The Aussie Mag for Amstrad owners

THE AMSTRAD USER

I·N·D·E·X

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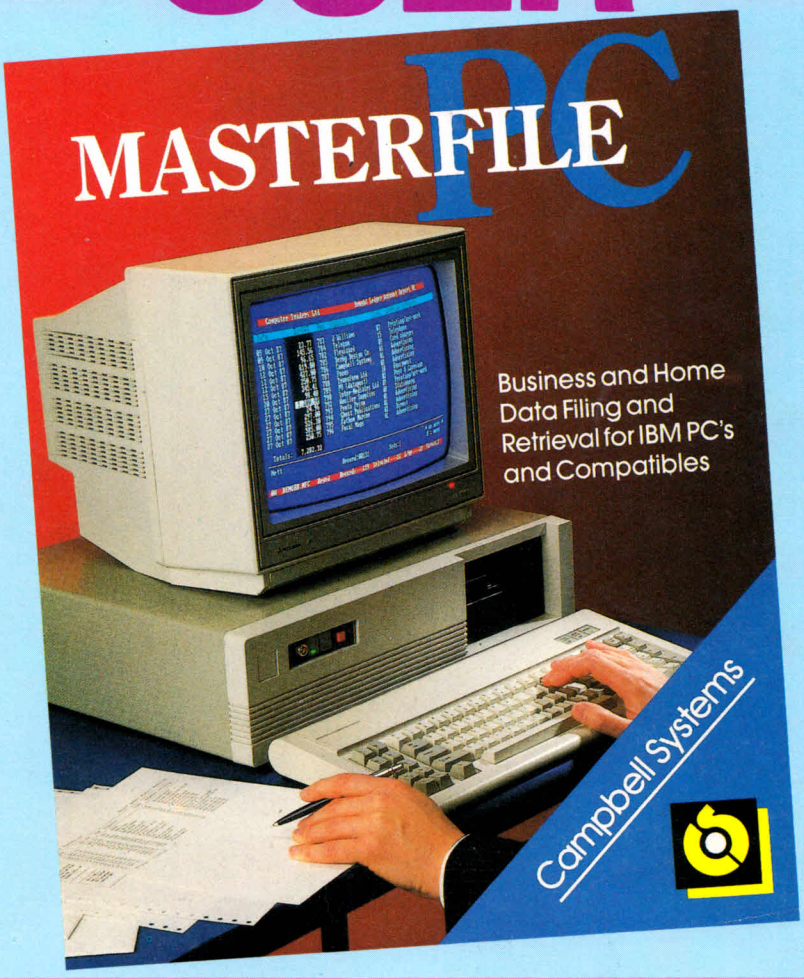
First Three Years

Issue No. 39 $4.25 April 1988



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- ***AUTOEXEC.BAT explained + Basic2 introduction***

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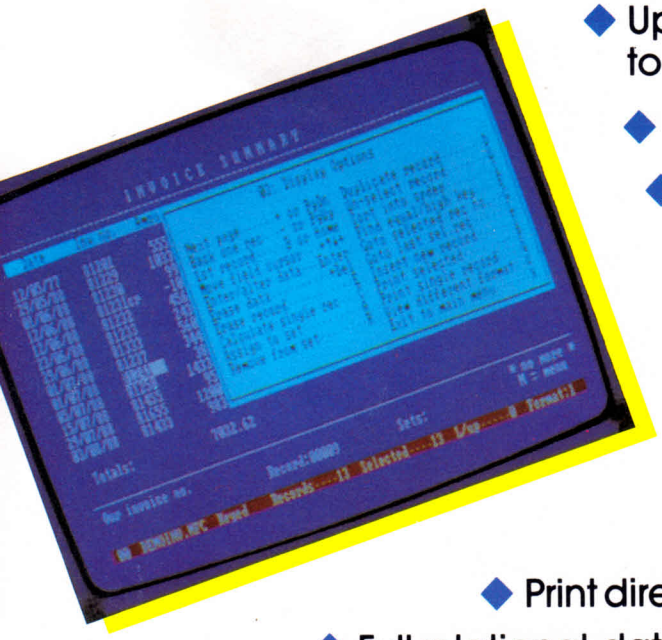

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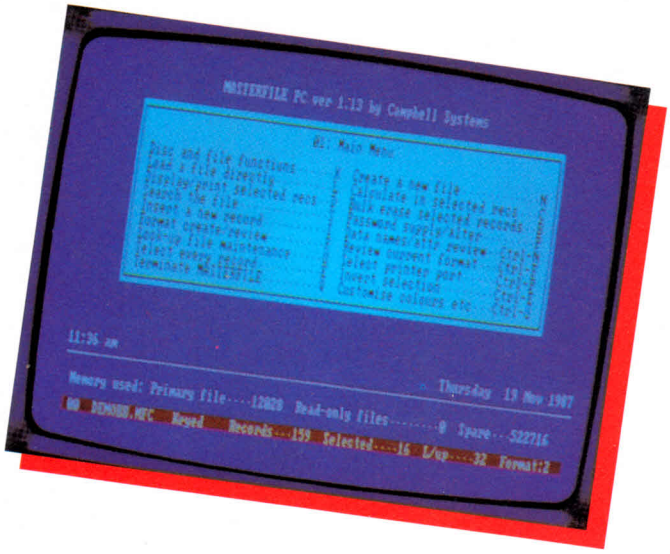

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THE AMSTRAD USER

Issue No. 39
April 1988

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All enquiries and contacts concerning this Publication should be made in the first instance by writing to The Amstrad User, Suite 1, 245 Springvale Road, Glen Waverley, Victoria 3150, Australia. Urgent matters can be phoned through on (03) 233 9661.

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The subscription rate (for Australia) is $42.50 for 12 issues of the magazine only, or $80.00 for 12 issues of the magazine plus tape (for CPC range only) containing programs appearing in that issue. Postage is included in the above prices. For subscriptions to New Zealand, PNG, Solomon Islands or Vanuatu please add $21 airmail. Other overseas prices available upon application. Please note that whilst every effort is made to ensure the accuracy of all features and listings herein, we cannot accept any liability whatsoever for any mistakes or misprints. Contributions are welcome from readers or other interested parties. In most circumstances the following payments will apply to published material: Cartoons $10.00 and a rate of $15.00 per page for programs, articles etc. unless otherwise previously agreed. Contributions will not be returned unless specifically requested coupled with a suitable stamped and return addressed padded bag (for tapes or discs).

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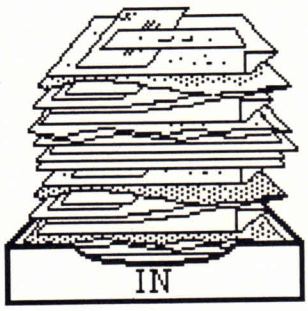
Letters



PC VIRUS FROM AMERICA

We were contacted last month by a reader who gave us news of a serious virus discovered in the stack space of COMMAND.COM on one of the discs at Lehigh University, near Bethlehem in the States.

We checked out this information with the Head of User Services, Kenneth van Wyk. He confirmed the problem and told us that the virus was discovered last October.

As already mentioned, the virus itself is contained in the stack space of COMMAND.COM. When a PC is booted from an infected disc, all a new user needs to do to spread the virus is to access another disc via TYPE, COPY, DIR etc. If the other disc contains COMMAND.COM, the virus code is copied to the other disc. Then a counter is incremented on the parent.

When this counter reaches a value of 4, any and every disc in the PC is erased thoroughly. The boot tracks are nulled, as are the FAT tables etc.

This affects both floppy and hard discs. Meanwhile, the 4 children that were created go on to tell 4 friends and then 4 friends and so on.

Detection

While this virus appears to be very well written, the author did leave behind a couple of footprints:

1st - the original date of COMMAND.COM changes

2nd - if there is a write protect tab on an uninfected disc you will get a WRITE PROTECT ERROR . . . . .

So, boot up a suspected virus disc and access the write protected disc. If an error comes up you are sure.

Note: the length of the COMMAND.COM file does not get altered.

Recently I finished typing in "Therapy" (the adventure game by David Rich published in Issues 35 and 36) and had many troubles trying to play it. Could you please send a list to me of all the movements, and what do you type in to do that certain move, eg. I don't know how to DRESS or PICK UP objects. A hint sheet would be excellent as well. Please help me for I'm not enjoying the adventure. Thank you.

Paul Frahm, Yorketown, SA

If you study the program carefully, especially the first part which started on Page 22 of Issue 35, you will discover that B$ holds the first three characters of the one word vocabulary. Take a look at line 780 which starts [IF B$="TAK" OR B$="SWA" THEN .....] - you can deduce from this that acceptable words here are TAKE or SWAP. You'll also find that EXAmine and LOOk are treated in the same way (lines 840, 850 and 860). Line 870 reveals SWItch, TURn and WATch, and so on.

It would wreck the game for you if we were to provide a comprehensive list of directions and actions. What we can tell you is that you must LOOk before doing anything else in each location. Failing that, you will have to wait until next month for a rather cryptic hint sheet from David Rich.

I have a CPC6128 with an Epson GX-80 printer and a second 5.25" MDS disc drive.

For a word processor I have been using Mini Office II for all my printouts.

Now having a second disc drive I wish to save my files to the 5.25" discs but haven't succeeded in doing so. Could you or the public please let me know how. By the way, does anyone know how to copy or poke Acro Jet from Micro Press?

Duncan Riley, Sylvania Hts., NSW

Most programs that save files to disc use the Amsdos firmware to do so. Amsdos requires dd:nnnnnnnn.eee where 'dd' is the destination drive or user, 'nnnnnnnn' is the name of the file and 'eee' the file extension. If dd is omitted, the file is saved onto the logged drive. Mini Office II automatically places its own file extension name of DOC. So, to save a file in Mini Office II, merely type B: then the file name (eg. B:DEMO). The file will be saved on drive B as DEMO.DOC.

The Amstrad 6128 that I have produces excellent results in both the games and programming departments. In the 6 months that I have had my 6128, I have enjoyed experimenting and trying various home-made extensions including a light sensing activator via the joystick port.

I have plans to build a robot with a simple motor (forward and backwards) function via a cable connection to a home computer. These plans do not provide connection data for the 6128.

Is it possible for the 6128 to handle this type of task, and if so could you please let me know the way this can be achieved though both software and hardware.

Nikolai Ivanovic, Mt. Gambier, SA

All letter for the Mailbag section should be addressed to:
The Editor
The Amstrad User
1/245 Springvale Road
Glen Waverley, Vic 3150
We regret that we cannot enter into any personal correspondence.

. . .AND

I have just purchased an Amstrad CPC464, but I have a problem. I have a Micro Robot but I don't know which pins to use to control it.

Because there are two different lots of pins on the expansion port. Can you or a reader give me some advice?

Greg Oborne, Ongerup, WA

We'd love to help both Nikolai and Greg but confess this is not an area we are familiar with. So we hand the problems over to our more experienced readers. Who knows - we may get an article about robotics (hint, hint!)

While I was thumbing through the pages of the December '87 issue of The Amstrad User I came across Chris Mitchell's "File Coder" program for the PCW.

I was wondering if someone had converted it, or something similar, for the CPC6128.

Gary Jerram, Modbury Hts, SA

It's relatively simple to convert so while waiting for this month's three year Index to print out we put fingers to keys with the following result:

```
1 REM File Coder for CPCs
100 INPUT "Name of the file to
be coded/decoded: ",f1$
110 INPUT "Name of Output File:
",f2$
120 OPENIN "!"+f1$
130 OPENOUT "!"+f2$
140 INPUT "Password: ",pass
150 IF pass>255 THEN 140
160 WHILE NOT EOF
170  LINE INPUT#9,a$
180   FOR i=1 TO PEEK(@a$)
190    a1$=MID$(a$,i,1)
200    byte=ASC(a1$) XOR pass
210    PRINT#9,CHR$(byte);
220   NEXT i
230  PRINT#9
240 WEND
250 CLOSEIN
260 CLOSEOUT
```

. . . . but please don't expect us to do this again - at least, not for another three years!

Today I went to our local newsagents and saw the February issue of The Amstrad User, much to my delight, so you now have another reader.

I have one query that you may be able to answer for me. In CP/M, when I press CTRL-P the computer acts the same as a typewriter, with everything going to the printer. I am trying to find out if the same is possible in Basic on the PCW. I can LLIST a program or LPRINT a line, but I would like to obtain a printout of everything. Could you please tell me if there is a way to obtain these results?

F. Wellman, Rockingham, WA

On Page 52 of Issue 23 (December 1986) we published a screen echo program from Ian Jardine which does just what you want - except it was written for a CPC and not your PCW. If anyone has converted it, please let us know.

I own a 6128 and have found a way of changing the DIR command (which is

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built into the C10CPM3.EMS file) in CP/M Plus. The short listing below, which is entered using SID, alters the DIR command to CAT. This is very handy for those who don't use CP/M very often and constantly find themselves typing CAT instead of DIR.

The procedure is a s follows:

1. Boot CP/M Plus (ensure that it is a copied version and not the master disc).
2. Insert Side 2 of the CP/M Plus disc.
3. Type `>SID B:C10CPM3.EMS <return>` (When prompted, re-insert the disc on side 1 and press any key)

```
#S59B7
59B7 44 43
59B8 49 41
59B9 52 54
59BA 20 .       - full stop marks
                  end of changes
#WC10CPM3.EMS - writes new version
                  of file to disc
                  (overwrites old file)
```

Now reset the computer and boot up CP/M once again. Type CAT and a directory will appear on the screen. Type DIR and any system files on the disc will be displayed.

I also have something to add to the "Elite Complete" Cheat Mode in the July '87 issue. I was confronted by a 'Memory Full in 140' message. Inserting '135 MEMORY &4000' will correct this. It makes a mess of the screen but it works.

I would also like to congratulate you on a great magazine and beg for help in Hitch-Hikers Guide to the Galaxy. How do you get out of the Heart of Gold onto the surface of the legendary planet of Magrathea?

Wayne Clarke, Bunbury, WA

I am now the proud owner of an Amstrad PCW8512 (I've actually come to my senses after 9 years with TRS-80, Sorceror, ORIC, Sharp and CBM machines!!).

It also happens to be the first time that I have diverged into computer communications. This is where my problems with the machine lie. I got myself the CPS8256 Centronics/RS232 interface and an Avtec Mini Modem II and away I went. I fired the system up and called Little Dicks RBBS. (It was the only number I had). To my amazement (and joy) I succeeded in connecting and communicating with the system. That joy lasted just three days when my modem died, so back it went for repair/replacement.

Two months later I got it back (a new telephone handset included) and away I went. Same RBBS, same software and same procedure as before, but this time nothing happened. There was the usual carrier tone but for some reason I just couldn't connect. So thinking the Modem was at fault I sent it back once again.

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This new section of the magazine offers you the chance to speak directly to the huge waiting world of Amstrad owners - or would-be owners.
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Since then I have tried communicating with a Maestro Supermodem (one of those auto jobbies) with Mail232 and then Sage's Chit Chat Combo software. Still no luck.

By this stage I was wondering if the RRBS was at fault so I tried a couple of others (the Prophet BBS and Micro Design Labs RCPM to be exact).

Still no connection.

After a few malicious thoughts, not to mention 15 hours of attempts, I started to worry if my first comms linkups were just flukes. After reading four manuals and some half a dozen magazine articles on the subject I found myself no better off than when I first started, except that I now know some of the jargon.

I am not interested in communicating with Viatel and the like, just with some RRBS and RCPM systems. Can anyone help with the 'how, why and what' that I so desperately need?

D.J. Higgins, Cooma, NSW

If Valmai wants all pages of her manuscript headed the same (Dec '87 Mailbag) she doesn't need to alter the pagination section of the LocoScript header. She, and editors, will be happy to see at the top, a page number at the right and a brief title at the left. This is how I do it:

f7 and choose 'edit header'; type short title; f5 and choose 'right justify'; f6 and choose 'this page number'; type 2 arrow symbols for 99 pages (or 3 for over 100); f7 choose 'header zone'; type the number 11 and return; exit and enter (back to the heading); exit and enter (back to the main text).

Leni Matheson, Sandgate, Qld

Our thanks to others who took the trouble to send solutions to Valmai's problem. Our problem was that we forgot about it until we were reminded during a telephone conversation recently. Sorry about that!

CONTRIBUTIONS

Please note that all program contributions must be submitted on tape or disc. We just do not have the time to key them all in. The tape or disc will be returned if originally accompanied with a stamped and return addresses padded bag.

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Nationwide User Groups

There are quite a few changes to the list this month. All notices received by the beginning of March 1988 have been included. Unfortunately, this is the time lead we need for production of the mag., and unless you get your details in by the 1st, you could wait two months before seeing the changes.

WESTERN AUSTRALIA

ALBANY AMSTRAD USER GROUP
President: Gerry Barr (098 41 6884)
Secretary: Steven Hands (098 44 7807)
Treasurer: Gavin Grose
Venue: Priess Street Centre, 14 Priess Street, Albany on the first and third Mondays of each month at 7.00 pm.
Mail: 20 Anuaka Road, Albany, WA 6330

AMSWEST (Perth)
President: Carl Hindle (09 419 1411)
Vice Pres: John Lansdown (09 342 3154)
Secretary: Saskia Quinn (09 444 8147)
Treasurer: Mario Ioppolo (09 444 7691)
Venue: Royal Institute for the Blind, cnr. Whately Cres. and Guildford Road, Maylands on the first and third Tuesdays of each month starting at 7.30.

