2004 LET x$="ESSEX": PRINT INVERSE 1; AT 6,5; x$
2005 RETURN
2500 RESTORE 2500: FOR a=1 TO INT (RND*6)+1: READ f$: NEXT a
2501 DATA "Australia", "India", "Pakistan", "Sri Lanka", "W. Indies", "N. Zealand"
2502 PRINT INVERSE 1; AT 17,5; f$
2503 LET x$="ENGLAND": PRINT
                              INVERSE 1; AT 6,5; x$
2504 RETURN
2550 FOR a=3 TO 14: PRINT AT a,0;"
                                       ": NEXT a
2551 FOR a=3 TO 14: PRINT AT a,29;" ": NEXT a
2552 FOR b=0 TO 2: FOR a=0 TO 31: PRINT AT b,a;" ": NEXT a: NEXT b
2553 RETURN
9999 SAVE "oneday" LINE 1
```

BRITAIN'S SOFTWAR by the ASP Market Research Group

ARCADE

- 1 Sabre Wulf
- Beach Head
- Loco
- 4 Psytron
- Omega Race
- 6 Trashman
- Oblivion
- Son of Blagger Trashman
- 10 Munch Mania
- **Ultimate** US Gold
- Alligata Beyond
- Commodore Oulcksliva
- **Bug-Byte** Alligata
- New Generation Mastertronic
- Spectrum (-) **CBM (2)**
- **CBM 64 (3)** Spectrum (5)
- CBM 64 (4) CBM 64 (7)
- Spectrum (6) **CBM 64 (9)**
- Spectrum (10) CBM 64 (-)

- 1 Mugsy
- 3 Flight Path 737 Lords of Midnight
- Sphinx Adventure
- 5 The Inferno 6 Mastermind
- Valhalla
- 8 The Fall of Rome
- 9 Oulzmaster 10 Solo Flight
- Melbourne House Anirog
- Beyond
- Acornsoft R. Shepherd
- Commodore Legend
- APS
 - Commodore US Gold
- Spectrum (1) CBM 64 (2)
- Spectrum (4)
- BBC (3)
- Spectrum (6) **CBM 64 (5)** CBM 64 (7)
- Spectrum (9) CBM 64 (10) **CBM 64 (8)**

Compiled with the assistance of Britain's leading software distributors, including: Pinnacle, SDL, PCE, Websters, PCS and Software Centre.

SPECTRUM

- 1 Sabre Wulf 2 Jet Set Willy 3 Stop the Express
- 4 Match Point 5 Mugsy 6 Atic Atac
- 7 Scuba Dive 8 Fighter Pilot 9 Night Gunner 10 Manic Miner
- Ultimate (1) Software Projs (-) Sinclair (9) Sinclair (-)
- Melbourne Hse (-) Ultimate (-) Martech (-)
- Digital Integratn (-) Digital Integratn (-) Software Projs (-)

COMMODORE 64

- 1 Manic Miner 2 Beachhead
- 3 Solo Flight
- 4 Colossus Chess 5 Chuckle Egg
- 6 Snooker
- 7 Superpipeline 8 Megawarz 9 Chinese Juggler 10 Revelation
- Software Projs (-) Centresoft (-) Centresoft (-) CDS (-) A&F(-)
- Visions (-) Tasket (-) Paramount (-) Microsoft (-)

Softek (-)

- DRAGON 32
 - 1 Buzzard Balt 2 Cuthbert in Space
 - 3 Hungry Horace 4 Rug Diver
 - 5 Dragon Chess
- 6Mr Dig 7 Sprite Magic
- 8 Chuckle Egg 9 Transylvanian Twr 10 Hunchback
- Microdeal (-) Microdeal (-) Melbourne Hse (-) Mastertronic (-)
- Oasis Software (-) Microdeal (-) Knight (-)
- A & F (-) R. Shepherd (-) Ocean (-)

Compiled by W. H. Smith and Websters. Figures in brackets are last week's positions.

MC-20

- 1 Computer War 2 Tank Commander
- 3 Charlot Race
- 4 Snooker 5 Flight 015
- 6 Games Designer 7 Wizard and the Princess
- 9 Duck Shoot 10 Tower of Evil
- Creative Sparks (-) Creative Sparks (-) Microantics (-)
- Visions (-) Ferrantičrają (-)
- Galactic (-) Melbourne House (-)
- 8 Grandmaster Chess Audiogenic (-) Mastertronic (-) Creative Sparks (-)

- BBC
- 1 Aviator 2 JCB Digger
- 3 Linkwood French **4Linkwood German** 5 Chouls
- 6 Fortress 7 Snooker
- 8 Snooker 9Twin Kingdom Valley
- Acornsoft (-) Acornsoft (-) Acornsoft (-) Micropower (-) Pace (-)

Acornsoft (-)

- Acornsoft (-) Visions (-)
- Bug-Byte (-) 10 Tree of Knowledge Acornsoft (-)

72 XX 8391

- 1 Krypton Ordeal 2 Black Crystal
- 3 Planet Raider 4 Walk the Plank
- 5 Sabotage 6 Space Raiders
- 7 Flight Simulation RChess 1K
- 9 Reversi 10 City Patrol
- Novus (4) Carnell (9) Novus (8) Novus (5) Sinclair (10) Sinciair (-) Sinclair (-) Sinclair (-)
- Sinclair (-) Sinclair (-)

MSX computers are big news. Backed by some of the biggest names in electronics, the stylish new computers are due in the

UK from Japan in September.

In this issue of MSX Computing we question the companies about their MSX plans. And, in an exclusive article, Graham Knight, of Knights TV and Computers, gives you a head start in programming the MSX micros.

We give you the rundown on who's planning what for MSX

Yamaha's MSX micro, due here in November, will also be a musical instrument, with its own remote piano-style keyboard.

The system will cost about £600 and will comprise Yamaha's CX5 computer with a built-in sound module and added keyboard.