AMSWEST (Blackwood) USERS GROUP
This small group is affiliated to AMSWEST (Perth). For more details contact George Muscat on (097) 61 1488.

ROCKINGHAM-KWINANA AMSTRAD USER GROUP
President: Ray Forsyth
Vice-Pres: Larry Spozetta
Treasurer: John Hille
Secretary: Ben Hille (095 27 5246)
Venue: Cooloongup Primary School, Westerly Way, Cooloongup (Rockingham), every second Wednesday at 7.30 pm. and every other second Tuesday at Medina Primary School, Medina Ave, Medina at 7.30pm.
Mail: The Secretary, R-KAUG, 104 Milina St, Hillman, 6168

SOUTHSIDE AMSTRAD USER CLUB
President: W. Van Der Kooi (09 271 1085)
Secretary: Steve King (09 354 2068)
Treasurer: Eric Tytherleigh (09 390 8865)
Venue: Huntigdale Primary Sch., Matilda Rd. Huntingdale every 2nd and 4th Wednesday of each month from 7.00 pm.
Mail: The Sec., Southside Amstrad Users Club, 61 Keslake Way, Parkwood, WA 6110.

AMSTRAD COMPUTER CLUB TOM PRICE
President: Colin Smith (091 89 2074)
Secretary: John Eliot (091 98 1735)
Treasurers: P. & C. Montgomery (091 89 2398)
Venue: Primary School every 2nd Wednesday night. Contact the above for more details.

SOUTH AUSTRALIA

AMSOUTH AMSTRAD USER'S GROUP
President: Drew Ames (085 371 0151)
Treasurer: Bob Bleachmore (085 56 2048)
Secretary: Ross Kennewell (08 386 2737)
Venue: Christies Beach High School, Western Section, Beach Road, Christies Downs (adjacent to Staff Car Park off Mander Road) every 2nd Wednesday of each month at 7.30.
Mail: PO Box 612, Noarlunga Centre, SA 5168

AMSNORTH AMSTRAD USER'S GROUP
Organisers: J.T. Clarkin (08 262 6342)
R. Britton (08 258 7861)
Venue: Lacrosse Hall, Terama Street, Gepps Cross every Wednesday at 7.00 p.m.

AMSTRAD COMPUTER CLUB INC. (SA)
President: Frank Matzka (08 382 2101)
Vice Pres: Andrew McDade (08 79 5414)
Treasurer: Les Jamieson (08 356 9612)
Secretary: Ross Barker
Venue: Church Hall, 15 Clayton Ave, Plympton between 6.30 and 9.00 each Tuesday.
Mail: PO Box 210, Parkholme, SA 5043

NORTHERN COMPUTING SOCIETY INC.
President: Grant Wilson (08 250 2760)
Treasurer: Percy Cook (08 248 1065)
Secretary: Judith Thamm (085 20 2377)
Venue: Salisbury North Primary School, cnr. Bagster & Woodyates Rds every Wednesday from 7.00.
Mail: PO Box 269, Two Wells, SA 5501

PORT LINCOLN AMSTRAD USERS GROUP
Contact: Rita Bascombe (086 82 1633)
Venue: Third Tuesday of each month from 8.00pm. Ring above number for address.

PORT PIRIE AMSTRAD USER GROUP
President: Doug Gowers (086 36 5206)
Treasurer: Dave Green (086 32 6834)
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Youth Rep: Mark Fusco (086 36 2452)
Venue: Education Ctr, 370 The Terrace, Port Pirie every 2nd and 4th Monday from 7.30 pm.
Mail: The Pt. Pirie Amstrad User Group, c/o D.T. Green, 207 Senate Rd., Pt. Pirie, SA 5540.

SOUTH EAST AMSTRAD USER GROUP (SA)
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NORTHERN TERRITORY

DARWIN AMSTRAD USER GROUP
President: Kevin Bateman (089 32 1463)
Treasurer: Jeff Powis (089 27 5557)
Secretary: Kiem Le (089 32 1828)
Venue: Meetings are held twice monthly. Contact any of the above for more details.
Mail: 45 Priest Circuit, Gray, Palmerston, NT 5787

VICTORIA

CENTRAL AMSTRAD USER SOCIETY
President: Fred Gillen (03 580 9839)
Vice-Pres: Dennis Whelan (03 367 6614)
Treasurer: Doug Jones (03 560 8663)
Secretary: Craig Tooke (03 359 3736)
Venue: Bogart's Restaurant on the corner of Victoria and Errol Streets, North Melbourne on the first Sunday of each month starting at 1.00 pm.

EASTERN AMSTRAD USER GROUP Inc.
President: J.L Elkhorne
Secretary: Bob MacDonald (03 878 7783)
Treasurer: Ron Dunn (03 277 7868)
Venue: St. Ninian's Church Hall, cnr. McCracken Avenue and Orchard Grove, South Blackburn on the1st Sunday of each month from 1.00pm.
Mail: R.D. MacDonald, 6 Ashwood Drive, Nunawading, Vic 3131

GEELONG AMSTRAD USER CLUB
President: Arthur Pounsett (052 78 2160)
Vice-Pres: Diethard Kuhlmann (052 81 9200)
Secretary: Mick Stone (052 91 505)
Venue: South Barwon Community Services Ctr, 33 Mount Pleasant Road, Belmont on the first Wednesday of each month, starting at 7.30p.m
Mail: 346 Autumn St., West Geelong, 3218.

GOULBURN VALLEY AMSTRAD USERS CLUB
President: Shad Aitken (058 52 1001)
Sec/Treas: Bill Brown (058 21 7569) or (058 22 1011)
Venue: 98 Nixon Street, Shepparton on the first floor every third Wednesday from 7.30 pm.

LATROBE VALLEY AMSTRAD USER GROUP
President: Stan Hughes
Secretary: M.G. Donaldson (051 345 711)
Venue: Morwell Neighbourhood House, 17 Symons Crs., Morwell on the first Thursday of each month at 7.30pm.
Mail: PO Box 947, Morwell, Vic 3840

MARYBOROUGH AMSTRAD USER CLUB
President: Chad Banfield (054 68 1351)
Treasurer: Brendan Severino (054 61 3191)
Secretary: J. Fothergill (054 75 2667)
Venue: Maryborough CCC each week on Tuesday from 12.10 p.m. to 12.45 p.m.

MOUNTAIN DISTRICT AMSTRAD USER GROUP
President: Ian Poli (03 758 5282)
Treasurer: Lindsay Bell (03 758 9921)
Venue: Country Womens Association Hall, 4 Sundew Avenue, Boronia from 7.00 pm. every second Monday of the month.
Mail: PO Box 132, The Basin, Vic 3154

NORTHERN AMSTRAD USER GROUP
Contact: Brian Ellis (03 469 4425 A/H)
Venue: Every three weeks in Brunswick West for CPC owners with a sincere interest beyond games.

SOUTHERN AMSTRAD USER GROUP INC.
President: Noel Sheard (03 786 5469)
Secretary: Bob Patterson (03 786 6976)
Treasurer: Christine Donaghey
Venue: Senior Campus at John Paul College, Frankston every third Tuesday from 7.30p.m.
Mail: The Sec., PO Box 100, Seaford, Vic 3198.

SUNBURY MELTON AMSTRAD USER GROUP
Contacts: Wayne Urmston (03 744 2719)
Norma McEntee (03 743 7104)
Venue: Contact above for more details.

WENDOUREE AMSTRAD USER GROUP
Contact: Brad Maisey (053 44 8356)
Venue: Cnr. Charles and Appleby Drive, Cardigan Village on the first Sunday of the month at 3.00 pm.

WESTERN COMPUTER CLUB
Venue: Fairbairn Kindergarten, Fairbairn Road, Sunshine on alternate Tuesdays from 6.30 pm.
Mail: PO Box 161, Laverton 3028.

ACT

CANBERRA AMSTRAD USER'S GROUP
Convenor: Paul Kirby (062 86 5460)
Secretary: Michael Hickey (062 58 5719)
Treasurer: Rod MacKenzie (062 54 7551)
Venue: The Oliphant Building, ANU, Canberra on the first Wednesday of each month from 7.30 pm.
Mail: PO Box 1789, Canberra , ACT 2601.

NEW SOUTH WALES

AM-USER's (North Ryde)
Contact: Lawrence Walters (02 888 1898)
Venue: Meeting Room at 2 Leisure Close, North Ryde from 7.30 p.m. on the first Tuesday of each month.

BLUE MOUNTAINS AMSTRAD USERS
President: Bob Chapman (047 39 1093)
Vice Pres: Dennis Shanahan (047 39 4568)
Treasurer: Peter Traish (047 53 6203)
Secretary: Christine Preston (047 51 4391)
Venue: Springwood Neighbourhood Centre, Macquarie Road, Springwood on the 4th Wednesday of each month at 8.00pm.

CENTRAL COAST AMSTRAD USERS CLUB
President: Lloyd Mitchell (043 88 2950)
Secretary: Ray Thompson (043 32 9095)
Venue: The Entrance Aquatic Club, Salt Water Reserve, Long Jetty every second Monday at 7.30 p.m. sharp.

COFFS HARBOUR AMSTRAD COMPUTER CLUB
President: Bruce Jones (066 52 8334)
Secretary: Don Donovan (066 52 6909)
Treasurer: Brian Claydon (066 49 4510)
Venue: Orara High School, Joyce Street from 7.00 on the first Friday of each month.

FAIRFIELD MICRO USER GROUP
Contact: Ekrem *[after 6.30 pm]* (02 609 6581)
Venue: Room 65, Canley Vale High School, Prospect Road, Canley Vale every third Wednesday from 7.00.

HAWKESBURY AMSTRAD USER GROUP
President: Terry Webb (045 76 5291)
Secretary: Dave Keen (045 77 5536)
Venue: Richmond Swimming Club Rooms every third Tuesday of the month at 7.30 pm.

ILLAWARRA AMSTRAD USERS CLUB
President: Paul Simpson (042 27 1574)
Secretary: Ken Waegele (042 56 6105)
Publicity Off: Steve Parsons (042 96 3658)
Venue: AGA Gremania Club, Berkeley at 2.00 pm. evey third Saturday.

LISMORE DISTRICT AMSTRAD COMPUTER CLUB
President: Max Muller (066 337 113)
Vice Pres: Nick Van Kempen (066 874 579)
Sec/Treas: Laurie Lewis (066 62 4542)
Venue: Goonellabah Public School, Ballina St. on the last Tuesday of each month from 6.30.
Mail: 20 Johnston Street, Casino, NSW 2470

S & W MILLER AMSTRAD USER'S CLUB
President: Wal Sellers (049 33 5459)
Secretary: Nikki Lee (049 33 5459)
Treasurer: Georgina Todd (049 66 2788)
Venue: Maitland Park Bowling Club, Maitland on the second Tuesday of each month at 7.30pm

MURWILLUMBAH AMSTRAD USERS GROUP
President: Nick Bruin (066 79 3280)
Vice Pres: Kel Philip (066 77 1440)
Secretary: Laura Goode (066 72 2499)
Treasurer: Lorraine Montgomery (066 72 1823)
Venue: Murwillumbah High Sch. on the 2nd Wednesday of each month at 7.00p.m.
Mail: c/o Post Office, Burringbar, 2483

NEWCASTLE AMSTRAD USER GROUP
President: John Harwood
Treasurer: Erica Harwood
Secretary: Janet Bowen
Venue: Kotara Public School, Park Avenue, Kotara on the first Tuesday of each month. Contact the above for meeting times.
Mail: PO Box 18, Charlestown, NSW 2290

PCW AUSTRALIA GROUP
President: David Springett (02 660 4515)

Secretary: David Chamberlain (047 77 4396)
Venue: Burwood RSL Club, 96 Shaftsbury Road, Burwood every second Tuesday of the month at 7.30 pm.
Mail: PO Box 97, Annandale, NSW 2038.

PORT MACQUARIE AMSTRAD USERS GROUP
Mail: Craig Tollis, Box 584, Pt. Macquarie, 2444.

SYDNEY AMSTRAD COMPUTER CLUB
President: Bob Knowles (02 810 7373)
Secretary: Reed Walters (02 560 9487)
Treasurer: Jim Chryss (02 327 7872)
Venue: Newtown area on the 1st Saturday of every month for a normal club meeting and on the 3rd Saturday for the purposes of programming tutorials only. Both meetings commence at 2.00 p.m. For more details contact the Secretary or Treasurer between 6.00 p.m. and 9 p.m.

SYDNEY PC1512 USER GROUP
Contact: Geoff Craine (02 76 6467) A/H (02 412 9213) B/H
Venue: To be arranged; meeting initially on the third Tuesday of each month at 7.00 pm.

QUEENSLAND

BRISBANE AMSTRAD COMPUTER CLUB
President: John O'Connor (07 271 3350)
Vice Pres: John Digby (07 351 2553)
Secretary: Bob Ashe (07 355 5699)
Treasurer: Ivan Dowling (07 269 8795)
Tech. Editor: Franz Hendrickx (07 356 0633)
Venue: Main meetings in Room 15a of Junction ParkState School, Waldheim St., Annerley starting at 7.30p.m on the 1st Tues. of the month.. Another is held at Wynnum Central State H.Sch, Florence St., Wynnum Central on the 3rd Saturday of each month at 1.00p.m. The coordinator is Warren Kennedy (07 351 4232). A third is held at Newmarket State Sch., Banks St., Newmarket on the second Saturday of each month at 1.30p.m. The co-ordinator is Cherry Shrier (07 351 6179).
Mail: PO Box 167, Alderley, Qld. 4051

BUNDABERG AMSTRAD USER'S GROUP
President: Ray Babbidge (071 72 1223)
Secretary: Clive Barrett (071 71 3668)
Treasurer: Sheila Coe (071 72 8884)
Venue: The third Tuesday of the month. For more details contact the above.
Mail: 11 Laack St., Bundaberg, QLD 4670.

CABOOLTURE AMSTRAD USER GROUP
President: John D'Archambaud (071 95 4860)
Secretary: Stephen Yench
Treasurer: Craig Deshon
Venue: Contact above number for more details.

CAPRICORN AMSTRAD USERS GROUP
President: Graeme Annabell (079 27 4915)
Sec/Treas: Anthony Trost (079 33 1951)
Venue: Waraburra State School, Johnson Road, Gracemere on the first Friday of each month at 7.00 pm.
Mail: 4 Sunrise Crescent, Gracemere, 4702

COMPUTER USER GROUPS OF AUSTRALIA
Pittsworth Branch
President: David Siebuhr
Contact: Ron Langton (076 931 690)
Venue: Every first Tuesday of every month from 5 pm. at the St. Peter Lutheran Church Hall, Grand Street, Pittsworth.
Mail: CUGA, PO Box 166, Pittsworth, 4356

GOLD COAST AMSTRAD USER GROUP
President: Mark Abbott (075 31 2114)
Treasurer: Pam Scott
Secretary: Mary Maclaren
Venue: Benowa State High School, Mediteranean Drive, Benowa on the first Saturday of each month at 2.00 pm.
Mail: 17 Ewan Street, Southport, Qld 4215

HERVEY BAY - MARYBOROUGH AMSTRAD COMPUTER USER GROUP
President: Ian Jardine (071 28 3688)
Vice-Pres: Gerhard Schulze
Sec/Treas: Les Patford (071 28 9737)
Venue: The first Thursday of each month at 7.00 alternating between the Hervey Bay Senior College and Maryborough TAFE College. Contact the above for more details.
Mail: Les Patford, PO Box 24, Torquay, Q 4657

IPSWICH AMSTRAD USER GROUP
Contact: Peter Wighton (07 288 4571)
Venue: Every second Wednesday from 7.15 p.m. at Bremer High School, Blackstone Rd, Raceview

MACKAY AMSTRAD USER GROUP
Contact: Des Mulrealiey (551 409)
Ron Coates (547 222)
Venue: Meet every second Sunday morning. Contact the above for location and time.

PENINSULA AMSTRAD CLUB
(amalgamated with BACC)
President Ivan Dowling (07 269 8795)
Treasurer Keith Johnston (07 203 2339)
Secretary Tracie Payne (07 267 6645)
Venue: Kippa-Ring State School Library, Elizabeth Avenue every third Tuesday of the month at 7.30 pm.

SOUTHSIDE AMSTRAD USER GROUP (QLD)
President: Michael Toussaint (07 200 5414)
Vice-Pres: Peter Incoll (07 208 2332)
Secretary: Mick Howe (07 209 1839)
Treasurer: Wayne Stephens (07 287 2459)
Librarian: Carol Watts (07 287 2882)
Venue: Loganlea State High School (in the Communications Room) every third Saturday of the month starting at 2.00 p.m. A Basic programming course is held fortnightly.
Mail: 10 Carramar St, Loganlea, 4204

TOOWOOMBA AMSTRAD USERS GROUP
President: Stephen Gale (076 35 5001)
Vice-Pres: Priscilla Thompson (076 35 5092)
Secretary: Adrian Dunsmore (076 91 1561)
Treasurer: Edwin Gerlach (076 33 1054)
Venue: Toowoomba Education Centre, Baker Street, Toowoomba on the 4th Monday of each month starting at 7.30 pm.

TOWNSVILLE AMSTRAD USER GROUP
President: Ian Wallace (077 73 1798)
Vice Pres: Doug Selmes (077 79 6011 xt 252)
Treasurer: Chris Nisen (077 79 6299)
Secretary: Alister Buckingham (077 73 3955)
Venue: Science Block of the Kirwan High School in Thuringowa Drive on the first and third Tuesdays each month at 7.30pm.

THE WARWICK AMSTRAD USER GROUP
President: Mrs. D. Christensen
Secretary: John Wode (076 61 5176)
Treasurer: Neville Christensen

WEIPA AMSTRAD USERS CLUB
President: Andrew Seaborn
Vice-Pres: Dave Wootton
Treasurer: Frances Casey
Secretary: Gary Chippendale (070 69 7448)
Venue: Noola Court in Weipa. Contact above for more details.
Mail: 15 Noola Court, Weipa, QLD 4874.

WESTERN SUBURBS AMSTRAD USERS GROUP
President: Peter Wighton (07 288 4571)
Secretary: Jimmy James (07 376 1137)
Contact: Keith Jarrot (07 376 3385)
Venue: The Jamboree Heights State Primary School, 35 Beanland Street, Jamboree Heights at 1.30 p.m. on the first Saturday in each month.
Mail: Jimmy James, 36 Penong Street, Westlake, Brisbane 4074.

TASMANIA

SOUTHERN TASMANIAN AMSTRAD USER CLUB
President: Frank Self (002 49 5499)
Secretary: Peter Campbell
Treasurer: Cindy Campbell
Publ. Off: Danny Brittain (002 47 7070)
Venue: Elizabeth Matriculation College on the first Wednesday of each month from 7.30 pm.

NORTHERN TASMANIA AMSTRAD COMPUTER CLUB
President: Russell Lockett (003 44 8972)
Treasurer: Keith Chapple (003 26 4338)
Secretary: Shane Crack (003 97 3298)
Publicity: Michael Watts (003 31 1944)
Librarian: Patrick Salter (003 97 3379)
Junior Del: Bobby Lockett (003 44 8972)
Venue: Launceston Community College (opposite Park Street) in Room 11 on the first Saturday of the month at 5.00 p.m.

N.W. COAST AMSTRAD USER'S CLUB
President: Peter Gibson (004 24 7586)
Treasurer: Robert Simpson
Secretary: Karen Stevenson
Venue: Hellyer College, Mooreville Rd, Burnie on the third Friday of each month at 6.30.
Mail: Secretary, 112 Payne St., Burnie 7320

NEW ZEALAND

THE AMSTRAD COMPUTER CLUB OF CANTERBURY
Contact: Christine Linfoot 897 413
Ian Orchard 524 064
Venue: Four Avenues School, cnr. Madras Street and Edgeware Road, Christchurch 1 on the fourth Wednesday of each month.
Mail: Box 23.082 Bishopdale, Christchurch, NZ.

WELLINGTON AMSTRAD USER GROUP
Contact: Tony Tebbs 791 072 (evgs)
Venue: Cafeteria, NZ Fisheries Research Division, Greta Point, on the first Monday of each month from 7.30 pm.
Mail: PO Box 2575, Wellington, New Zealand.

User Group Contact List

Please note that the following names are listed as contacts for new user groups and should NOT be viewed as a problem solving service.

NSW		
Nick Rogers	Bogan Gate	(068) 64 1170
Chris Craven	Canowindra	(063) 44 1150
Trevor Farrell	Coolah/Mudgee area	(063) 77 1374
David Higgins	Inverell	(067) 22 1867
Paul Wilson	Moruya	(044) 74 3160
Frank Humphreys	Mummulgum	(066) 64 7290
Reuben Carlsen	North Sydney	(02) 957 2505
Stephen Gribben	Singleton	(065) 72 2732
Ken Needs	St. Ives	(02) 449 5416
Chas Fletcher	Toongabbie	(02) 631 5037
Nick Bruin Snr.	Tweed Valley	(066) 79 3280
VIC		
Brian Russell	Ballarat	(053) 31 2058
C. van de Winckel	Ballarat	(053) 313 983
Rod Anderson	Camperdown	(055) 93 2262
Paul Walker	Heathmont	(03) 729 8657
Terry Dovey	Horsham	(053) 82 3353
Andrew Portbury	Leongatha	(056) 62 3694
R. Kernebone	Mildura	(050) 23 3708
Angela Evans	Mt. Evelyn	(03) 736 1852
Keith McFadden	Numurkah	(058) 62 2069
Maureen Morgan	Warnambool	(055) 67 1140
QLD		
Beryl Schramm	Boyne Island	(079) 73 8035
Steven Doyle	Caloundra	(071) 91 3147
Ric Allberry	The Gap	(07) 300 1675
Neville Eriksen	Gladstone	(079) 78 2418
Kylie Telford	Goondiwindi	(076) 76 1746
D.F. Read	Ingham	(077) 77 8576
SA		
Lindsay Allen	Murray Bridge	(085) 32 2340
Michael Spurrier	Murray Bridge	(085) 32 6984
Mrs. S. Engler	Penola	(087) 36 6029
WA		
Graeme Worth	Scarborough	(09) 341 5211
P.M. Nuyens	Waroona	(095) 33 1179
TAS		
Conal McClure	Scottsdale	(003) 52 2514
NT		
G.P. Heron	Tiwi	(089) 27 8814

This revised list is based on information collected over the last four months. If your name appears and it shouldn't, please let us know.
For new readers: if you want to start a group in your area just drop us a line with the relevant details and we will add you to the list.

Software to expect from the UK

CPC Releases

• Digital Integration have turned their attention to flights of future fancy with their latest simulation called ATF (Advanced Tactical Fighter). DI have an exceptionally good record for producing accurate simulations and are fascinating to play, like Bobsleigh, Tomahawk and Fighter Pilot. ATF should be one to watch for.

• The much acclaimed arcade adventures by Gargoyle Games are to be re-released as budget titles. Gargoyle gained their good reputation for games from a handful of titles like Dun Darach, Marsport, Tir Na Nog and Heavy on the Magick. All these games, along with Sweevo's World will be appearing on the Rack-It label in cassette form. There is also a possibility of a disk compilation of three of the titles but at the moment Hewson, publishers of Rack-It, are undecided on that.

• London based Iansyst - renown for their Iankey typing tutor - have announced PEP - Personal Excellence Package. PEP is badged as a self-assessment and improvement package. Basically, it will tell you everything you wanted to know about yourself. Like what is your intelligence quotient? What is the best time of day for you? What do other people think of you? PEP will be for 6128s only as it runs under CP/M Plus.

• Firebird are about to hit the market with the sequel to Druid and the conversion of the Flying Shark coin-op. The Druid sequel is called Enlightenment, in which you again control Hasrinaxx the druid. You are attempting to rid the land of of Belorn the Acamantor. You're accompanied by an old friend, the Golem, and also some new chums - Wisp, Phoenix and Kraken, representing the other three elements of air, fire and water.

The arcade conversion of Flying Shark, licensed from Taito, puts you at the controls of a small fighter aircraft in a vertically scrolling shoot-'em-up.

Firebird are also about to release two budget titles: Warhawk, a shoot-'em-up set in an asteroid belt with hordes of aliens waiting to be slaughtered and War Cars, a racing game in which you have to find flags around a large network of roads.

For PCWs . . .

• Activision expect to be marketing soon Mindfighter from Abstract Concepts. It's a text and graphics adventure based around life in Southampton after a nuclear holocaust. You take the part of a young boy who can - if you finish the game - save the world and civilisation as we know it. The difference in this game, Abstract Concepts say, is that each character has emotional as well as physical characteristics which makes the game change every time you play. Even the weather can affect the course of the story.

• Mirrorsoft have just released Tetris, apparently a Russian game for the PCW. This isn't just another adventure or shoot-'em-up - it involves quite a bit of thinking. You have to fit together the shapes which appear on the screen in a line at the bottom, using the keyboard or a joystick, and Mirrorsoft say it's dangerously addictive. *(It is, and we currently have copies for sale - Ed.)*

• Have you ever looked at a racecard and wondered how to make sense of all the information - form, runners, riders, prize money and so on? Perhaps you want to go on something more scientific than hunches all the time. DGA's Pro-Punter is a PCW program which claims to interpret racing form for you and can advise you where to place your bets. According to DGA, trials in both National Hunt and Flat seasons saw a return of 80% profit on stake investments when the Pro-Punter top rated horse was backed.

You key in information about trainers, horses, jockeys, courses and so on and gradually build up a 'knowledge base' on disc. On race day you enter the details from the racecard and then ask the program to advise you on which horse or horses, if any, your money should go. If none of the odds offered on any horse look promising it'll advise you not to bet. Of course DGA can't guarantee you'll win!

. . .and for PCs

• NewStar is set to launch a 'top-notch' utility for hard disc users, entitled Top DOS. It provides 'contextual on-line help for all MS-DOS commands', according to NewStar. Included are a disc organiser, a memory-resident file editor, adding lists of useful commands to MS-DOS commands, sort directory into any sequence, displaying files by time, and generally filtering and representing data for hard disc users.

• Advanced Memory Systems has launched a new DTP package called Finesse. It claims to offer 'the same facilities as Ventura Publisher and Aldus' Pagemaker but without the price burden'. It costs £99.99. Finesse runs under GEM, and a version which includes a mouse (for non-Amstrad users) is priced at £159.99. It is file-compatible with a 'variety of popular word processors' and includes 7 to 72 point text in plain, bold, light and italic. Only two fonts are supplied - for more you have to purchase DR's Fonts and Drivers pack (about £70).

• MGA Microsystems have released a 'competitive game of financial speculation' called Wall Street. It is aimed at the 15+ age group. It includes a Stock Market simulator, an investment tracker and an investment advisor in a 'true to life program'. The average game takes about three hours to complete. *(How long to a "Crash"? - Ed).*

• Marc Blank, the author of Zork, has written a new adventure called Border Zone, and will be released by Infocom. The setting is 'where the Iron Curtain divides East and West, the frontier which is no mans land between freedom and captivity'. This real time adventure offers you the leading role in a plot involving a 'headstrong American spy, an easy-going businessman and a ruthless KGB agent'.

Caxton range now produced locally

Caxton Software (UK) has been responsible for producing a number of quality packages for Amstrad computers - Cardbox, Scratchpad Plus and Condor to name just three. The good news for the Australian market is that these products are now manufactured under licence in Rose Bay, NSW by Reckon Pty Ltd. headed by Greg Wilkinson - former Sales and Marketing Manager for Caxton Software.

Greg's first impression of the Australian software market was not a good one. "Australia is a sort of sump as far as software is concerned with distributors falling over each other to get the rights on any or all products just in case they turn out to be the flavour of the month".

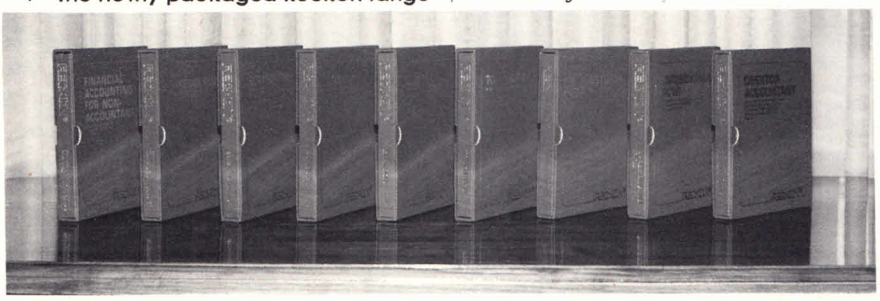
"The user is then confronted with a vast array of application software, each one of the products claiming to be the best. Should the user ask any questions on a product they are often met with raised shoulders from the retailer. Worse, if they buy the product and run into problems the only answer is to call the publisher in England or the US".

With local production Reckon should score well. They can maintain a decent stock holding, keep prices to a more acceptable level and, above all, provide a competent support for both end-user and retailer.

The Reckon range covers most applications for Amstrad computers and has been repackaged in smart encyclopedic binders and slip cases. As users adds to their collection of applications, so the manuals literally become that - a collection that looks nice, feels good and most importantly, does the job.

More details can be obtained by ringing Reckon Pty Ltd on (02) 371 9631

▼ The newly packaged Reckon range



Keep a check on cheques

A handy program for householders, farmers or small businesses will be launched in May. Expendiport, written by Australian Alan Collins, is a cheque management and reporting systems for disc based Amstrad CPC computers. Over 500 hours have been spent developing the system which Alan believes to be as near fool-proof as possible.

The source data for the system comes from the user's cheque butts - the date, amount, payee, number - with options to include one of twenty different categories in which to pigeon-hole the payment. The categories can be determined by the user.

Expendiport automatically saves entries by calendar year (January to December), but can also provide information for a financial year by automatically extracting the relevant data from two 'year' files. The reports section provides the opportunity to compare expenditure levels between months or over the previous year's for the same months.

The system allows for a maximum of 300 cheques (records) per year; that's an average of 25 per month and probably plenty for most chequebook owners. Expendiport cannot guarantee to keep your account in the black, but by identifying forthcoming payments it could save your face from going red!

A full review of Expendiport will appear in our May issue and the product will be available only through this magazine from May 1988. The post free cost is expected to be $39.95.

* Look at these *
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GROUP 2
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LIVING IMAGE
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Get to know your Bank Manager

Part 1 of a three part series from Anthony Trost on using the bank switching software supplied with the CPC6128

Some owners of CPC6128 computers are lucky enough to be able to make their bank manager jump through hoops at their whim. Others are in the process of learning how to obtain complete control. Still others have little idea of how they are ever going to approach the problem that their bank manager presents. But fear not. In the following articles, you may learn enough about your bank manager to enslave him for all eternity.

Perhaps 'it' would be a better pronoun to use. The bank manager controlled by CPC6128 users is not a person but a program. Ever present on disc, but from my experience, seldom used. After paying upwards of seven hundred dollars for a computer with twice the memory of its predecessor, the CPC664, owners of a CPC6128 are asking what can they do with the extra memory. Well, your bank manager has the answer.

A common misconception is that larger programs, in excess of 64k, may be loaded and run in a machine with the extra memory. Unfortunately, because of the architecture of 8 bit computers, such as the AMSTRAD, only the first 64k of memory is available for storage of programs. The second bank of 64k is used for the storage of data.

Unless taught how to by the BANKMAN program supplied with the CPC6128, your computer is unable to access this extra memory and the data stored within. If you take out the copy that you have made of side 1 of your master CP/M+ disc and ask for a CATalogue you will see that two programs reside on the disc named BANKMAN.BAS and BANKMAN.BIN - the first will load and install the second. ***NOTE: 464 and 664 owners with an extra 64K ram expansion must execute the bank switching software supplied with the expansion before executing Bankman.***

Type `RUN "BANKMAN"` and you will notice that the drives whirls twice over a period of about 8 seconds as it loads and runs the BASic program followed by the BINary program. An interesting point to note is that if you run BANKMAN once more it will detect that the bank manager is in place and not go onto reinstallation of the program.

Your AMSTRAD now has six new commands at its disposal. These are:

|SCREENCOPY
|SCREENSWAP
|BANKOPEN
|BANKREAD
|BANKWRITE and
|BANKFIND

If the use of these commands ever evokes a BAD COMMAND message then you may assume that you have not yet run BANKMAN to install them.

My interest lies very much in the last four new commands, called RSX's - Resident System eXtensions - but the first two make an excellent introduction to the use of the bank manager and its associated commands. Note the bar (|) that precedes each, is found above the @ symbol on the keyboard.

Besides storing data such as names, addresses, dates and places - the second bank of 64k can be used to store screen images - pictures if you like but they could just as easily be screens full of text. These images are stacked like playing cards, one behind the other. The diagram in the manual on page 2 chapter 8 gives an excellent representation of how the bank manager moves the screens about to almost instantaneously display one or any of the others.

```
100 FOR x=2 TO 5:READ a$(x):NEXT x
110 FOR x=2 TO 5
120  MODE 1
130  FOR y=1 TO 6
140   PRINT STRING$(160,a$(x));
150  NEXT y
160  |SCREENCOPY,x,1:PRINT CHR$(7);
170 NEXT x
180 a=VAL(INKEY$):IF a=0 OR a>5 THEN 180
190 IF a=1 THEN MODE 1
200 |SCREENCOPY,1,a
210 GOTO 180
220 DATA 2,3,4,5
```

The above program called BANKSCRN demonstrates the use of the |SCREENCOPY command. In its simplest form the command has the syntax....

|SCREENCOPY, <destination screen no.>, <source

screen no.>

The program will fill screen 1 with the numbers from 2 to 5. Each time screen 1 is filled the program will |SCREENCOPY it to its appropriate screen number. A screen filled with 2's will be copied to screen 2, a screen full of 3's will be copied to screen 3 etc. A beep will signal whenever a screen has been put in place.

By hitting the keys marked 2 to 5 you will be able to see what these screens contain. I do this by enabling the copying of the contents of the 4 other screens to screen 1 in lines 100 to 130. At all times you will be looking directly at screen 1. If you hit for example, the 2 key you will be looking at screen 1 with a copy of screen 2's contents. You will not be looking directly at screen 2 but for all intents and purposes you may as well be. But remember that things are not always as they would seem. Unless the images are brought to screen 1 by some means, they will remain hidden.