Jerry Uwins, marketing manager for the company's UK arm, Kemble-Yamaha, said "With 48 preset sounds it can sound like a piano, trumpet, violin... any instrument you care to name.

"Composing is going to be one particular feature.

"One of the important points to stress is that the various squeaks and squawks that you get out of Commodore and Sinclair are not in the same league.

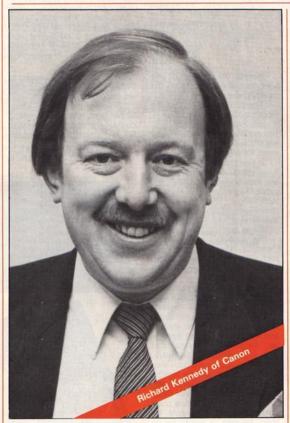
"The sound is very similar to our DX9 synthesiser, which is a proper, pedigree musical instrument using proper classical notation."

The MSX computer from Sony will probably be called the Hit Bit.

Sony's new business manager, Mike Margolis, explained: "Until a week before we launched the Walkman we were in two minds about whether to use the name. Number 3

July 24, 1984

GOVERNMENT OF THE STATE OF THE S



"We thought: 'Why call it a silly name like Walkman... it's ridiculous'. We thought long and hard about it. But it's now part of the language. It has a personality and it's part of a lifestyle.

"A lot of the thinking behind the computer was done by the same people who are behind the Walkman, so we would expect the same unique approach. The uniqueness of the name has been an advantage to the Walkman and it would be the same for the computer."

Sony's present range of products in the UK include hifi, audio, video, TV and broadcasting equipment for both TV and radio. And Mr Margolis said the computer would be sold through dealers who are currently selling Sony products.

Answering criticisms that the MSX standard could delay computer development, he said: "The way we see home computers is that they have traditionally been developed by boffins, reviewed by boffins and bought by boffins.

"They are people who are interested in computers for their own sakes. We believe there are a lot of people who are interested in home entertainment, not only to do their own programming.

"There is a large number of people who are afraid of buying home computers. They are not sure what to buy and they have a whole list of fears."

The only reason for innovation was to bring benefits to the consumer — which would continue to be done with MSX — but there was no point in putting the latest chip into a home computer to sort 10 megabytes of information more quickly.

Speed of games was important, though. And the format allowed considerable sophistication, not only with discs and the CP/M business operating system to come, but also the possibility of a second processor — increasing speed by two to three times — within about three years.

He stressed, however, that the computers would always be upward-compatible. The companies making them were highly competitive and their only common ground was compatibility.

Mr Margolis said Sony would be bringing out its own

Continued on page 3.

What MSX will mean MSX will cure the major headache for home computer users and dealers: software for one micro

won't generally work on another maker's range.

Several Japanese companies have got together to bring out computers which all use the same BASIC and operating system. And European and American computer makers are thinking of doing the same.

It means that all software and peripherals will run on any computer using the same standard, designed by the U.S. company Microsoft. MSX stands for Microsoft Extended.

MSX computers are due in the shops in September from, among other companies, Hitachi, Teleton, Sanyo, Mitsubishi, Sony, Toshiba, Canon and Yamaha.

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Continued from page 1. peripherals, like disc drive and

joystick, but probably not a standard joystick.

He said: "We pride ourselves on being innovative'.

Toshiba expects to have its computer in the shops in September/October. Product manager Chris Greet said: "We're been ahead of the field in Japan, so we will possibly be one of the first in the UK".

UK buyers had the advantage that they would be getting the second generation of MSX computers, advanced on what first went on sale in Japan.

Talking of computer development, he said that the problem with boffins and research staff was that they always wanted to wait for the next advance before bringing out a computer.

He felt that in the beginning there may be some confusion in the minds of buyers about which MSX computer to choose. But this would be cleared up as each manufacturer advertised and promoted its additional features.

He said: "At the end of the day the machines are completely different. Some have cassettes built in, some have got built-in joysticks."

JVC's computer, made in the town of Ewai, 50 miles north of Tokyo, will also have 64K of RAM and cost will be about £250. The company also plans to offer a monitor, 31/2 in disc drive and a data recorder.

JVC's assistant marketing manager, Stephen Michaelis, said his company was also thinking of introducing a 5 1/4 in drive because that format was quite popular.

be running training courses for dealers before the launch."

There would also be training for service engineers at the same centres, as well as in Scotland and Ireland.

Mr Michaelis said: "I don't see many problems on that side - video recorders are far more complex and our dealer network can service them already. Computers are a piece of cake".

JVC, short for the Japan Victor Company, is the inventor of the VHS video recorder format — which now had a claimed 80 per cent of the market — and makes video recorders, TVs, hi-fi, including compact disc players, as well as other products. It employs 1,200 people worldwide.

Mr Michaelis expected JVC to export its computer to most of Europe, starting with France

The big names behind MSX reveal their plans for their own machines. What sets them apart from each other? Paul Liptrot investigates

He said: "At some stage you have to put something on the marketplace.

"The technology behind the MSX standard is not unique it uses standard components. But we know the reliability and we know how to develop software for the computers.

"If you look at the problems other computer manufacturers are having you can see the advantages of existing technology, That isn't to say that our computers are absolutely fixed. There's a lot of things coming from Japan."

The general manager of Canon's systems division. Richard Kennedy, expected his company's computer to start arriving in October.

He was cautious, however, saying: "We are taking a very advised view of the market. We are very enthusiastic about the product and the market and we are trying very hard to get it right from the point of view of availability of software. From the past, we know that software can be a little late."

He expected Canon's 64K computer, costing about £250, to get a major marketing push in the spring of next year. By then, he said, it would be on sale in every major high street retailer.

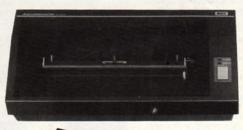
He expected tremendous competition between the makers of MSX computers.