The next program is called BANKSWAP which will demonstrate the |SCREENSWAP command. In its simplest form the command has the syntax...

|SCREENSWAP, *<screen no.>* , *<screen no.>*

This program utilizes the |SCREENSWAP command to actually exchange the image from one screen for another. It is definitely not a copy but a physical swap. A beep will sound when the screens are swapped over. The program works similarly to BANKSCRN except that after all screens from 2 to 5 are in place I swap screens 5 & 4 and 2 & 3. This is done in lines 100 and 110. You can then go on to press the keys 2 to 5 to bring up a screen full of numbers. However, pressing 5 will get a screen full of 4's and pressing 3 will get a screen full of 2's - and vice versa.

```
100 FOR x=2 TO 5:READ a$(x):NEXT x
110 FOR x=2 TO 5
120  MODE 1
130  FOR y=1 TO 6
140   PRINT STRING$(160,a$(x));
150  NEXT y
160  |SCREENCOPY,x,1
170 NEXT x
180 MODE 1
190 |SCREENSWAP,5,4:PRINT CHR$(7);
200 |SCREENSWAP,2,3:PRINT CHR$(7);
210 a=VAL(INKEY$):IF a=0 OR a>5 THEN 210
220 IF a=1 THEN MODE 1
230 |SCREENCOPY,1,a
240 GOTO 210
250 DATA 2,3,4,5
```

To store away a full complement of 5 screens it will be necessary to |SCREENCOPY the contents of screen 1 to the 4 other screens namely, 2 to 5. After that, clear screen 1 and fill it with the image you desire. From then on you may not |SCREENCOPY unless you deliberately want to overwrite one of your stored screen images. The way to go is to |SCREENSWAP. Use this command to exchange your desired screen for screen 1.

This sounds easy and is, but you do have the added problem of keeping track of which image has been placed where. You can try to program and find the answer to this one for yourself. If screen 1 was swapped for 5, 2, 3, 5, 3, 2 and then 4 where would the original screen 1 image end up? It is like shuffling 5 cards very slowly and keeping track of how one particular card travels. Not impossible, yet not easy.

These two commands do have a third parameter which will allow you save 1/64th sections of the screen. This is explained on page 3 of chapter 8 in the manual if you wish to look into it further.

NEXT MONTH:

|BANKOPEN
|BANKREAD
|BANKWRITE

TAS-SIGN

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Cheat Mode

N I N J A

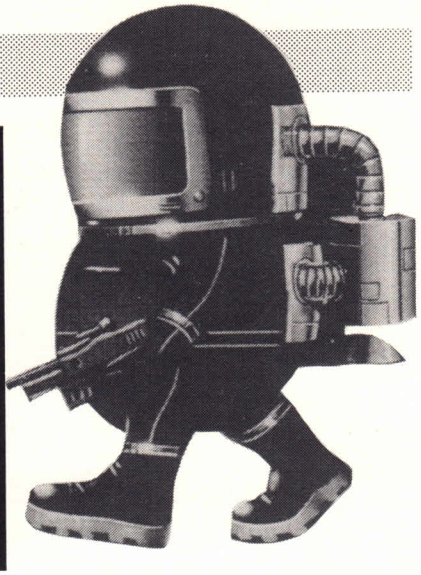
Getting to the end of the Mastertronic game isn't easy so here are some tips from Jay Sowden.

First pick up the three tools and go through all the screens ion the first level picking up the idols. Go up and continue until you reach Akuma's Chamber where the last of the seven idols is. Now you have to return to "Torit on the sea". be careful every time you re-enter a level because the enemy will have come alive again.

The best move is the punch because it's the quickest. When using weapons throw them and leave the room at the left or right. Then re-enter. Your opponent will have lost strength and the weapons will be ready for you to pick up and use again. Idols replenish strength so try to find them when your energy is low.

Grand Prix Rally II

J. Hall has some advice on surviving this old game. Just drive as far as possible on the right of the road and you'll miss the other cars. You can't do this on the water circuits. Slow down for right turns to avoid drifting out but go full-tilt on the left bends.



10th FRAME

Paul Evans has a tip for getting a strike every time on the US Gold bowling game. Play the novice level. When the bowler appears tap him one space to the left. Do the same for the aiming cross, being careful in both cases that it is only one tap. It's particularly easy to move the cross too far so keep an eye out. The hook won't affect the ball on novice level and whatever the strength all the pins should fall.

PROJECT FUTURE

Livingston houses poker Owen Cunningham has supplied you with a Method 1 poke for Gremlin's shoot-em-up-and-search game. The poke gives infinite lives.

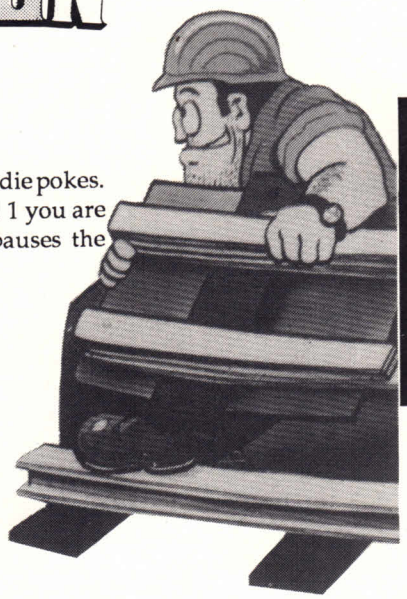
Owen's warning: "When playing the game always leave rooms near the bottom. Do this because there is a bug in the game where you get stuck in the wall after leaving a room - annoying if you've got all the code."

```
1 ' Project Future
2 ' by Owen Cunningham
3 ' The Amstrad User March
1988
10 MODE 1:OPENOUT"d"
20 MEMORY 499:LOAD"pfuture"
30 POKE &A107,&C9:CALL &A0F0
40 POKE &9876,0:CALL &9FB8
```

LOCOMOTION

Here is the first of Owen Cunningham's golden-oldie pokes. It's for Mastertronic's train game. Using Method 1 you are given infinite train-pause time. Pressing Fire pauses the game; another stab at the Fire button restarts.

```
1 ' Locomotion
2 ' by Owen Cunningham
3 ' The Amstrad User March 1988
10 MEMORY 4999:MODE 1
20 PRINT"Loading: Please wait..."
30 LOAD"!data1",5000
40 LOAD"!data2",29000
50 LOAD"!data3",33000
60 LOAD"!data4",36000
70 POKE &951A,0:POKE &951B,0
80 POKE &9524,0:POKE &952E,0
90 POKE &953C,0:POKE &953D,0
100 POKE &953E,0:CALL 29000
```



Send your pokes and tips to:
The Editor (Cheat Mode)
1/245 Springvale Road,
Glen Waverley, Vic 3150
but PLEASE, PLEASE make sure that they are your own work and not just a copy from another publication. Unless you have permission, this is breaking copyright.

ZUB

Another Mastertronic game bites the dust thanks to Richard Hodges. Endless (makes

a change from infinite) lives, number-of-platforms choice and removal of droids are the capabilities of this Method 1 poke.

```
1 ' Zub
2 ' by Richard Hodges
3 ' The Amstrad User March
1988
10 MODE 1:FOR p=&BE00 TO &BE11
20 READ p$:POKE p,VAL ("&"+p$)
30 NEXT:INPUT"Endless lives
";i$
40 IF UPPER$(i$)="Y" THEN POKE
&BE01,0
50 INPUT"Remove droids ";i$
60 IF UPPER$(i$)="Y" THEN POKE
&BE06,&C9
70 INPUT"Enter number of
platforms per planet (normally
18) ";s
80 IF s<1 OR s>18 THEN 70
90 POKE &BE0B,(19-s)
```

Tony Watson has sent in this poke for the budget bouncing game from Mastertronic. It gives you infinite lives and is input using Method 1.

```
1 ' Ball Crazy - tape
2 ' by Tony Watson
3 ' The Amstrad user April 88
10 Load"!"
20 POKE &A064,&F0:POKE&A065,
&9F
30 FOR n=&9ff0 TO &9ff7
40 READ a$:POKE n,VAL("&"+a$)
50 NEXT
60 DATA 3E,A7,32,6F,1C,C3,40,0
0
70 CALL &A000
```

Exolon

Justin Cole has sent in a tip for the tape and disc versions of Exolon. Define the keys as Z,O,R,B,A. A short tune will play. Redefine the keys again to whatever you want and then start the game. You then have infinite lives. Simple huh?

Using Method 2 (just skip past the block called "KT") and PAul Robson's poke you can help MAgic Knight: infinite energy, magic, fuel, "strength and objects held" display are all up for grabs.

```
1 ' Knight Tyme
2 ' by Paul Robson
3 ' The Amstrad User March
1988
10 MODE 1:GOSUB 100
20 MEMORY 4999
30 LOAD"!":CALL 5000
40 INK 1,26:INK 2,11:INK 3,18
50 LOAD "!":GOSUB 100
60 FOR f=1 TO 6:READ a$
70 POKE VAL("&"+a$),0:NEXT
80 POKE &1925,&E0
90 LOAD"!",&C000:CALL 5000
100 FOR f=0 TO 3:INK f,0:NEXT
110 BORDER 0:RETURN
120 DATA 18c6,18c7,1923
130 DATA 29b2,33dc,3427
```

CHOLO

Ian Culpin has sent in the passwords to access some of the robots in Firebird's expensive vector graphic game, Cholo.

Leadie: Mclean
Hacker: Plugin
Rats: Rebels
Plane: Flyboy
Flying Eye: Brazil
Koke: Lorean

Poke methods for tape

Here is how to input the majority of Cheat Mode tape pokes. The instructions for each poke tell you which of the two different methods to use. If you have a 664 or 6128, first type |tape.

Method 1

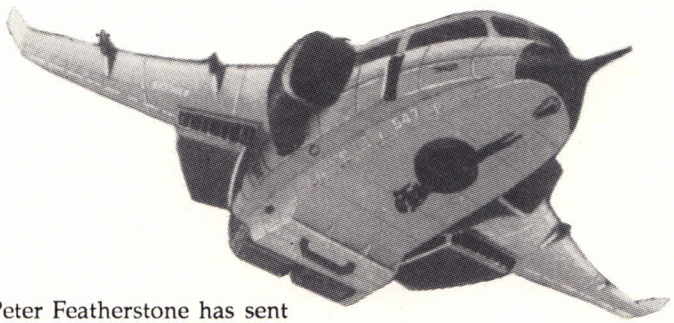
Rewind the game tape to the beginning. Now type in the poke listing. Then type RUN and press the Enter key. (Don't use the key marked CTRL or Control; that would stop the poke from working.) Press the Play key on the cassette deck, then any key on the main keyboard - the spacebar will do nicely. The tape should now start to play through in the normal way.

Method 2

For this method you have to skip the first bit of the game program. To do that, start by rewinding the game tape to the beginning. Now type in the listing. Then type CAT and press Enter. Start the tape by pressing Play and then any key. Then watch the screen. Soon you'll get the message FOUND SOMETHING BLOCK 1. It doesn't matter what the something actually is; this will vary from one game to another. If the Cheat Mode instructions just tell you to skip the first block, you should stop the tape here.

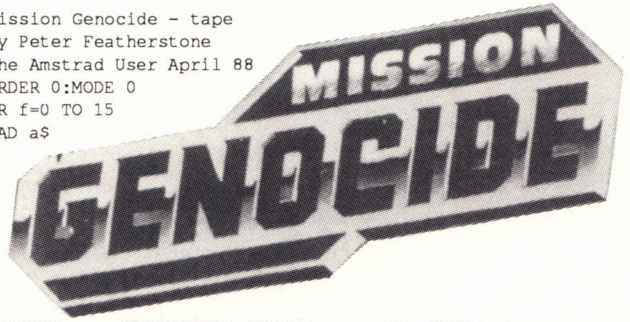
If the instructions tell you to skip several things, stop the tape when the found message comes up for the last thing you're trying to skip.

Once you've stopped the tape, press Escape, type RUN and press Enter. Now press Play on the tapedeck and any key on the keyboard to start the tape running.



Peter Featherstone has sent in a poke to give you infinite lives and to improve the built-in cheat mode on Mission Genocide. The cheat mode is activated by typing QED on the title screen, then pressing the keys 1 to 9 gives you levels 1 to 9. To select levels 10 to 12 use :, ; and 0 respectively. Use Method 1 to input the poke.

```
1 ' Mission Genocide - tape
2 ' by Peter Featherstone
3 ' The Amstrad User April 88
30 BORDER 0:MODE 0
40 FOR f=0 TO 15
50 READ a$
60 POKE f,VAL("&"+A$)
70 NEXT
80 CALL &BE80
90 DATA 1a,00,06,02,1a,18,14,00
100 DATA 0d,09,0f,10,12,00,0e,03
110 DATA f3,21,00,00,11,00,be,01
120 DATA 40,00,ed,b0,31,3f,bf,21
130 DATA b5,be,e5,3e,06,21,40,bf
140 DATA 11,00,00,cd,a1,bc,21,c7
150 DATA a0,36,00,21,e5,97,36,0c
160 DATA 21,e2,97,36,00,21,00,be
170 DATA 11,00,00,01,40,00,ed,b0
180 DATA c3,38,86,00,00,00,00,00
```



Phil Howard wasn't content with poking one half of this Dinamic game, so this one gives infinite lives for both parts. Use Method 1 and remember you must choose, when prompted, which part of the game you are using the poke for.

If anyone was having too much trouble getting through to part 2 of the game then J Redfield has sent in the password, it's 10218.

```
1 ' Game Over - tape
2 ' by Phil Howard
3 ' The Amstrad User April 88
10 DATA 21,F4,37,36,C3,23
20 DATA 36,16,23,36,BE,21
30 DATA 40,00,E5,21,00,B9
40 DATA E5,C3,C9,37,E5,21
50 DATA 6E,00,36,DC,23,36
60 DATA 15,23,36,89,E1,F1
70 DATA F3,C9,21,2E,B9,36
80 DATA ED,23,36,4B,23,36
90 DATA 02,21,2E,B9,11,2E
100 DATA 79,01,26,00,ED,B0
110 DATA 3E,79,32,47,79,32
120 DATA 4B,79,32,53,79,E3
130 DATA C9,32,54,79,CD,2E
140 DATA 79,DD,21,D9,BB,11
150 DATA 02,01,CD,67,BB,21
160 DATA 62,BE,22,C3,BC,C3
170 DATA 03,BC,3E,00,32,63
180 DATA 23,3E,C9,32,1F,23
190 DATA C3,94,8E
200 MEMORY &3000:Y=0
210 FOR X=&BE00 TO &BE6E
220 READ A$:A=VAL("&"+A$)
230 POKE X,A:Y=Y+A:NEXT
240 IF Y<>&2B0B THEN 330
250 INPUT "PART 1 OR 2 ";P
260 IF P=1 THEN 310
270 POKE &BE65,&78
280 POKE &BE66,&21
290 POKE &BE6A,&34
300 POKE &BE6B,&21
310 LOAD""
320 CALL &BE00
330 PRINT "DATA ERROR!"
```

COBRA

Tips for the Ocean film-bore come from Jamie Mascall.

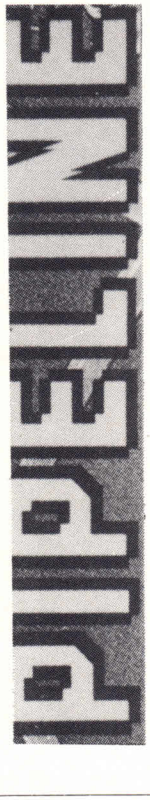
There are men with bazookas, knives and guns. Duck under bazooka shots and jump over knives and guns, then kill the gangsters. Don't kill women standing still or the man under a lamp-post - you'll lose points. Gangsters will pop out of dustbins, duck their shot and kill them. If ducks come down and you're on the ground you must duck them. If you're on a platform you should jump at the duck to kill it.

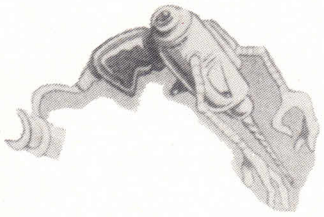
Ingrid will be somewhere on level five or six and will follow you around, impervious to bullets.

PROHIBITION

Peter Featherstone is as busy as ever and has sent in a poke for the tape version of Prohibition. It is entered using Method 1 and gives you infinite lives.

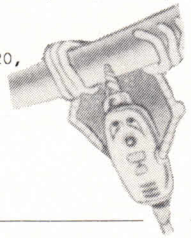
```
1 ' Prohibition - tape
2 ' by Peter Featherstone
3 '  The Amstrad User April 88
30 BORDER 0:MODE 0:INK 0,3
40 INK 1,26:INK 2,13:INK 3,0
50 t=0
60 FOR f=&2000 TO &205F
70 READ a$:a=VAL("&"+a$)
80 POKE f,a:t=t+a
90 NEXT f
100 IF t<>8833 then PRINT
"error":END
110 CALL &2000
120 DATA 21,0e,20,11,64,00,01,50
130 DATA 00,ed,b0,c3,64,00,f3,31
140 DATA ff,ff,21,00,c0,11,80,3f
150 DATA af,cd,a1,bc,21,e6,00,11
160 DATA 00,40,af,cd,a1,bc,21,00
170 DATA 40,11,00,40,af,cd,a1,bc
180 DATA 21,00,80,11,00,20,af,cd
190 DATA a1,bc,af,32,69,0b,21,18
200 DATA 01,22,6a,0b,21,00,c0,11
210 DATA 00,20,af,cd,a1,bc,f3,21
220 DATA 00,c0,11,00,a0,01,00,20
230 DATA ed,b0,c3,75,09,00,00,00
```





Steve Trimmer has sent in this poke for Super Pipeline 2 by Mastertronic. It's entered using Method 1 and when you lose a life you are automatically taken to the next pipe.

```
1 ' Super Pipeline 2 - tape
2 ' by Steve Trimmer
3 ' The Amstrad User April 88
10 MODE 1:OPENOUT"!dummy"
20 h=HIMEM:MEMORY &3FF
30 CLOSEOUT
40 LOAD"!P II"
50 POKE &600,&FF
60 FOR a=&BE00 TO &BE04
70 READ a$:POKE a,VAL("&"+a$)
80 NEXT
90 CALL &400
100 DATA a4,20,
53,4a,54
```



Phil Howard's been busy again this month and his usual style of fair play has come up with a Method 1 poke that slows the rate of energy loss in Ranarama.

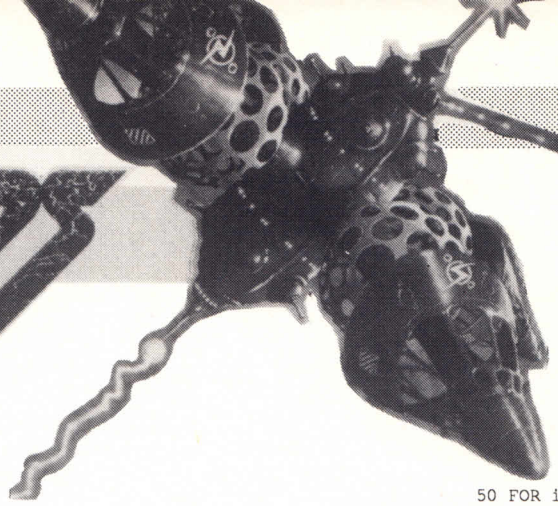
```
1 ' Ranarama - tape
2 ' by Phil Howard
3 ' The Amstrad User April 88
10 DATA 21,00,9a,e5,01,00
20 DATA 02,c5,3e,ee,ae,77
30 DATA 23,c1,0b,78,b1,20
40 DATA f4,21,37,9a,36,c3
50 DATA 23,36,28,23,36,be
60 DATA 21,1e,9a,e3,e9,50
70 DATA 2e,46,2e,48,21,8c
80 DATA 79,36,00,c3,b5,5a
90 MEMORY &3000:y=0
100 FOR x=&BE00 TO&BE2F
110 READ a$:a=VAL("&"+a$)
120 POKE x,a:y=y+a:NEXT
130 IF y<>&1275 THEN 160
140 LOAD"rana":LOAD"!"
150 CALL &BE00
160 PRINT"Data error"
```

AMAUROTE

Phil Howard gets bored with doing infinite lives, so here's a Method 1 poke that gives you joystick control in the bug-busting budget game.

```
1 ' Amaurote - tape
2 ' by Phil Howard
3 ' The Amstrad User April 88
10 DATA 21,40,00,11,25,00
20 DATA 3e,16,cd,a1,bc,21
30 DATA 14,be,22,59,00,c3
40 DATA 40,00,21,d3,41,36
50 DATA c3,23,36,22,23,36
60 DATA be,c3,00,40,dd,21
70 DATA 0a,7f,11,0c,00,21
80 DATA 49,be,06,05,cd,3c
90 DATA be,dd,19,11,09,00
100 DATA 23,10,f5,c3,d4,26
110 DATA dd,36,00,49,7e,dd
120 DATA 77,01,dd,36,02,ff
130 DATA c9,10,04,02,01,08
140 y=0:MODE 1
150 FOR x=&BE00 TO &BE4D
160 READ a$:a=VAL("&"+a$)
170 POKE x,a:y=y+a:NEXT
180 IF y<>&19-7 THEN 200
190 CALL &BE00
200 PRINT"Data Error"
```

ZYNAPS



The final poke by Declan Kennedy gives you infinite lives and no loss of firepower when killed in Hewson's shoot-em-up Zynaps. This one is for the disc version and following it is a poke for the tape version.

```
1 ' Zynaps
2 ' by Declan Kennedy
3 ' The Amstrad User April 88
10 LIN=100:ADDR=&BF00:MODE 1
20 FOR C=1 TO 7
30 TOTAL=0:FOR B=1 TO 20
40 READ A$:A=VAL("&"+A$):POKE ADDR,A
50 TOTA
L=TOTAL+A:ADDR
=ADDR+1:NEXT:READ CHK$
60 IF TOTWAL<>VAL("&"+CHK$) THEN PRINT
"DATA ERROR IN
LINES";LIN;"AND";LIN+10:END
70 LIN=LIN+20:NEXT
80 PRINT "PLACE ZYNAPS DISC IN
DRIVE":PRINT "AND PRESS ANY KEY"
90 CALL &BB18:MODE 0:CALL &BF00
100 DATA AF,CD,0E,BC,01,00,00,CD,32,BC,01
110 DATA 00,00,CD,38,BC,21,7F,BF,CD,07,F0
120 DATA D4,BC,79,22,7C,BF,32,7E,BF,21,00
130 DATA 0F,11,00,08,0E,24,C5,D5,E5,07CF
140 DATA DF,7C,BF,21,7F,BF,CD,D4,BC,79,22
150 DATA 7C,BF,32,7E,BF,E1,11,00,02,0A0F
160 DATA 19,D1,C1,0C,79,FE,6C,28,21,FE,2D
170 DATA 28,1A,FE,36,28,16,FE,3F,28,0827
180 DATA 12,FE,48,28,0E,FE,51,28,0A,FE,5A
190 DATA 28,06,FE,63,28,02,18,C2,14,070E
200 DATA 18,FB,AF,32,18,57,32,19,57,32,1A
210 DATA 57,32,75,60,32,76,60,32,77,0660
220 DATA 60,C3,00,90,00,00,00,84,00,00,00
230 DATA 00,00,00,00,00,00,00,00,00,0237
```

Here's a tape poke by Ian Murphy which gives you a choice of 255 lives, no sprites and rapid fire. It's a Method 2 poke.

```
1 ' Zynaps
2 ' by Ian Murphy
3 ' The Amstrad User April 88
10 MEMORY & 1FFF:MODE 0
20 PRINT"LOADING : LOADER"
30 LOAD"!LOADER",&4000
40 MODE 0:BORDER 0
50 FOR i=0 TO 15:READ a:INK i,a:NEXT
60 DATA 0,26,13,16,15,6,3,24
70 DATA 12,9,18,19,20,11,2,1
80 PRINT"LOADING : ZYNAPS"
90 POKE &414E,64:POKE &414F,0
100 i=64
110 READ a$
120 IF a$="end" THEN 150
130 POKE i,VAL("&"+a$):NEXT
140 i=i+1:GOTO 110
150 CALL &4000
160 ' DELETE any data statements which
you don't want to use
170 ' Remove sprites
180 DATA 3e,00,32,3f,4a
190 DATA 32,44,4a,32,49,4a,32,4e,4a
200 ' multiple bullets on screen
210 DATA 3e,c9,32,39,61
220 ' 255 Lives
230 DATA 3e,ff,32,7e,5f
240 ' end data
250 DATA c3,0,90
260 DATA end
```

STORM BRINGER

There have been lots of tips sent in for Stormbringer. These have been combined into a playing guide, brought to you by Kojo Elimah, Stephen Stokes, Gavin Manning, John Lumbus and Gavin Smith.

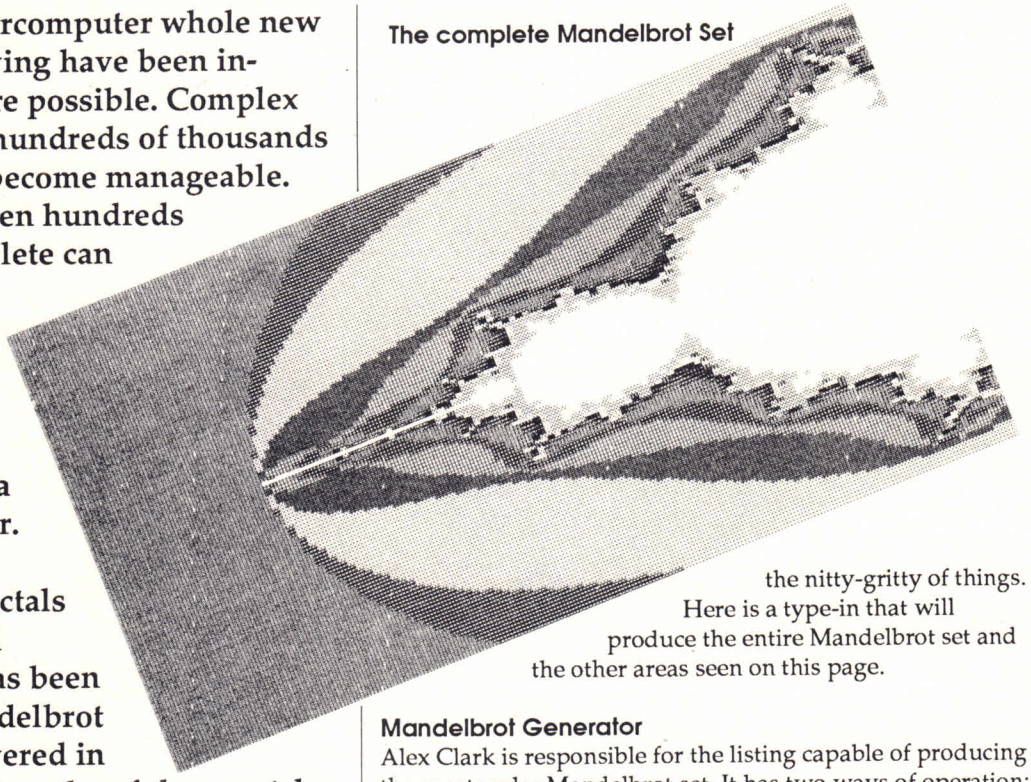
1. When you are carrying the chicken it lays eggs.
2. When you are carrying an egg, command Robin to help and he will give you the newspaper.
3. Read the newspaper to tell you which disguise to wear. Wear the right disguise and carry the newspaper. This will allow you entry into the castle where you will find the teleport pad and teleport key.
4. Standing on a plant and casting the pass plant spell can get you the elf-horn.
5. If you teleport whilst carrying the teleport key and teleport pad then you will end up in Limbo.
6. The shield is in Limbo and so are the jumping boots.
7. The shield stops the axes draining your energy.
8. You need the boots to reach the upper levels of castle Storm.
9. When you are in the upper part of the castle walk left until you reach the giant statue. Walk under the arrow and drop the advert. Jump on top of the advert and you can pick up the silver arrow.
10. To kill Bearwoolf. Summon Robin by blowing the Elf-horn, give him the silver arrow and a golden egg. Command him to help and he will shoot Bearwoolf.
11. Go to the Entwood and take the brass ankh from Barker. This makes your energy go up to 60% when it reaches zero.
12. Aramis Le Peux has the wand of command.
13. The magic missile is in Bearwoolf's hoard.
14. You can get both the arrow and the magic missile by standing on top of the advert while you are underneath the appropriate object.
15. To open the security door you must pull the three levers which aren't main levers.
16. Ask Rachel for help in the castle. She will tell you the password number to activate the teleport machine in the teleport room. Convert the number into binary and pull the appropriate main levers eg. supposing the number was 10: in binary this is 1100101 so set levers 7,6,3 and 1
17. To pass the conveyor belt in the main lever level, throw the teleport pad at Reggie the rat, and teleport.
18. The magic missile induces sleep in everybody it hits.
19. The elf-horn summons people.
20. The chicken lays golden, silver and copper eggs.
21. The magic talisman restores magic levels quickly.
22. To travel to somebody you require the magic missile and crystal ball.
23. Off-white knight must be asleep before you can merge with him.
24. Be careful with the dynamite and boomerang.
25. You must carry the glow shield into main lever 2. Wearing it won't help you. Once in there, drop it on the floor.
26. You score 1% for every room you enter. Bearwoolf's caves are all counted as one room.
27. Aramis Le Peux will read the list of clues. Give him the list of clues and command him to help.
28. The feather can be used to make people happy by tickling them.
29. Do not touch or command Bearwoolf because he will kill you.

Mandelbrot Mathematics

All set for Mandelbrot? A type-in on a fascinating frontier of maths

In the age of the supercomputer whole new areas of problem-solving have been invented because they're possible. Complex equations involving hundreds of thousands of calculations have become manageable. What would have taken hundreds of man-years to complete can take seconds on a powerful computer. Several mathematicians' theories have been explored in depth as a result of the computer. The Mandelbrot set - which stems from fractals - is both obscure and spectacular. Much has been made of Benoit Mandelbrot and the set he discovered in 1974. Why? Look at the colourful eye-catching designs of ever-increasing complexity. No use whatsoever - but breathtaking.

The complete Mandelbrot Set



The Mandelbrot set is pictured as an area in two dimensions. It's a collection of points defined by a simple repeated function. You can see the complete Mandelbrot set in the picture - the black region. The coloured bands represent the behaviour of points as they get close to the set.

It's the complexity of the shape that makes the Mandelbrot set so fascinating: the more you enlarge and examine minute areas of the set, the more complex it gets. Although the area is finite - lies within the circle defined by x2 + y2 = 4 (which I'm not going to prove, you can get further details from Mandelbrot's book The Fractal Geometry of Nature) - the edge is infinitely complex and of infinite length. Mathematicians have a word for this: fractal. A few recent games use fractal graphics to build, say, a real-looking mountain from only an equation. Eidolon and Koronis are two.

Enough of the background information. Let's get down to the nitty-gritty of things. Here is a type-in that will produce the entire Mandelbrot set and the other areas seen on this page.

Mandelbrot Generator

Alex Clark is responsible for the listing capable of producing the spectacular Mandelbrot set. It has two ways of operation: automatic mode draws the complete Mandelbrot set and six other interesting locations from the set; manual mode lets you select and view an area of the set. In either case the final design is saved to disc or cassette. It is best to run the program and leave Arnold to do his bit for a day or so: each picture takes between three and eight hours to produce.

```
10 ' Mandelbrot generator
20 ' by Alex Clark
30 ' The Amstrad User April 1988
40 '
50 MODE 1: MEMORY &4FFF: DIM c%(255)
60 INPUT"Automatic or manual operation? (a/m): ";am$
70 IF LEFT$(LOWER$(am$),1)="a" THEN GOSUB 160 ELSE GOSUB 9
0
80 END
```

Alex has been rather clever in the way he has used LEFT$ and LOWER$ in line 70. LEFT$ (*string expression, required length*) is the standard format for the command.

Its function is to extract the number of characters from a string (specified by required length) starting from the left of the string.

LOWER$ forces a string to lower-case - UPPER$ does the opposite. It is now easy to see what line 30 does to your input - which is held in am$: the command

LEFT$ (LOWER$ (*am$*) , 1) =a will force *am$* to lowercase and interest itself in the leftmost character only. If the expression falls true, that is, finds that your input consists of an a, you'll be whisked off to line 160, otherwise you're banished to line 90.

Dicing with data

Notice line 140, which reads a$="!"+a$. The filename is held in a$. The exclamation mark prefixed to a$ prevents the SAVE message appearing on screen (which would run five hours computer time).

```
90 ' *** "j" "k" and "q" manual input
100 INPUT "Enter j... [real axis start]: ";j
110 INPUT "Enter k...[imaginary axis start]: ";k
120 INPUT "Enter q...[axes' length]: ";q
130 INPUT "Enter filename to save picture under: ";a$
140 a$="!"+a$
150 GOSUB 320: GOSUB 580: MODE 1: RETURN
```

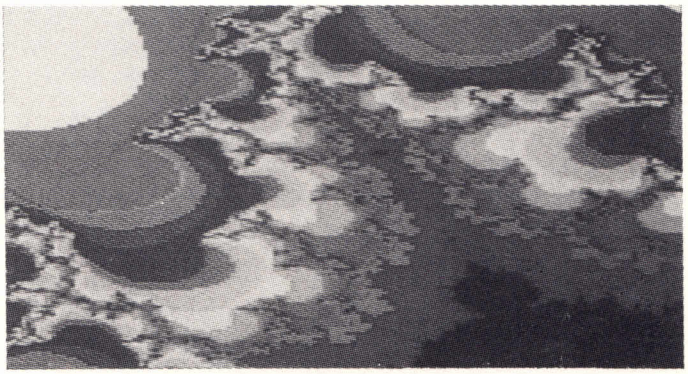
Once the program has accepted your input it will GOSUB 280 which does the calculating, GOSUB 540 (draws up the picture and saves it) and finally RETURNs whence it came.

```
160 ' *** Load in your own data for "j" "k" and "q"
170 ' or run this routine to give five good examples
180 ' from the Mandelbrot set ***
190 FOR a=1 TO 6: READ xa(a),ya(a),sa(a): NEXT
200 ' *** Coordinatess for entire set***
210 DATA -2.5,-1.25,2.5
220 ' *** Interesting locations from set ***
230 DATA -0.9, 0.15, 0.2
240 DATA 0.353, 0.647, 0.005
250 DATA 0.34, 0.63, 0.04
260 DATA -0.737, 0.25, 0.025
270 DATA -0.725, 0.257, 0.006
280 FOR pics=1 TO 6
290 a$="!mandpic"+MID$(STR$(pics),2,1)
300 j=xa(pics): k=ya(pics): q=sa(pics)
310 GOSUB 320: GOSUB 580: MODE 1: NEXT: RETURN
```

If you picked automatic then you'll have landed here. Line 150 reads in the data starting at 170 which holds the coordinates for the entire Mandelbrot set and five other locations in and around the set. If you wish you can replace the existing data with some of your own.