The objects of the MSX working party had been superb but "certain people" would now adopt the standard after the hard work had been done by the founders.

He said: "We are aiming at the audio and video dealer who

we are already supplying. "Some of the dealers, about 10 per cent, are already selling computers and they know a fair bit about them. We have two training centres, in London and in Leeds, and we'll and Germany next year.

But supplies for the UK would at first be limited. He said: "It's very critical coming into the market in October. This year I don't think we will be able to meet demand because it's coming too late".





Now Sories

MSX computers have been on sale in Japan since October 1983 and we have been fortunate enough to have had MSX models at Aberdeen since that time. The purpose of this series of How to MSX articles is to assist readers in understanding all the features and complexities of the MSX range.

The MSX concept is a simple one - MSX seeks to set a standard for home computers. Manufacturers joining the MSX Group agree to make computers to the same technical and software specification.

As all MSX computers have the same cassette, joystick, cartridge and printer interfaces, software and peripherals made by, say, Tobisha, will run on a Sanyo or any other MSX micro.

The MSX concept has had the backing of at least 20 of the largest Japanese electronic corporations since 1983 and they have been joined this by European giants G.E.C. and Philips.

MSX has already taken a large slice of the Japanese home computer market. With the might of companies like Canon, Hitachi, JVC, Mitsubishi, Sanyo, Sony, and Toshiba combining to make computers to a single standard, there is no doubt that MSX will also take a substantial share of the European market.

The manufacturers aim to

computers".

As each MSX Group member also manufacturers home entertainment products it is no surprise that MSX micros can be interfaced with radio, TV, hi-fi and video equipment. JVC, the manufacturer which invented the VHS video system, has already shown its micro linked interactively with a video disc player. JVC and the other manufacturers see MSX as setting the standard for home computers, just as VHS sets the standard for video recorders.

Each MSX micro has an extended version of Microsoft Basic in ROM. Switching on a typical MSX micro boots the BASIC which is in a 32K ROM which occupies an area of memory from 0000H to 7FFFH.

The computer then finds the largest continuous block of memory from FFFFH down to 8000H and uses this for program and data storage. All MSX micros start up with white letters on a blue background. The following is displayed at the top left:

MSX BASIC version 1.0 Copyright by Microsoft 28815 Bytes free. Ok

The start up mode is SCREEN 0 (detailed later) and line 24 of the screen displays the words:

color auto goto list run

to remind users of the initial definitions of the five function keys. This line changes to show:

colour cload" cont list, run

sell their micros as "family Program 2 - shows all 256 characters

100 COLOR 15,4,4:SCREEN 1

11Ø FOR F%=Ø TO 19

12Ø FOR J%=Ø TO 13

13Ø IF F%*14+J%<256 THEN VPOKE &H1842

+F%*32+J%*2,F%*14+J%

14Ø NEXT J%.F%

when the shift key is pressed. Function keys 1 to 5 become F6 to F10 when pressed with the shift. This visual reminder of the key definitions can be switched off and on with the KEYOFF and KEYON commands.

All MSX micros have 16K of built-in video RAM which is separate from the main memory. There is no reduction in the amount of memory free when you are in highresolution or multi-colour modes. There are four screen modes which are specified by the first parameter of the

The 16 colours available are:

0 transparent

SCREEN command.

black 2 medium green

light green dark blue

5 light blue

6 dark red

cyan medium red

9 light red 10 dark yellow

11 light yellow

12 dark green

13 magenta

14 grey

15 white

Program 1 displays bars of all the 16 colours on the highresolution screen. After a short delay, the computer returns to the text mode.

Program 1 — displays bars of all 16 colours

100 COLOR 15,1,1:SCREEN 2

110 DPEN "GRP: "AS#1

12Ø PRESET (35,5)

130 PRINT #1, "A CORRECTLY ADJUSTED SE

14Ø PRESET (35, 15)

150 PRINT #1, "SHOWS 15 COLOURS & BLAC

KII

16Ø CLOSE #1

17Ø FOR G%=2 TO 15

180 COLOR G%

19Ø LINE (G%*16-15,3Ø)-(G%*16,184),,8

200 NEXT G%

210 FOR D%=1 TO 12000:NEXT D%

Microsoft has obviously given a great deal of thought to the character set as it contains all the usual letters and figures plus many language, scientific, game and graphic shapes. The German umlauts, the French accents, circumflexes a the mathematical symbols will be especially popular with schools

Program 2 displays all the 256 charactes on the screen.

SCREEN 0 is the first of the two text modes and gives a format of 24 lines each with up to 40 characters. All UK MSX micros default to 37 characters per line when switched on.

The WIDTH command selects the number of characters per line. It is possible to get the full 40 characters by entering WIDTH

All Japanese MSX micros default to 40 characters. Perhaps our Far East friends know that very few UK TV sets have a picture width control which can be adjusted by the customer and that many sets therefore "overscan".

Each character displayed in this mode is made up of 6 x 8 pixels. The built-in character set stores 8 x 8 pixels, but in this mode the right-most two columns of pixels are not

displayed.

When the screen mode is changed to 0 or 1, the character set is copied from ROM (Read Only Memory) to RAM (Random Access Memory) so this makes it possible to re-define any of the 256 characters. This feature allows special characters to be displayed without going into high-resolution mode. Two of the sixteen colours can be used in this screen 0 mode - one for foreground and one for background.

SCREEN 1 is the second of the text modes and gives a format of 24 lines each of up to 32 characters. Again the switch-on default width is less than the maximum possible the default for screen 1 is 29 characters per line. To get the full number of characters per line enter WIDTH 32, but on nearly all UK TVs the left-most character would be off the edge of the screen.

The MSX specification defines the use of two colours in SCREEN 1 mode. In later

Program 3 — demonstrates the speed of MSX computers | 0 8 x 8 unmagnified

100 COLOR 15,1,1:SCREEN 2

11Ø FOR F%=1 TO 100

12Ø LINE (RND(1)*25Ø, RND(1)*19Ø)-(RND

(1)*25Q, RND(1)*19Q), RND(1)*14+2, BF

130 NEXT F%

issues of MSX COMPUTING, we will describe a programming method which allows all 16 colours to be displayed.

At present the character set is split up into 32 groups of eight characters and the foreground and background colours of each group are the same effectively giving a two colour display. Our method will show how to alter the foreground and background colour of all these 32 groups.

Remember it is also possible to redefine the shape of each character in screen 1 mode.

SCREEN 2 is the highresolution mode which has 256 x 192 pixels definition. All 16 colours can be displayed at the same time.

The horizontal colour resolution is eight dots which means that in every group of eight adjacent horizontal dots, there can only be one foreground colour and one background colour. Any two of the 16 colours can be used for each group of 8 dots. The vertical colour resolution is one pixel, therefore any of the 16 colours can be placed next to each other vertically. There are many commands for creating hi-resolution patterns and they are all very flexible.

Program 3 demonstrates the speed of the computer and also shows all the colours. First hte computer is put into SCREEN 2 (hi-res mode) and then 100 boxes of random sizes and colours are displayed.

There is a command which allows printing of normal text on the hi-res screen. As the text can be placed anywhere on the 256 x 192 grid, this allows much greater control over where it is printed than in either of the text modes.

SCREEN 3 is the multicolour mode and has 64 x 48 resolution. Each of the 3072 pixels on the screen can be in any of the 16 colours.

When text is printed to this screen, all the pixels that make up the characters turn on one

0 8 x 8 unmagnified 1 8 x 8 magnified

2 16 x 16 unmagnified

3 16 x 16 magnified

The numbers refer to the number pixels make up the sprites e.g. a mode 2 sprite has $16 \times 16 = 256$ pixels. Magnified means that every pixel is the size of a square of four pixels,

Program 5 — a knight-shaped sprite bounces off the screen edges

100 COLOR 15,1,1:SCREEN 2,3

11Ø 5\$="":FOR F%=Ø TO 31:READ A\$

12Ø S\$=S\$+CHR\$(VAL("&H"+A\$)):NEXT F%

13Ø SPRITE\$(Ø)=S\$

14Ø DATA Ø,1,6,1D,2A,2A,2A,1F,4C,F7,F

Ø, 18, 7, 2, 3E, FE, 1B, 8F, 65, 11, C9, A9, B1, F

3,7F,9F,31,41,81,81,F9,FD

15Ø X%=128:Y%=96

16Ø XS%=1:YS%=1

17Ø PUT SPRITE Ø, (X%, Y%), 13

18Ø X%=X%+X5%:Y%=Y%+Y5%

19Ø IF X%<Ø OR X%>21Ø THEN XS%=-XS%

200 IF Y%<0 OR Y%>156 THEN YS%=-YS%

21Ø GOTO 17Ø

of the SCREEN 3 pixels which are equivalent to a square of sixteen SCREEN 2 mode pixels. Since the letters are made up of 8 x 8 dots, and the screen has 64 x 48 pixels, you can get 6 rows of eight characters in this mode. This is useful for title pages etc.

Program 4 draws 200 lines at random positions on the screen and shows the size of the pixels in the SCREEN 3

mode.

MSX computers can display up to 32 sprites at the same time and can remember up to 256 'sprite patterns'. Sprites are characters whose shape, colour and position can easily be defined. They can be placed much more exactly than characters can and there are built-in collision detection routines. There are four sprite modes, these are specified by the second parameter of the SCREEN command.

The four sprite modes are combinations of large or small sprites and magnified or unmagnified sprites. The modes are as follows:

so the sprites become four times their normal size.

When using a 8 x 8 size, the computer can store up to 256 sprite patterns. When using a 16 x 16 size, the computer can store up to 64 sprite patterns. Remember — only 32 sprites can be displayed at the one time.

New Series
HOW
TO USE
YOUR
MSX

Program 5 shows a sprite in the shape of a knight bouncing off the edges of the screen. To stop the program press the CTRL and STOP keys at the same time.

Try changing both the occurances of the number 1 in line 160 to 2 and note that the sprite moves faster.

Program 4 — draws 200 lines and shows SCREEN 3 pixel sizes

100 COLOR 15,1,1:SCREEN 3

110 FOR F%=1 to 200

12Ø LINE (RND(1)*256, RND(1)*192)-(RND

(1)*256, RND(1)*192), RND(1)*15+1

130 NEXT F%





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Velnor's Lair 48K Oric/ **48K Atmos** £6.95

Quicksilva, 13 Palmerston Rd, Southampton, Hants SO1 1LL

Quicksilva's first adventure game for the Oric is a classic alltext version, similar in layout to most others of its type. You choose the role of a warrior, priest or wizard in a quest to destroy the evil Velnor. Your journey will take you through dark caverns and passages where untold dangers lurk but vast treasures may also be found.

If you like adventures then Velnor offers a good challenge, with logical thought and inspiration both playing their part. An option to save the game at any stage is provided which worked satisfactorily and is probably

essential if you do not have the patience to solve the puzzle in

There is little assistance given and, by the nature of the game, this is correct. But perhaps some fundamental explanations of the very simplest moves and commands should have been supplied for the novice. The descriptions of your surroundings are quite realistic. If you are with children make sure they are not frightened by goblins, trolls or much worse nasties.