The data is placed into arrays. Array xa will hold the six different j values, ya the six k values and so on.

Line 150 contains an interesting example of string-handling: a$ holds !mandpic. However, there is a plus sign following the closing quotemark, indicating more to a$ than is immediately obvious. The plus is followed by MID$ and a smattering of assorted characters. The function MID$ has the format MID$ (*string variable,position ,new string length*). It behaves in a similar way to LEFT$. The string variable in this case is STR$ (*pics*) . The variable *pics* ranges from one to six (defined in the for-next loop, line 240). STR$ will convert a numeric expression into string form. So the net result is that a$ will contain !mandpic1, with the final digit increasing each time until 6.



▲ A part of the Mandelbrot set magnified

Assigning variables

The next section of the program is responsible for working out and storing the different points of the Mandelbrot set. You should have no trouble following this part. What you may not have come across is the form variable%. The percent-sign tagged onto a Basic variable's name indicates a special type - an integer variable. An integer is a whole number; it does not allow a fractional part. There is a good reason for using this form of variable: it takes up less space in memory and consequently increases execution speed.

```
320 ' *** Mandelbrot set generator ***
330 BORDER 0: INK 0,0: INK 1,13: PAPER 0: PEN 1: MODE 1
340 PRINT "RUNNING"
350 tot=0
360 s%=255
370 h=q/128
380 add=&5000
390 FOR j%=0 TO 127
400 t=TIME
410 FOR k%=0 TO 127
420 u=j+h*j%
430 v=k+h*k%
440 n%=-1:x=0:y=0
450 y2=y*y
460 x2=x*x
470 y=2*x*y+v
480 x=x2-y2+u
490 n%=n%+1
500 IF n%=s% OR x2+y2>=4 THEN 510 ELSE 450
510 POKE add,n%: add=add+1: NEXT
```

```
520 PRINT j%+1;"completed out of 128 runs taking"
530 se=INT((TIME-t)/300): mi=INT(se/60): sec=se-(mi*60)
540 PRINT mi;"mins  ";sec;"secs"
550 tot=tot+mi+(sec/60): NEXT
560 PRINT "end after about";INT(tot);"minutes"
570 RETURN
```

The listing works out the points for the Mandelbrot set within an area 128 by 128. Each point is worked out individually - this amounts to an incredible 16,384 points to calculate. Given that each calculation with all its stages takes approximately one second, it's easy to understand why Arnold needs four hours to draw a single picture.

Drawing the set

The data for the Mandelbrot set is stored from memory location &5000 (in decimal, 20480). If a point is within the set it will have a value 255. The nearer the point is to the set, the higher its value. Points of the same value will have identical colours assigned to them, rather like contours on a map. In theory there could be 256 colours in the final display, but in practice too many colours would produce a confusing display. Not only that, the Amstrad can display a maximum of only 16 colours. So we compromise: ranges of numbers will have certain colours assigned to them.

```
580 ' *** Mandelbrot drawer ***
590 ' *** Initialise ***
600 maxcol%=15
610 FOR n%=0 TO 255
620 c%(n%)=0
630 NEXT
640 ' *** Find max and min values ***
650 add=&5000
660 FOR n%=1 TO 128*128
670 b%=PEEK(add): add=add+1
680 c%(b%)=c%(b%)+1
690 NEXT
700 ' *** Assign colours to values ***
710 ma=(128*128-c%(255))/maxcol%
720 c%(255)=0
730 j%=maxcol%
740 t%=0
750 FOR n%=0 TO 254
760 t%=t%+c%(n%)
770 c%(n%)=j%
780 IF t%>=ma*(maxcol%-j%+1) THEN j%=j%-1: IF j%<1 THEN j%
=1
790 NEXT
800 ' *** Draw Set ***
810 MODE 0: ORIGIN 64,72
820 RESTORE 830:FOR a%=0 TO 15: READ col%:INK a%,col%:NEXT
830 DATA 0,4,1,2,9,12,18,25,24,15,6,7,16,10,13,26
840 h%=8
850 add=&5000
860 FOR j%=0 TO 127
870 FOR k%=0 TO 127
880 a%=PEEK(add): add=add+1
890 b%=c%(a%)
900 PLOT j%*4,k%*2,b%
910 NEXT
920 NEXT
930 ' *** Save Screen ***
940 SAVE a$ + ".pic", b, &C000, &4000
950 RETURN
960 END
```

Now, while waiting for your screen to fill, has anyone written a short, fast machine-code version? Please send it in.

The Loader

After waiting hours for your masterpiece pictures, you will want to load them back in pristine condition. Use this short loader. You will note all the ink colors can be found in the data statement in line 50.

```
10 ' Mandelbrot Picture Loader
20 ' The Amstrad User, April(1988)
30 '
40 FOR a=0 TO 15:READ color:INK a,color:NEXT '
50 DATA 0,4,1,2,9,12,18,25,24,15,6,7,16,10,13,26
60 MODE 2:PRINT "NAME OF PICTURE TO LOAD":INPUT name$
70 name$=MID$(name$,1,8)+".PIC"
80 MODE 0:LOAD name$:CALL &BD18
```


MASTERFILE III

FOR THE 6128 (ALSO 464/664 WITH Dk'Tronics 64K RAM)

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For ordering see page 19.

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Firing Up CP/M - Final

We wipe away the tears as we say goodbye to our long running series, Firing Up CP/M

A six-month recap;
Firing up CP/M started life during October; the time has come for it to give up its post. This concluding part will, briefly, go over all the major issues raised in the past.

Enter the operating system

Part One (issue 33) showed you how to bring CP/M to life, with examples of the CP/M operating system commands.

Those with two drives discovered that typing B: 'logs on' to drive B. Similarly A: switches back to drive A:.

To catalogue a disc, or show its directory, the command is DIR.

Type REN followed by the new filename, equals (=) and the existing filename to REName a file, ie.

```
REN filename.new=filename.old
```

Erasing a file is simple. Enter ERA followed by the name of the file you want to be rid of:

```
ERA filename.abc
```

A final, very useful command is Type. Enter TYPE with a filename following it to display any Ascii or text file on the screen.

What's STAT?

STAT was the major topic of discussion in Part Two (issue 34) - it's found on the CP/M system disc and is used to display a more detailed directory - or extended file information.

Files can have certain 'attributes' associated with them. That is, they can either be 'Directory' or 'System', and System files are normally hidden from directory displays. Files can also be 'Read/Write' (R/W), which means they can be changed or deleted, or 'Read Only' (R/O), which means they can't.

Stat can take various 'parameters' - or none at all. Simply typing STAT at the keyboard tells you how much read/write space (in kilobytes) there is left on the disc.

Device assignment

Part Two (issue 34) also covered the obscure subject of device assignment.

Your CPC system is made up of various devices - the disc drive is only one. Other elements are the keyboard, screen and any interface ports. On the Amstrad these are the printer (Centronics) port and, if you have one fitted, the RS232 or dserial port.

Entering STAT *.* will display;

RECS - one record is equivalent to 128 bytes

BYTES - length of file in K

EXT - number of 16K 'extent' blocks, and

ACC - whether the file is R/O or R/W.

Finally the filename is displayed.

The STAT command can be used in a variety of ways. These alternatives were detailed in the second part of Firing Up CP/M. Used by itself it looks pretty puny, but used with qualifiers it lets you inspect and alter the whole nature of your CPC.

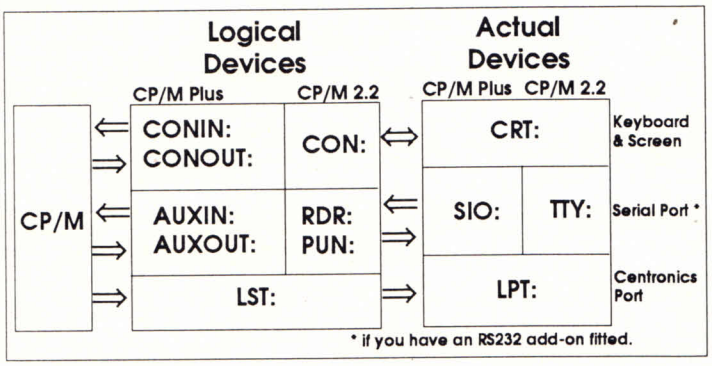
STAT *filename*:	- gives full details of the named file, including its size and status.
STAT *VAL:*	- provides a list of the valid formats for STAT parameters.
STAT *DSK:*	- lists all characteristics of the current disc drive.
STAT *DEV:*	- lists the current assignment of physical (actual) devices to the CP/M logical devices (device assignment is explained later on).
STAT *logical:=physical:*	- assigns the specified logical device to the specified physical device.
STAT *filename* $R/O	- sets the specified file to read only status.
STAT *filename* $R/W	- sets the specified file to read and write status.

CP/M was not designed specifically for the Amstrad range, and runs on a variety of machines. The problem with 'portability' is that most computers have different screen layouts, keyboards and expansion ports.

CP/M takes care of this by distinguishing between 'Logical' and 'Physical' (actual) devices. Physical devices are best regarded as the actual keyboard, screen and interfaces of your computer. Logical devices are part of the CP/M operating system and are the same regardless of the computer system. CP/M operates by assigning logical devices to actual physical devices.

CP/M 2.2 has four logical devices: CONsole usually covers both keyboard and screen; ReaDeR covers the serial input device; PUNch covers serial output and LiST is usually a parallel or centronics printer. CP/M Plus is slightly more up to date, having five logical devices: CONIN:, CONOUT:, AUXIN:, AUXOUT: and LST:.

Physical devices are named differently and reflect CP/M's age. The keyboard and screen are called CRT: (cathode ray tube). The serial interface is called TTY: in 2.2 standing for teletype and SIO: (serial input output) in 3.1. The printer is labelled LPT:.



Copying discs and things

There is no shortage of copy-utilities available under CP/M. Part Five sifted through these with explanation where necessary.

Users of CP/M 2.2 have DISCCOPY to transfer the entire contents of one disc to another using one drive - those lucky enough to possess two drives have COPYDISC. DISCKIT2 is also available for disc copying; it has the advantage of being simple to use and can be used on either single or dual drive systems.

DISCKIT3, which operates under CP/M Plus, is very similar to DISCKIT2, but makes use of the extra bank of memory to copy in larger 'chunks'. The DISCKIT series has two other uses: formatting and verifying discs. individual files can be copied with PIP or FILECOPY.

CLOAD and CSAVE transfer files from cassette to disc and vice versa. Their syntax is:

```
CLOAD "cassettefile",discfile
CSAVE discfile,"cassette",writespeed
```

Piping Tom

The December issue dealt solely with PIP - the Peripheral Interchange program. PIP can be found on your system disc; This will set the file 'filename' to take input directly from the keyboard. In other words, whatever you type at the keyboard will become part of the file. You finish the file off with CTRL Z.

Create a file, for example, containing the word 'HELLO'. If you catalogue the disc, you will see a new file in the directory.

You have now created filename. If you wish to view it, type:

```
PIP CON:=A:filename
```

The word 'HELLO' will appear on screen.

As you can see, PIP can be used to create files and inspect them, but what else? For starters, files can be dumped to a printer:

```
PIP LST:=A:filename
```

One of the most important applications of PIP is the copying of files from one disc to another. The ability to copy files from disc to disc means you can create discs with just the files you need for any given task.

If your CPC has twin drives, and you wish to transfer a file from drive A to drive B, then enter the following:

```
PIP B:=A:filename
```

It is possible to use PIP to copy files on a single drive, if you're using CP/M Plus. Unfortunately this is not the case with CP/M 2.2 - Filecopy makes a nice alternative though.

That multi-talent PIP

Part Five of Firing Up CP/M really showed what a useful program PIP is. Not only can it copy files but, by supplying various parameters, a great deal of user-control can be exerted when transferring files from one source to another.

The format of these extra parameters goes as follows:

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```
PIP B:=A:filename [parameter]
```

Take note of the syntax; the parameter must be enclosed in square brackets which are at least one space distant from the last character of the filename. Some of the more important parameters include:

[E]	- echoes all transfers to the screen.
[L]	- converts capital letters to lower-case.
[U]	- converts lower case to upper.
[Qstring↑Z]	- copies a file until the word or letter following Q is found.
[X]	- copy non-standard Ascii files: such as basic and binary ones.

More than one parameter may be included after the main body of the PIP command:

```
PIP LST:=DEMO.TXT[U Qhello ↑ Z]
```

This command sends the file DEMO.TXT to the printer in upper-case and ending when the word 'hello' is encountered.

It's a Setup!

The SETUP utility, described in parts five and six, allows CP/M 2.2 users to configure discs to their own needs. A brief run down of the SETUP's facilities is as above:

Initial command buffer	- up to 128 commands can be executed automatically on booting CP/M.
Sign-on string	- up to 253 characters can be output to the screen when starting CP/M.
Printer power-up string	- directs characters to the printer on startup.
Keyboard translation table	- allows redefinition of keys to suit your taste.
IOBYTE setting	- device assignment, detailed earlier on. Alternate and IY register saving - this defines whether or not the BIOS saves the alternate and IY registers.
BIOS message enable/disable	- switches certain operating system error messages on and off.
Initial command buffer clear/ preserve	- defines whether the initial command buffer is cleared when a key is pressed.
Drive motor on delay	- sets the length of time the BIOS waits before starting disc drive motor.
Drive motor off delay	- sets the length of time the BIOS waits between last disc access and turning off the motor.
Stepping rate	- sets the speed at which head may be stepped across disc.
Serial interface configuration	- alters input/output baud rates, data bits, stop bits and parity of the serial interface.

As you can see, SETUP is extremely useful, though there is no simple way of implementing this using CP/M Plus.

Reconfiguration is the name of the game

Unfortunately lack of space in the last issue meant that this little section got left out.

BOOTGEN and SYSGEN are two utilities that allow reconfiguration of the system tracks on a CP/M disc. Alternatively a system disc may be created from a vendor disc.

System track information is held in two different blocks on the system disc, one containing the boot sector (that is, part of the operating system) and the other holding information such as the sign-on message, key translations and disc drive parameters (information altered by SETUP).

Vendor discs are CP/M-formatted discs with blank system tracks. The conversion is achieved by invoking BOOTGEN, which reads the bootstrap and configuration information from a disc with system tracks. Once the data has been read, BOOTGEN asks for the vendor disc you wish to insert.

So far half the required CP/M information has been written to your vendor disc, the other half is installed by invoking SYSGEN in precisely the same way and following the same procedure.

SYSGEN is specific to CP/M 2.2. to copy the system tracks in version 3.1, you need COPYSYS - all prompts are displayed.

Getting technical

Those of you wishing to delve slightly deeper into CP/M should take note of the following programs:

DUMP - this will display the contents of a file on screen. Version 2.2 displays the contents in hexadecimal only, whereas 3.1 shows both Ascii and hex. To dump a file, type:

```
DUMP filename
```

Load (2.2)HEXCOM (3.1) - converts a file assembled with ASM into a COM file which can be run independently. The command is:

```
LOAD filename
```
or
```
HEXCOM filename
```

depending on which operating system you're using.

DDT - standing for Dynamic Debugging Tool, has many handy functions for the programmer/hacker. DDT allows you to run, inspect and modify 'object' code. For an in-depth look at this subject, refer to the last issue.

A legal exit!

There is one particular file on the CP/M system disc that allows you to exit legally (?) from CP/M and return to the native Amstrad disc operating system (or Basic, if you prefer). Go on try it: at the A> prompt enter:

```
AMSDOS
```

As far as I'm concerned, `AMSDOS.COM` is a waste of 1K of valuable disc space. Just pressing Shift, Control and Escape all together works wonders. On that note...

An inside look at User Groups

by Judith Thamm

Each month The Amstrad User publishes a nationwide list of User Groups. Have you ever wondered about joining a group or even going along to a meeting? It is rather daunting the first time you go. But then it takes an ounce of courage to try anything new, even to start computing!

I had gone to several computer shops looking for programs and asking for help and advice on making programs run, and learning that when a program said 'Press ENTER' that it really meant 'Press RETURN'...and how to run the Welcome program.... and so on. I thought that was the only way to learn more about using our new but scarcely used Amstrad. At last a computer shop owner suggested that I go to a club where I could get advice and help, and he gave me a phone number to ring.

I remember my first visit to the User Group. I hate walking into a room where I know absolutely nobody. There were several groups of people clustered around computers looking at games or programs and everyone seemed to know so much about computers...the word is seemed!...It was easy to know more than I did then!

On my first visit to the club, I had my most urgent questions answered and I found out how to use some programs that now I look back at and wonder why I ever let my computer intimidate me into thinking that I would never learn how to master the Amstrad. Most of the people were very friendly and some went out of their way to be helpful. I was very glad of the moral support I had from my teenage sons, but they soon deserted me and became involved with a group their own age looking at games. There were other women there, but the majority of the members were men.

The following week we paid our membership fee and joined as a family. Although not a large group, the Northern Computing Society is a very active one. The members come from all walks of life. We have interesting people amongst our members. I was only a member for a short time when there was a kerfuffle with the committee and everyone resigned. What was really at the bottom of it all, I've never found out (and am better not to), but there was a general meeting called and a new committee elected...but no secretary. Some people are soft. I was so sure that my husband would say definitely 'NO' that I had declined nomination. But he was treacherous too and suggested that it would be a pity to let a club falter through lack of a secretary... So the next week I became secretary. And you know, its not a big hassle after all. (It is for everyone else - but not the secretary!)

We found we had to move our meeting place and now meet in the Salisbury North Primary School, across the road from the Scout Hall where we had been meeting. With members at all stages of computing, we found that formal classes were inadequate for some members and too far advanced for others. Instead of classes we try to give individual teaching to new members and encourage them to bring their own computer along and older members will work with them exclusively to give them a hands on start.

Our memberships rotate with some who come for only a short time until they have found out what they need to

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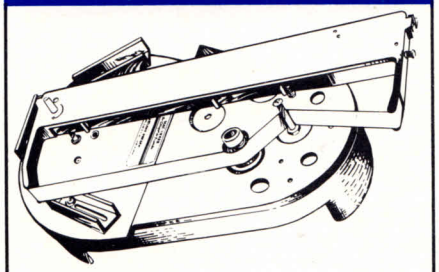

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know, to the absolutely dead keen who rarely miss a night. The range of ages is from about mid-teens to mid-seventies. Sometimes there are younger children at the club, but we ask parents of anyone under 16 to attend the club too. We found that young children can't resist touching things or wandering off - which proved an absolute nightmare, because they would chose their moments when everyone was absorbed in a computer or a demonstration and then there was a panic when we found someone's child missing. He'd just gone out to play....at night!

Some of our members are doing a night course on computers at a TAFE and could no longer attend our Wednesday night meetings. As the room we use was available for Mondays too, we decided to have a second night as well until the end of 1987 and then review the decision and decide whether the club warranted the second night. This meant a little more organisation. We try to avoid formal meetings as such, but have a very well organised committee. We have two members with keys to the school, a President who attends Wednesday nights and a Vice-President who attends Mondays. I attend Wednesdays and we have an assistant secretary who attends Mondays. We have a Wednesday treasurer and a Monday assistant and a Wednesday and Monday Librarian.

If any committee decisions need to be made, there are always enough committee present to make a decision. This we found was a major stumbling block with a small committee - not enough present for a quorum and so a club meeting would have to be called. We try to keep the club strictly to computing, not meetings. We are finding that older members - older in length of membership, are reluctant to bring their computers along to the meetings, because they have so many attachments that they are a hassle to transport. We are hoping to acquire a club computer soon. There have even been nights when disaster of disasters, no-one brought a computer! There's still plenty to discuss, however.

What I really enjoy most is the friendly atmosphere at the club. There is enough space for a group wanting to discuss something serious to be able to go off on their own and not interfere with anyone else. We have members with technical ability, programming ability and everyone seems to enjoy helping other members. Perhaps there is something about computers, but the club is quite the friendliest of any organisation I have ever belonged to. Everybody mixes in with everyone else. I think the best decision our club ever made was to have a balanced committee made up from both younger and older members. Those whose interests are mainly games are not considered any less important members than those whose interests lie in building modems or switches.

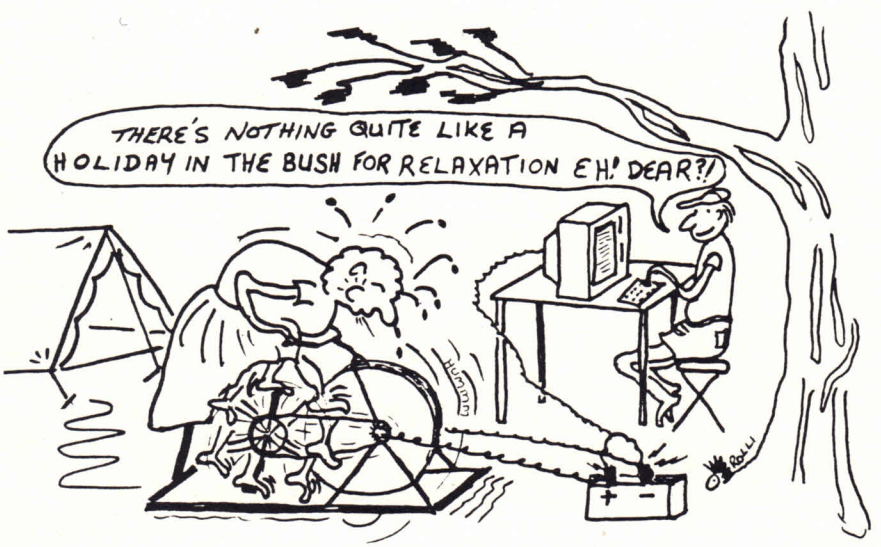
If you haven't tried a User Group, don't hesitate to join. The opportunity for you to learn how to use your Amstrad quickly and painlessly is as close as your nearest User Group. Our members have the full range of Amstrad models, and someone is bound to know how to help you with a problem. All you have to do is ask. When some of the members first got their PC's that was all that was talked about for a time, but now they are no longer a novelty, we are back to a balance of all models. Some of the very keen members attend both nights in the week. I confess I have only gone once to both nights, and then only because I thought the secretary ought to make an appearance. My Monday nights are usually spent at the computer working.

Each User Group will have its own way of running their meetings. We like to have demonstrations of programs of all sorts at least one night a month and are blessed with computer shops willing to help us with these demonstrations. Of course we recommend to our members that they give their support to these shops in return for the help and advice they give the club.

As a computer addict (my husband declares that he never knows whether I've been to bed or not some nights - I'm at the computer when he goes to sleep and when he wakes up, I'm still at the computer!), I'm very glad that our club has weekly meetings (or twice weekly I should say) because I'd hate to have to wait longer to find out a little bit more about computing.

Name tags for each member is a real help when it comes to remembering names, especially for the new members (and the secretary..). As with most things in life, the more you put into a group, the more you get out of it. The President and I agree that by teaching others about the computer, we learn more ourselves. Whether you have a 464 or a 1640 - a club will have something to offer you! We are glad to have persuaded another member to do the PC teaching - gives the President and me a break.

PS. We've since had to cut out Monday nights, but the club is just as strong as ever!



from Laurie Whitehead, P.N.G..

TIP-OFFS

The pages with more power-packed tips than a pool room. Snookered in LocoScript? Baulked by your accounts package or spreadsheet? Give yourself a break with the next few pages!

Two-column LocoScript

Yes, it is possible: justified, two-column print from LocoScript, both columns perfectly lined up, without making ASCII files, or any other trickery!

The secret is in the layouts. Create your document and set up your layouts as follows:

LocoScript 2:

Via f1=Actions (Document setup)
then f2=Layouts (Change stock layouts) change layouts 1, 2 and 3 as follows:

Layout 1: left margin 5 (f1); right margin 85 (f1); line spacing 1 (f4); justify on (f8).

Layout 2: left margin 5; right margin 43; line spacing 0; justify on.

Layout 3: left margin 47; right margin 85; line spacing 0; justify on.

[EXIT] back to editing the document and set up two phrases:

Phrase L: space, ten hard spaces (hard spaces are [+]-space),[+]LT1, [RETURN],[+]LT2,[RETURN]

Phrase R: space, ten hard spaces, [+]LT3,[RETURN]

LocoScript 1:

Edit the base layout to the same description as 'Layout 1' given above. [EXIT] several times to return to the document and set up two new layouts via the 'f2=Layouts' menu:

Layout 1: as 'Layout 2' above.

Layout 2: as 'Layout 3' above.

Phrase L: space, ten hard spaces,[-]LT,[RETURN],[+]LT1,[RETURN]

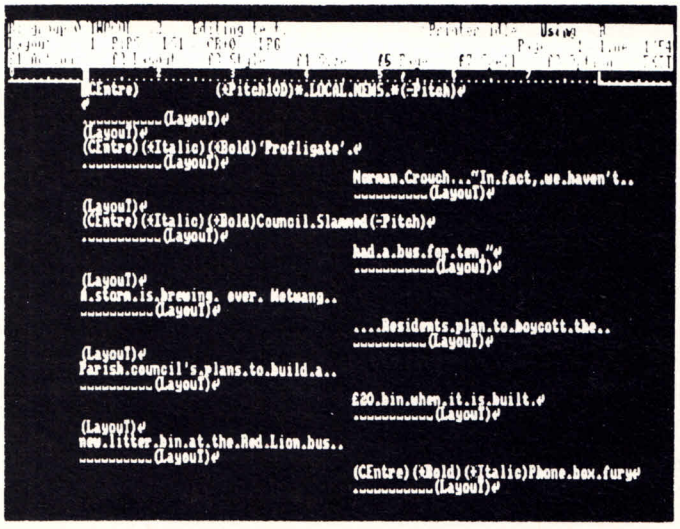
Phrase R: space, ten hard spaces,[+]LT2,[RETURN]

You can check the spaces in the phrases by 'showing the spaces' (f7 in Loco2, f1 in Loco1, cursor to 'Spaces' and press [+]). Soft spaces are shown as a small triangle, hard spaces by a character like the bottom quarter of a square.

Using the arrangement sounds complicated but is actually quite quick and easy. First, [PASTE]L and type text in until one word wraps to the next line. Delete that word so you only have one line left; press [PASTE]R and then [PASTE]L and type the next line similarly. Carry on until this, your left-hand column is as long as is required. Now move to the top of the right column - if you show the spaces as above there should be a triangle at its top left hand corner. Place the cursor on this triangle and continue typing in your text. When you get to the end of the line, a word will wrap to the line below; delete this extra word, then move the cursor down to the triangle at the start of the line below and carry on similarly.

If you use two-column print regularly it would save time to create a template with a whole page full of [PASTE]R[PASTE]L combinations which can then simply be filled up as required. Note that features such as bold italic and pitch changes must be retyped at the beginning of every new line, because the layout changes will reset them. Also you can't edit, as if you change any line lengths once the document's been set up the thing goes haywire.

Philip Barrett



Sorting cardbox files

Cardbox is an excellent database, reasonably priced and simple to use. Its one drawback is that it can't sort, but read on and you will have all the tools you need not only to sort the file, but to make a neatly formatted LocoScript document of the sorted database as well, which you can even add bolds and italics to.

You will be using four discs - the CP/M and LocoScript discs, the disc with your Cardbox database, and a new disc onto which you have copied three files, PIP.COM, BASIC.COM and one of the sorting programs which appear in the type-in section of this month's magazine - call this file SORT.BAS.

Let's assume you have a Cardbox database of books called BOOKS.FIL you want to sort into alphabetical order of authors. Use a format which only shows the fields you want in the order you want them. The fields to be sorted on should come first. Load up Cardbox, select Use, and load up BOOKS.FIL. Type FO and indicate the .FMT file you will be using. Type WR and [ENTER], M until the mode is WS, then type S until Beginning is displayed, then O for output file, which you can call M:BOOKSWS. Press [RETURN],[EXIT], and G for Go.

Quit cardbox and copy BOOKSWS onto the disc with PIP, BASIC etc on it with the command PIP A:=M:BOOKSWS.

With this same disc in the A drive still, type BASIC SORT and give the file name to be sorted as BOOKSASC and the result file name as BOOKSORT. When 'OK' appears you have a sorted file on your disc.

Load LocoScript and insert your new disc. Create a new

file called BOOKLIST and put in tab stops at each place where a field starts, to arrange the list in columns of author, title, etc. Select "Inserted text" from the 'Actions' and choose BOOKSORT as the file to insert. Your book list appears: use the [EXCH] command to change all "," to tabs, and then all " to nothing. You now have a columned, sorted list.
A nice feature of this method is that if the title is the second field, all the books by the same author will be sorted alphabetically by title too. You can now beef up the file with Loco's bolds and italics and so on.
Maggie Rugg

Protext page lengths

If you've gone to the trouble of setting up an address list file in Protext to do your mailmerging run, you may want to print out the names and addresses from your ADDR file directly onto envelopes. It is probably best to do the envelopes in one batch after the main printing session.
One problem is that no matter what page length you tell Protext to use, the printer still thinks you are using 70 line A4 paper. It will therefore roll the platen round for a few seconds after each envelope, which is tedious if you've dozens of letter to do.
What you have to do is use a separate command to tell the printer to change its page length too. A letter such as this:

```
>pl 15
(blank)
>oc 27,67,15
>sm 35
>rv name add1 add2 add3
add4
&name&
&add1&
&add2&
&add3&
&add4&
```

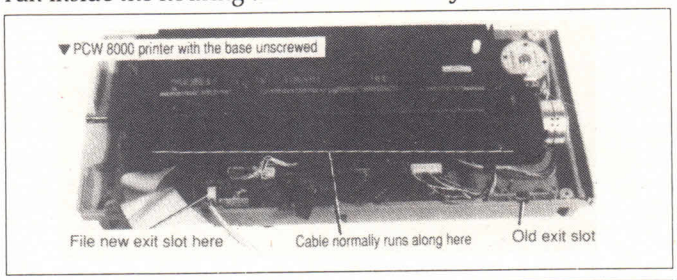
The 'oc' sends the 'escape codes' 27, 67, 15 to the printer, which tell it to treat each page as if it were 15 lines long. Whatever page length you choose, make sure that the number on the 'pl' line and the last number on the 'oc' line are the same.
Incidentally, 9512s (when they arrive in Australia!) will feed envelopes directly through the printer but on 8000 machines you may need to print on labels.

Quick copyfiles

You can copy BASIC programs from one disc to another without leaving BASIC as follows: with BASIC running, insert your first disc and LOAD "filename. Change the disc, press the left cursor key, then press the [+] set key (next to the space bar on the 8000 machines) and type SAVE then press RETURN. The file is copied onto the new disc. (This doesn't work for files which aren't BASIC programs.)
Roy W. Archer

Moving your printer

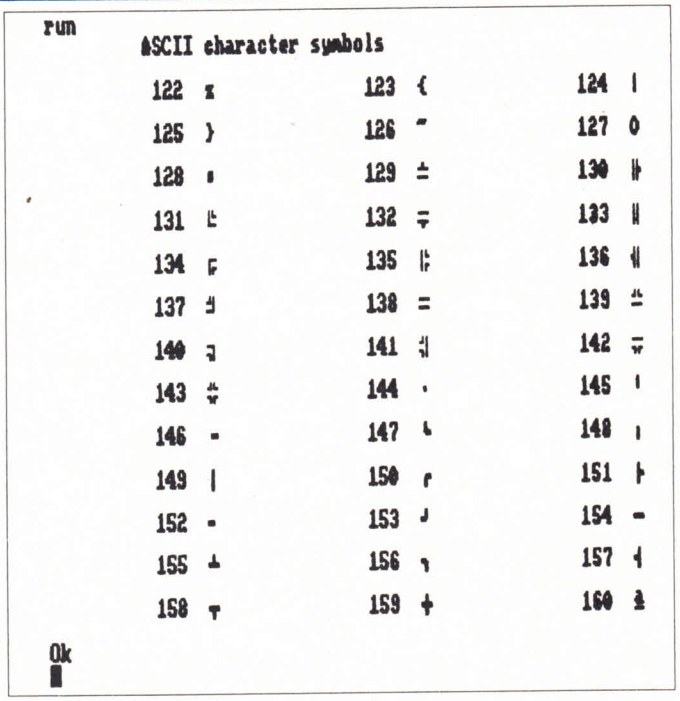
The cables between the PCW and printer are fairly short, and as the printer port on the PCW is on the right hand side as you look at it from the front, the printer has to be on the right too. However, if you don't mind invalidating your guarantee, you can easily modify it so it will go on the left of your PCW. The ribbon and power cables enter the printer at the back on the left, run inside the housing all the way to the right hand side where they join on to the internals. By pulling this slack out and adding new exit slots with a file, you can make the cable come out on the right hand side. First remove the six screws on the underside of the printer, gently prise off the two parts of the black plastic knob at the right, then lift off the top half of the casing. You'll see the cables running all along the back from left to right. Ease this extra eight inches out (you may have to unscrew the bottom half of the casing), file new exit slots, and reassemble.
Chris Lilley



Interesting Characters

There are a number of interesting characters you can print to the screen in Basic to make boxes and various fancy shapes. They are produced via statements like PRINT CHR$(n) where n is a number between 128 and 157, and it's handy to keep a list of which number produces which character pinned up by your PCW. You can produce it by running the following short Basic listing and taking a screen dump by pressing [EXTRA] + [PTR] - unfortunately this is the only way you can get them printed out; you can't use them in LPRINT.