All in all, a fairly standard adventure without too many

instructions	75%
playability	75%
graphics	N/A
value for money	80%

Star Force Seven **32K BBC £9.99**

Argus Press Software, No. Golden Sq, London W1R 3AB

in the Mind Games series. My major criticism of this program is that the information screens, while clear and unambiguous, are most uninspiring. Even the major planet display is not very exciting

The game is, however, a fully implemented, war based, strategy game and will appeal to those who enjoy a good long thoughtful battle amongst the stars. The aim is to destroy the home planet of the Zurgs or to capture, and keep, 25 of the other planets in the galaxy.

You start by choosing the proportions of each type of fighting ship to commission for

the battle. Then you progress by three major stages, expressed as screens. The computer screen can give intelligence, energy status and fleet details whilst the navigational one allows star jumping, orbiting and attacking. If you are in orbit you may bombard, asault or retire. Notice that there is no chance of a friendly approach! In battle the screen is graphically much better as you watch the various ships being destroyed before your eyes. An interesting, yet not too long-winded, game to be sure.

550%

instructions 80% playability graphics 70% value for money



Firelady plus Snakes and Ladders TI-99/4A £5

The first is quite long and takes some time to load. Judging by the awkwardness of the instructions it was written by a couple of youngsters and viewed in that light it is a very creditable effort. I don't know why the main character is a "fire-lady", but due credit for including the girls in the heroism charts.

A block of flats is ablaze and you must climb 10 floors to save an old man. You can play against the computer or another player and your movements are determined by dice. In fact, it's actually a revamped Snakes and intelligently done, Ladders despite odd macabre moments. If you land on a smaller fire you must guess how many gallons of water are needed to extinguisher, and you've saved someone's life so you gain another throw; a skull and crossbones, and you'll need a '6'; and of course there are ladders.

By the same authors, the second program, also long, is a bog-standard Snakes and and

Ladders. Both games make good, colourful use of graphics, and are aimed squarely at the younger users.

instructions	50%
playability	75%
graphics	85%
value for money	85%
	The state of the s

Puzzies and adventures

Now get out of that! Our reviewers have tackled this software before, and this is what they think

Gatecrasher

Southampton, Hants SO1 1LL

passages and angled gates. are at the top clutching a barrel which you can roll left and right instructions or drop down. If you drop it, it playability falls down passages bouncing off graphics the gates at right angles, falling value for money into one of eight holes at the bottom. When the barrel drops on any gate it swivels to slant in the opposite direction.

The object is to fill all nine holes with 20 barrels, which is not as easy as it sounds. If a barrel is accidentally dropped in a full hole all the barrels in that

32K BBC £6.95 hole are wiped out. At first the Quicksilva, 13 Palmerston Rd, have only one hole left to fill you realise it isn't. If you're desperate the earthquake With a chance of winning J200 function can be used to swivel

on completion of this game, the gates at random.
enthusiasm overwhelmed me.

After seeing the difficulty of
On loading you are presented the later stages I can safely say
with a screen full of complex the £200 will be well earned.

800% 60% 60%

the Java Star 32K BBC/ Electron £7.95

The Mystery of

Shards, 189 Eton Rd, Ilford, Essex IG1 2UQ

If you like puzzles then this multi-faceted program may be just your cup of tea. To describe this as a program is far too mean, for the package comprises four individual, yet linked, games of different types and styles.

The first is called Bristol and involves the jigsaw type skills of piecing together a message. In London you must wander around researching your information ready to go exploring, the aim here being to get just the information you need at minimum cost in time and money. In Jamaica you go looking for an island to match your research and can survey those you find before landing to charter a hoat

Finally, you dive in your chosen location on the Seawitch! in the hope that you find the ultimate goal — the beautiful Java Star ruby and all the gold that the wrecked ship carried. When you consider the cost of individual programs like this you can only conclude that this exceptional value for money and, unlike short action games, the work involved is likely to take a number of days if not weeks. Its claim to be educational is reasonably fair too. Well done Shards!

instructions playability 900% 90% graphics 100% value for money

THOUGHTS & CROSSES

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Mined-Out 48K Oric/ **Atmos £6.95**

Quicksilva, PO Box 6, Wimbourne, Dorset BH21 7PY

A welcome change from space wars, Mined-Out requires more brain than brawn and one false orain than brawn and one take move can lead to disaster. You are situated at the start of a minefield over which you must carefully pick your way to reach the next level. The snag is that you cannot see the mines and you only have one chance. All is not lost, however, since you know if one, two or three mines lie next to you and by getting the old grey matter working, it is possible to find a safe path.

As you progress, various complications arise but ultimate success is achieved when you

May Money =

reach level 8 and are permitted to rescue the famous star Bill the Worm. A neat reply facility is included for all us failures.

A clever game, simple to pick up, but requiring skill to master. For more thoughtful players it should provide some hours of diversion

My only quibbles are that only a fast load version is available and the inlay card, although amusing, did not describe the game very accurately.

instructions	80%
playability	85%
graphics	80%
value for money	90%

Gatecrasher **48K Spectrum**

3 4 3 13 15 8

Quicksilva, PO Box 6, Wimbourne, Dorset BH21 7PY

No, it's not party time! You must drop barrels into a maze o tunnels, trying to get one barrel into each of the nine boxes at the base of the maze. However, the barrels look and sound like ball

If a barrel drops on to a gate it moves in the direction the gate is facing and flips it over.

A box will empty if a second barrel falls into it — and you're limited to only 20 barrels per level, so study the maze carefully! You are able to rotate the maze up or down and there's an earthquake feature which randomly alters some of the

Levels five and six add a difficult twist. You must sort the barrels into numerical order. If a barrel drops into a box it swops places with its neighbour on the

The keys are user-definable making the barrel-dropping machine easy to control. It's interesting that the screen shot on the inlay is from a different version of the game.

Enjoyable, simple at first but becoming much more difficult.

instructions	70%
playability	90%
graphics	70%
value for money	70%



Ugh! **48K Spectrum**

Softek, 12/13 Henrietta St, London WC2

The Ice Age is coming so Ugh's got to stock up with food by stealing Ptery the Pterodactyl's eggs! Pterry, Rex the tyranoaurus and Alison the aliosaurus drop tones on Ugh.

As Ugh you must climb the hill to get the eggs. You have an unlimited amount of spears in your cave — but you can only carry one at a time. When you pick up an egg you leave yourself defenceless. Your pursuers are stupid and would be easy to avoid if it wasn't so difficult to move - to get on to a different path you must press up or down with left or right and be in exactly the right position. The rocks are accurate so they're difficult to avoid.

Graphics are excellent. Score and lives left are displayed on a tablet of stone, in keeping with the prehistoric scenario. The game starts with an excellent title screen and unbelievable sound. The keys can be redefined, or you can use a wide variety of

Unfortunately, Ugh!'s lasting appeal is questionable because the 'maze' is tiny and there only appears to be one screen display.

instructions	80%
playability	65%
graphics	100%
value for money	75%



All-action arcade aces

These fun games are hot news. Test your arcade skill and experience against them

Encounter CBM 64 £9.95

arcade-style game I have seen on next level. the CBM 64. It seems to be based on an arcade game which realy makes the game interesting, involves shooting line drawn Graphics are quite outstand-

display is a 3D picture with radar and scanners below. Cyclinders on the battlefield deflect shots instructions from both yourself and the playability enemy craft. Sometimes missiles graphics home in on you. If you don't value for money destroy them immediately they smash into your shields.

Once you have killed all your enemies on one level you may go through a gate to the next one You are propelled through a

hailstorm. If you are hit by one Novagen of the spheres you are returned to the last level. If you get through you are awarded an This must be about the best extra shield and sent on to the

The sound is excellent and involves shooting line drawn Graphics are quite outstand-tanks. Graphics are quite outstand-ing. The 3D display is fast, Encounter is a full colour smooth and flicker-free in its game in which you must locate movement. The explosions are and destroy flying saucers. The spectacular as debris flies all over

90%



before twinkling away.

Horace Goes Skiing Dragon 32

Melbourne House, Church Yard, Tring, Herts HP23 5LU

Horace wants to go skiing the ski hut is on the other side of a busy road. He must cross the road to get some skis then cross back to tackle the slalom course.

The first part, crossing the oad, is rather like Frogger, and the second part bears some resemblance to a car race game.

resemblance to a car race game. The traffic is fast and furious, and you need a lot of patience and skill to reach the ski slope.

The graphics are excellent, among the best I've seen on the Dragon. The traffic is very convincing, with slow-moving lorries and speedy little motorbikes as well as cars and tractors. The flags and fir trees in the second stage are simpler but still very effective. The sound is also good, and not over-done for good, and not over-done for

The game can be played using the keyboard, or, preferably, a oystick. There are a few minor faults — the demonstration mode described on the cassette inlay didn't appear to exist, and there is a fairly long delay before the game re-starts after you lose a life on the road. Overall, though, it's a good, entertaining

instructions playability graphics value for money



Now that summer's finally here, all the insects are out and about and making the most of the warmer weather. So are you in this game.

You are a caterpillar and you spend most of the lazy hazy days of summer eating leaves. Your particularly favourite patch is the mushroom patch.

Eating leaves makes you grow at a miraculous rate. You can almost see yourself expand — it's a good thing that doesn't happen in real life! You must avoid bumping into your own body or colliding with mushrooms, or you'll lose one of your three lives. Once all your lives have been used up, the game ends.

Another obstacle to beware is the hedge bordering the

How it works

10 go ahead to print instructions 15-60 first set of variables set-up 70 clear screen

80 set screen colour to black set text to white

120-150 define colours 160-240 define characters

250-320 second set of variables set-up

330-360 hedge displayed 370-400 score printed

410-440 patch number printed 450-480 number of lives printed

490-610 mushrooms displayed 620-710 leaves displayed 720-730 display caterpillar

740 check caterpillar position 750 check keyboard

760-800 check for movement 810-1120 define new screen

positions 1150-1160 check new screen

positions 1170-1180 display caterpillar in

new positions 1190-1220 chec check new screen

positions 1230-1300 you've eaten a leaf 1310-1580 a patch is completed 1590-1650 you bumped into your

own body 1660-1700 you hit a mushroom 1710-1800 you went into the

hedge display number of 1810-1840

remaining lives 1850-1930 have you run out of lives?

1940-2200 end of game Warch Vourself expand of sold in the sold of the sold 2210-2240 display score and

The more more you

mushroom patch. If you touch

it the game ends.

Your first patch has 20 mushrooms and 10 leaves. Once you finish a patch, you move on to a new one with five more mushrooms and one more leaf. This makes each patch harder than the one before.

Control the caterpillar with the four cursor keys, keeping the alpha-lock button down. If you find the game too fast, stop the caterpillar moving by holding down any other key apart from the cursor keys.

Your score, patch number and number of lives are constantly displayed at the top of the screen. You score 10 points for each leaf you eat, and whenever you complete a patch you get a bonus score. The bonus depends on which patch you've completed and how many of your lives are left.

At the beginning of the game simple instructions displayed, but if you decide to play again at the end of a game, the instructions won't be repeated.

Variables NOM number of mushrooms NOL number of leaves PAT patch number

LI number of lives SC score

Q detect position of caterpillar COT change text to white J,F,A,B,O,P used to used to move

caterpillar LEAF number of leaves eaten shape of caterpillars

head MS hold screen messages and

score MD/MA positions of M\$ MUSH display required number of mushrooms

Y/X positions of leaves and mushrooms

WM1 check positions of mushrooms tops

WM2 check positions of mush-rooms stalks

LEA display required number of leaves WAL check positions of leaves

NOCD clear screen
DELAY produce short delay J change colour of cater-pillar's body

change volume of sound NUCD clear screen

SO change musical notes display screen messages

```
1 REM
       ************
      *CATERPILLAR CRAWL*
2 REM
3 REM
              BY
4 REM
      *
         STUART LENKER
5
 REM
      * 25TH APRIL 1984
6
 REM
7 REM
      * HIGH-SCORE 2870 *
8 REM
          BY JULIETTE
9 REM
      *************
10 GOSUB 2250
```

15 NOM=20

20 NOL=10

30 PAT=1 40 LI=3

50 SC=0 60 0=32

70 CALL CLEAR 80 CALL SCREEN(2)

90 FOR COT=1 TO 8

100 CALL COLOR(COT, 16, 1) 110 NEXT COT

120 CALL COLOR(13,13,1)

130 CALL COLOR(14,16,1) 140 CALL COLOR(15,7,1)

150 CALL COLOR(16,11,1) 160 CALL CHAR(128, "AA55AA55AA55A A55")

170 CALL CHAR(129, "081C3E7F7F3E0 808")

180 CALL CHAR(136, "18183C3C7E")

190 CALL CHAR(144, "000000183C7EF FFF")

200 CALL CHAR(152, "3C7EFFFFFFFF7 E30")

210 CALL CHAR(153, "814224183C7E7 E30")

220 CALL CHAR(154,"3C7E7E3C18244 281")

230 CALL CHAR(155, "0162F4F8F8F46 201")

240 CALL CHAR(156, "80462F1F1F2F4

680") 250 J=0

260 F=1

270 A=4

280 B=2 290 0=1

you eat, the arow

300 P=0 310 LEAF=1 320 CHAR=154 330 CALL HCHAR(2,1,128,32) 340 CALL HCHAR(24,1,128,32) 350 CALL VCHAR(2,1,128,23) 360 CALL VCHAR(2,32,128,23) 370 M\$="SCORE-"&STR\$(SC) 380 MD=1 390 MA=1 400 GDSUB 2210 410 MS="PATCH-"&STRS(PAT) 420 MD=1 430 MA=13 440 GOSUB 2210 450 MS="LIVES-"&STR\$(LI) 460 MD=1 470 MA=23 480 GOSUB 2210 490 FOR MUSH=1 TO NOM 500 RANDOMIZE 510 X=INT(31*RND)+1 520 IF X<3 THEN 510 530 Y=INT(22*RND)+1 540 IF Y=1 THEN 530 550 CALL GCHAR(Y,X,WM1) 560 IF WM1<>32 THEN 500 570 CALL GCHAR(Y+1,X,WM2) 580 IF WM2<>32 THEN 500 590 CALL HCHAR(Y,X,144) 600 CALL HCHAR(Y+1,X,136) 610 NEXT MUSH 620 FOR LEA=1 TO NOL 630 RANDOMIZE 640 X=INT(31*RND)+1 650 IF XK3 THEN 640 660 Y=INT(23*RND)+1 670 IF Y=1 THEN 660 680 CALL GCHAR(Y,X,WAL) 690 IF WALK>32 THEN 630 700 CALL HCHAR(Y,X,129) 710 NEXT LEA 720 CALL HCHAR(A,B,CHAR) 730 CALL HCHAR(A-F,B-J,152) 740 IF Q<>32 THEN 1190

750 CALL KEY(0,X,Y)

760 IF Y=0 THEN 1130

780 790 800 810	IF X=83 THEN 810 IF X=68 THEN 890 IF X=69 THEN 970 IF X=88 THEN 1050 ELSE 720 B=B-1
820	F=0 J=-1
840 850	P=-1 Π=0
	CHAR=156 CALL GCHAR(A,B,Q)
880	GOTO 720
Constitution:	B=B+1 F=0
910	J=1 P=1
	□=0

Hints on conversion

If you are going to try and convert this program to another machine, then remember the following points:

- The Texas has a 24 by 32 graphic screen.

 2 It has a 24 by 28 text screen.
- 3 It uses user-defined graphics.

A good amount of space can be saved by using multiple line statements. Below are the more unusual commands:

CALL CHAR (ASCII code number, hexadecimal string) Defines characters used in the program. The hexadecimal string describes the pattern to be given to the character with ASCII code

CALL HCHAR (row number, column number, ASCII code, number of repetitions) Places character on screen at row and column specified, and repeats it horizontally the number of times stated. If this fourth value is omitted then the character is displayed only once. The character used is the one whose ASCII code appears in the command.

CALL VCHAR (row number, column number, ASCII code, number of repetitions) Works the same way as CALL HCHAR only repeats vertically instead of horizontally.

CALL GCHAR (row number, column number, numerical variable) Equivalent of PEEK; assigns ASCII code of character at row and column stated to numerical variable.

CALL CLEAR Clears the screen. Equivalent to CLS.

CALL SCREEN (colour code) Specifies screen colour, using colour code.

CALL COLOUR (character set number, foreground colour code, background colour code) Specifies foreground and background colours for all characters in set stated.

CALL SOUND (duration, frequency, volume) Produces sound with duration, frequency, and volume specified. Duration is in milliseconds, frequency in Hertz and volume in scale from 0 (loudest) to 30 (quietest).

CALL KEY (key unit, k,s) Equivalent of INKEY\$ or GET.
Returns code if key pressed in variable k.

These are the 16 colours:

- 1 transparent
- 2 black 3 medium green
- 4 light green 5 dark blue
- light blue
- dark red
- 8 Cyan 9 medium red
- 10 light red
- 11 dark yellow 12 light yellow
- 13 dark green
- 14 magenta 15 grey
- 16 white

```
1460 MA=10
940 CHAR=155
                                       1470 GDSUB 2210
950 CALL GCHAR(A,B,Q)
                                       1480 SC=SC+(PAT*LI*10)
960 GOTO 720
                                       1490 M$=STR$(SC)
970 A=A-1
                                       1500 MD=1
980 F=-1
                                       1510 MA=7
990 J≐0
                                       1520 GDSUB 2210
1000 P=0
                                       1530 PAT=PAT+1
1010 0=-1
1020 CHAR=153
                                       1540 NOL=9+PAT
                                       1550 NDM=NDM+5
1030 CALL GCHAR(A,B,Q)
                                       1560 FOR DELAY=1 TO 500
1040 GOTO 720
                                       1570 NEXT DELAY
1050 A=A+1
                                       1580 GOTO 70
1060 F=1
                                       1590 CALL SOUND(600,110,30,110,3
1070 J=0
                                       0,500,30,-8,0)
1080 P=0
                                       1600 FOR NU=1 TO 6
1090 □=1
                                       1610 CALL COLOR(16,7,1)
1100 CHAR=154
                                      1620 CALL COLOR(16,11,1)
1110 CALL GCHAR(A,B,Q)
                                      1630 NEXT NU
1120 GOTO 720
                                      1640 LI=LI-1
1130 B=B+P
                                      1650 GOTO 1810
1140 A=A+D
                                      1660 FOR V=0 TO 30 STEP 2
1150 CALL GCHAR(A,B,Q)
                                      1670 CALL SOUND(-99,-6,V)
1160 IF Q<>32 THEN 1170 ELSE 720
                                      1680 NEXT V
                                     1680 NEXT V

1690 LI=LI-1

1700 GDTD 1810

1710 FDR V=30 TD 0 STEP -1

1720 CALL SDUND(-250,-2,V)

1730 NEXT V

1740 FDR V=0 TD 30
1170 CALL HCHAR(A,B,CHAR)
1180 CALL HCHAR(A-F,B-J,152)
1190 IF Q=129 THEN 1230
1200 IF Q=128 THEN 1710
1210 IF Q=152 THEN 1590
1220 IF (Q=136)+(Q=144)THEN 1660
1230 CALL SOUND(99,-1,2,320,0,55
                                      1750 CALL SOUND(-500,-2,V)
1760 NEXT V
0,3)
1240 SC=SC+10
                                      1770 FOR NUCD=3 TO 23
1250 LEAF=LEAF+1
                                      1780 CALL HCHAR(NUCD, 2, 32, 30)
1260 0=32
                                      1790 NEXT NUCD
1270 M$=STR$(SC)
                                      1800 GOTO 2050
1280 MD=1
                                      1810 M$=STR$(LI)
1290 MA=7
                                      1820 MD=1
1300 GDSUB 2210
                                       1830 MA=29
1310 IF LEAF=NOL+1 THEN 1320 ELS
                                      1840 GDSUB 2210
E 720
                                      1850 IF LIK1 THEN 1940
1320 CALL SOUND(100,440,0,540,2)
                                      1860 □=0
1330 CALL SOUND(100,550,0,650,2)
                                      1870 P=0
1340 CALL SOUND(100,440,0,540,2)
                                      1880 Q=32
1350 CALL SOUND(100,660,0,760,2)
                                      1890 CALL HCHAR(A,B,CHAR)
1360 CALL SOUND(100,880,0,980,2)
                                      1900 CALL HCHAR(A-F,B-J,152)
1370 FOR NOCD=3 TO 23
                                      1910 CALL KEY(0,K,S)
1380 CALL HCHAR(NOCD, 2, 32, 30)
                                      1920 IF S=0 THEN 1910
1390 NEXT NOCD
                                      1930 GOTO 720
1400 MS="WELL DONE-PATCH "&STRS(
                                       1940 FOR SO=150 TO 110 STEP -1
PAT)&" COMPLETED"
                                       1950 CALL SOUND(-100,SO,0)
1410 MD=5
                                       1960 NEXT SD
1420 MA=2
                                       1970 FOR NUCD=3 TO 23
1430 GDSUB 2210
                                       1980 CALL HCHAR(NUCD, 2, 32, 30)
1440 MS="BONUS OF "&STRS(PAT*LI*
                                       1990 NEXT NUCD
10)
                                       2050 M$="GAME DVER"
1450 MD=7
                                       2060 MD=9
```

PROGRAM

0070 MO-11
2070 MA=11
2080 GDSUB 2210
2090 MS="YOUR FINAL SCORE IS "&S
TR\$(SC)
2100 MD=11
2110 MA=5
2120 GDSUB 2210
2130 MS="PRESS Y TO PLAY AGAIN"
2140 MD=16
2150 MA=5
2160 GDSUB 2210
2170 CALL KEY(0,K,S)
2180 IF S=0 THEN 2170
2190 IF K=89 THEN 15 ELSE 2200
2200 END
2210 FOR I=1 TO LEN(M\$)
2220 CALL HCHAR(MD,MA+I,ASC(SEG\$
(M\$, I, 1)))
2230 NEXT I
2240 RETURN
2250 CALL CLEAR
2260 CALL SCREEN(2)
2270 FOR COT=1 TO 8
2280 CALL COLOR(COT,16,1)
2290 NEXT COT
2300 PRINT TAB(5); "CATERPILLAR C
RAWL"; TAB(5); "*************
1111
2310 PRINT "MOVE THE CATERPILLAR
AROUND":: "THE MUSHROOM PATCH, WH
TICHORD THE HOSHKUUR FRICH, WH
ILE,"::
2320 PRINT "EATING THE LEAVES AN
D":: "DODGING THE MUSHROOMS. "::
2330 PRINT "AVOID THE SURROUNDIN
G HEDGE, ":: "AND YOUR OWN BODY. ":
11
2340 PRINT "PRESS ANY KEY TO CON
TINUE"
2350 CALL KEY(0,K,S)
2360 IF S=0 THEN 2350
2370 RETURN
ZOTO KETOKN



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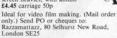
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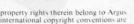
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