```
10 PRINT TAB (10) "ASCII
character symbols":PRINT
20 FOR a%=122 to 160
STEP 3
30 PRINT TAB(10) a%; "
"; CHR$(a%); TAB (30)
a%+1; " "; CHR$(a%+1);
TAB(50) a%+2; " ";
CHR$(a%+2)
40 PRINT: NEXT: END
```



Barry Moody

For recent converts to the PCW, here is our choice of the 8 top tips

1. PRINTING: To stop a LocoScript printout (if your paper gets screwed up) you press [PTR] which puts you into printer control state, then f7 (reset) and [ENTER] to confirm. Then press [EXIT] to leave the printer control state. For LocoScript 2 the steps are [PTR], f1, select 'abandon printing', [ENTER] and [EXIT].

2. GROUPS: LocoScript's groups correspond to CP/M's user numbers - user 0 is group 0, and so on. If you start CP/M up (put in side 2 of the PCW master discs after turning on the PCW) then once you see the A> prompt insert your LocoScript disc and type DIR [RETURN] you'll see all the files in group 0 listed - CP/M works only in group 0 unless you move into another group by typing, say USER 6 at the A>. A DIR here will list out all your group 6 files, and an ERA *.*[RETURN] will erase all your group 6 files (but no others).

You can use the CP/M utility PIP to copy LocoScript documents - the advantage being that PIP can copy whole groups of documents from one group to another whereas 'copy file' only does one at a time. Suppose you want to copy all files from group 4 of an old disc to group 1 of a new one - run CP/M and type PIP after the A>. An asterisk prompt appears. Replace the CP/M disc with the old LocoScript disc and type M:[g1]=A:*.*[g4].

You'll see all the files being copied. Then when the * prompt returns insert your new disc and type A:[g1]=m:*.*[g1]. By erasing the old files in group 4 of the old disc, (see tip 2) you can move whole groups of files to new discs.

LocoScript's 'limbo' files are stored in the user groups after user group 7. Therefore to find them in CP/M just add eight to the user group they came from - eg. a file erased from group number 5 has just been moved to group number 13.

3. WILDCARDS: In CP/M asterisks (called 'wild-cards') can be used to stand for any name. Typing era *.LTR will erase any file that ends .LTR (for example TOM.LTR, DICK.LTR or HARRY.LTR).

Similarly say you have documents called LETFRED.DOC LETDICK.DOC and LETHARRY.DOC which you want moved to another drive at one go type PIP M:=A:LET*.DOC or even L*.DOC and everything starting with 'LET' or 'L' will be moved.

The ultimate is ERA *.* which will erase everything in the user group you are in or PIP M:=A:*.* moves every file in the group to M drive.

4. CAPS LOCK: The PCW has a [SHIFT LOCK] key which switches the keyboard to upper case characters, but you can get the effect of a [CAPS LOCK] key, which prints letters as capitals but numbers as numbers, by pressing [ALT] and [ENTER]. The same combination releases the Caps Lock mode.

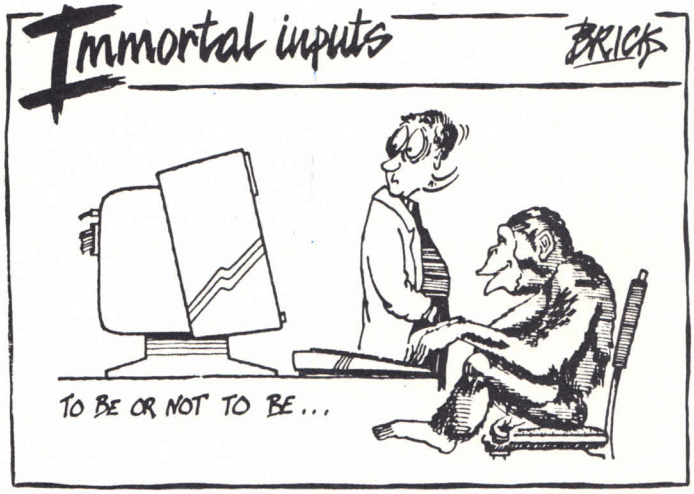
5. SCREEN DUMP: You can get a screen dump - a printout of whatever is on the screen - by pressing [EXTRA] and [PTR]. You can use this on LocoScript to get a copy of the disc manager screen, and so get a catalogue of your files (except in some early versions of LocoScript 2). Prospective owners of the new 9512 will have to live without this since the daisy-wheel printer can't cope with screen dumps.

6. OVERPRINTING: If you want you can overprint one line on top of another in a LocoScript document as follows. First make sure you're not in proportional spacing. Then type your basic line of text beginning it with [+]LSO and ending with [RETURN]. On the next line print [+]LS1 (or whatever the line spacing was), type your line to be overprinted and then carry on as normal.

7. DASH IT: There's no proper dash in LocoScript, but you can store (+Pitch10D) -(-Pitch) as a phrase with the [COPY] key (D would be a suitable letter to save it under). Then just pressing [PASTE]D will give you a nice long continuous dash instead of a short hyphen.

8. DISC FULL: If you try to save a document you are editing in LocoScript only to be told there isn't enough space, you'll be returned to the disc management screen with the message 'Make space for document!'. There may seem to be space on the disc but LocoScript does not realise this because it is taking into account the existing file you are editing and which will eventually be replaced by the new file you are trying to save. One way round this without erasing files may be to 'move' a few large documents over to the M: drive and then [EXIT] to return to the edit when the file will be saved to disc, overwriting the existing file.

You may then find room on the disc to move the documents in M drive back to the disc. This has to be done before you switch off or they will be lost. If there is not room on the original disc save the files you have moved on to another disc.



Foursome for some

Two sort routines, a Basic editor and a message maker

MORSE CODE
by Trevor Burton

We enjoy the occasional quiet joke. When we were faced with a listing to encrypt files we wrote " we have been inundated with programs to encrypt your files into everything from morse code to hieroglyphics". To be totally honest at that moment that was not strictly true. but rather than see us being branded liars Trevor Burton immediately inundated us with a listing to convert your messages into Morse Code.

This is achieved with the cunning use of the PCW bleep, one for a dot and six in a row for a dash. When you run the program you are asked for the message you want encoded. It then prints out the dots and dashes on screen (with full stops and dashes and slashes between the words) and bleeps away merrily.

The length of time between words is controlled by the '300' in line 160 and the pause between words in the '800' in line 80 so you can change these if they don't suit. The numbers in Data lines 20 and 30 contain all the information so make sure these are right or no-one will understand your messages.

We haven't as yet come up with a totally convincing practical purpose for this but we were certain you would be interested. We await with anticipation the influx of programs to encrypt into hieroglyphics.

```
1 'PCW MORSE
2 'by Trevor Burton
3 'The Amstrad User Apr 88
10 bell$=CHR$(7) : dot$=bell$+"."
: dash$=bell$+bell$+bell$+bell$+be
ll$+"-"
20 DATA 191,190,188,184,176,160,16
1,163,167,175, 66,129,133, 97, 32,
132, 99,128
30 DATA 64,142,101,130, 67, 65,103
,134,139, 98, 96, 33,100,136,102,1
37,141,131
40 DIM code%(36) : FOR i=1 TO 36 :
 READ code%(i) : NEXT
50 INPUT "Message";message$ : mess
age$=UPPER$(message$) : count%=0 :
PRINT
60 FOR i=1 TO LEN(message$)
70 index%=ASC(MID$(message$,i,1))
80 IF index%=32 THEN PRINT "/";:co
unt%=count%+1:FOR j=1 TO 800:NEXT:
GOTO 180
90 IF index%<48 OR index%>90 THEN
GOTO 190
100 IF index%>57 AND index%<65 THE
N GOTO 190
110 IF index%<58 THEN index%=index
%-47
120 IF index%>64 THEN index%=index
%-54
130 power%=1
140 FOR k=1 TO (code%(index%) AND
224)\32
150 IF ( code%(index%) AND power%
) THEN PRINT dash$; ELSE PRINT dot
$;
160 count%=count%+1 : power%=power
%*2 : FOR j=1 TO 300 : NEXT
170 NEXT
180 PRINT " "; : count%=count%+2 :
 FOR j=1 TO 800 : NEXT
190 IF count%>75 THEN PRINT : PRIN
T : count%=0
200 NEXT
```

SORTERS
by necessity

One side effect of having to produce an index of all the priceless pearls of wisdom in The Amstrad User has been the necessity of a plethora of sorting programs. Well if you have that amount of information to put into alphabetical order you may as well use the power of the PCW.

We ended up with a couple of sorting routines that will take a text file of entries (each on a different line) and sort them alphabetically in BASIC. As this is an area that we have neglected so far we include both programs and leave it up to yourself to decide which suits your purposes. You can create your text file in LocoScript and make an ASCII file using the simple text option. Load the program, insert the disc with your list to be sorted, and run. Both programs ask you for the name of the file you want sorted and the name of the new file you want the sorted list to be put in.

The first is a bubble sort routine in only 18 lines. The idea is simple. Every letter has a numeric value so it is fairly easy to decide which is numerically lower (therefore earlier in the alphabet). It just compares every entry with every other one.

If the two lines are out of order with each other they are swapped (line 120). You eventually get to the situation where there is nothing left to swap and the list is then in alphabetical order.

This works reasonably well until you get those really long lists. If you are wanting to sort a list of several hundred elements you are better using the Shell-Metzner sort as exemplified in our second listing. This works much faster than the bubble sort because it selects items to compare in a more structured way.

This listing has the added advantage of allowing you to sort sub-entries under a main entry. Just start off your sub-entries with a '-' and list them together under the main entry. The program sorts the main entries alphabetically and sorts any sub-entries alphabetically under their heading too. Now isn't that clever.

```
1 'PCW BUBBLE SORT
2 'The Amstrad User Apr 88
10 DIM line$(1000)
20 INPUT "Name offile to be sorted
";infile$
30 INPUT "Name of file to put sort
ed result in";outfile$
40 OPEN "I",1,infile$:OPEN "O",2,o
utfile$
50 WHILE NOT EOF(1)
60 maxline=maxline+1:LINE INPUT #1
,line$(maxline)
70 WEND
80 FOR i=2 TO maxline
90 PRINT CHR$(13);"line";i;"/";max
line;
100 FOR j=i TO 1 STEP -1
110 IF UPPER$(line$(j))>=UPPER$(li
ne$(j-1)) THEN 140
120 SWAP line$(j),line$(j-1)
130 NEXT j
140 NEXT i
150 FOR i=1 TO maxline
160 PRINT #2,line$(i)
170 NEXT
180 CLOSE
```

```
1 'PCW SHELL-METZNER SORT
2 'The Amstrad User Apr 88
10 DIM w$(500): PRINT CHR$(27)+"E"
+CHR$(27)+"H"
20 INPUT "Name of list to sort? ",
name$
30 INPUT "Name of file to send sor
ted data to? ",dest$
40 OPEN "I", 1, name$: OPEN "O", 2
, dest$
50 LINE INPUT #1, line$: PRINT: PR
INT "Loading...."
60 j%=1: w$(1)=line$
70 WHILE NOT EOF(1)
80 LINE INPUT #1, line$
90 IF LEFT$ (line$,1) <> "-" THENj
%=j%+1: w$(j%)=line$: GOTO 120
100 t%=j%: WHILE INSTR (w$(t%), "-
") > 0: t%=t%-1: WEND
110 j%=j%+1: w$(j%)=w$(t%)+"*"+lin
e$
120 WEND: PRINT "Sorting...."
130 k%=1: WHILE k%<j%: k%=2*k%: WE
ND
140 WHILE k%<>0
150 k%=(k%-1)/2: l%=j%-k%
160 FOR m%=1 TO l%: n%=m%
170 p%=n%+k%
180 IF UPPER$ (w$(p%)) > UPPER$ (w
$(n%)) THEN 210
190 SWAP w$(p%),w$(n%)
200 n%=n%-k%: IF n%>0 AND k%>0 THE
N 170
210 NEXT: WEND
220 PRINT #2," INDEX": PRINT #2
230 FOR k%=1 TO j%
240 z%=INSTR (w$(k%),"*"): IF z%=0
 THEN PRINT #2, w$(k%): GOTO 260
250 PRINT #2,"    "; RIGHT$(w$(k%)
, (LEN(w$(k%))-z%))
260 NEXT: PRINT "Index completed"
270 CLOSE
```

EDITING UTILITY
by D. Pulford

INIT.BAS is for PCW programmers who prefer to use short cuts when editing their Basic programs, or perhaps for programmers who seem to end up with more typos than they would like. It sets up a machine code utility in high memory which allows a much more easier way to edit programs once you get the hang of which keys to press.

The utility is relocatable, but the origin address HHLL appearing in the data statements must be changed accordingly.

An important point to note is that the program must be saved to disc BEFORE RUNNING IT (after you are satisfied you have removed all bugs). This point is made clear on the screen display, as changing d=1 to d=0 in line 110 forces a NEW command which clears the program from memory.

(Listing on next page).

```
0 PRINT: PRINT CHR$(27)"r"; "PCW B
ASIC PROGRAM EDITING UTILITY"; CHR
$(27)"u": PRINT
1 '
2 '  This utility changes HIMEM va
lue to F4FF & intercepts edited li
ne input routine.
3 '  Once the program is typed in,
 RUN it to verify the displayed co
des and checksum.
4 '  When you are satisfied that a
ll is well, change the value of va
riable d, as
5 '  instructed later, to disable
the diagnostic display and enable
the utility.
6 '
7 PRINT "To have effect, the chara
cter listed must be the first type
d on a new line."
8 PRINT "You can force a new line
of input by pressing the STOP key
(or ALT-C).": PRINT
9 '
10 PRINT "f7 or ALT-P : Toggle Pri
nter Echo ON (Beep!) and OFF (No B
eep)"
20 PRINT " LEFT-ARROW : EDIT the l
ast typed line (SAME AS ALT-A)"
30 PRINT "       COMMA : EDIT the C
urrent Line"
40 PRINT "RIGHT-ARROW : LIST the F
irst Line of Program (and Make it
the Current Line)"
50 PRINT "   UP-ARROW : LIST the P
revious Line in Program (and Make
it the Current Line)"
60 PRINT "  FULL-STOP : LIST Curre
nt Line in Program"
70 PRINT " DOWN-ARROW : LIST the N
ext Line in Program (and Make it t
he Current Line)"
80 PRINT "       RELAY : LIST the L
ast Line of Program (and Make it t
he Current Line)"
90 PRINT
100 MEMORY &HF4FF: org=&HF500: HH=
&HF5: LL=0: pc=-1: sum=0
110 d=-1 ' This value for d enable
s the diagnostic display and disab
les the POKES
120 IF d THEN PRINT "ADDR :  0  1
 2  3  4  5  6  7  8  9  A  B  C
D  E  F"
200 pc=pc+1: IF pc MOD 16 = 0 THEN
 IF d THEN PRINT: PRINT HEX$(org+p
c,4); " :";
210 READ code$: IF code$="" THEN 3
00
220 IF code$="LL" THEN byte=LL: GO
TO 250
230 IF code$="HH" THEN byte=HH: GO
TO 250
240 byte=VAL("&H"+code$)
250 POKE (org+pc), byte: sum=sum+b
yte: IF d THEN PRINT " "+HEX$(byte
,2);
270 GOTO 200
280 :
300 IF sum<>16977 THEN PRINT TAB(5
8) "CHECKSUM ERROR.": STOP
310 PRINT: IF NOT d THEN POKE &H9E
2, &H16: POKE &H9E3, &HF5: NEW
320 :
330 PRINT: PRINT "EDIT 110 to chan
ge d=-1 to d=0 (to disable the dia
gnostic display"
340 PRINT "and activate the utilit
y). Then SAVE this program to disc
. Then RUN it again."
350 END
360 :
500 DATA C5,D5,E5,5E,23,56,23,4E,2
3,46,7A,B3,E1,28,04,19
510 DATA D1,D1,C9,D1,C1,C9,E5,CD,1
F,22,FE,2E,ED,4B,46,70
520 DATA 20,07,59,50,CD,03,4B,18,E
E,FE,2C,20,04,3E,01,E1
530 DATA C9,FE,10,20,10,3A,C1,FB,E
E,40,32,C1,FB,E6,40,C4
540 DATA 83,0E,18,D3,00,F5,2A,17,7
4,23,01,00,00,11,00,00
550 DATA CD,LL,HH,F1,FE,06,28,CA,F
E,12,20,07,CD,LL,HH,20
560 DATA FB,18,BF,FE,1F,20,15,18,0
5,CD,LL,HH,28,B4,E5,2A
570 DATA 46,70,CD,A2,6D,E1,20,F1,4
B,42,18,A6,FE,1E,20,11
580 DATA CD,LL,HH,28,92,E5,2A,46,7
0,CD,A2,6D,E1,30,F1,18
590 DATA 91,E1,C9,
600 :
610 ' NOTE VERY CAREFULLY that the
re must be a COMMA after the final
 C9 or it won't work!
620 :
999 ' *** "INIT.BAS" By D.Pulford
- P.O.Box 22, Kingsford NSW 2032,
Australia. ***
```

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THE FIRST THREE YEARS
From Feb 1985 to Jan 1988

Once again we bend to readers' requests, this time producing an Index to The Amstrad User covering the first three years of publication.

Naturally, it has not got every reference listed, this would need another magazine by itself, but it does include a comprehensive list of all the major and most of the minor sections appearing in the pages of Australia's favourite Amstrad magazine.

On Page 35 you will find a subject heading list which may help to guide you.

Each item is referenced with the Issue number (following the #), the Month and Year then the page number. If the page number starts with an 'S' this indicates a supplement page.

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Letter of Protext

Leading by example, Rob Ainsley examines how Protext might handle a tricky mailshot problem

The situation: you have to write letters to all the members of your Avant Garde Icelandic Music Club urging them to come to an important concert. First, you must have a file somewhere consisting of the names and addresses. Though called a 'data file' it's a normal Protext file with one item per line - name, town, postcode etc. In addition there might be other information such as the member's title (Mr, Mrs or Ms etc, or a dash if you are on first-name terms) and a list of each member's favourite composers. To standardise the addresses, assume the format is as follows: first name, surname, title, up to four lines of address, suburb, state, postcode, and favourite composers. If there are less than four lines of address, then by putting exactly one blank between them and the suburb (which can't be blank) you can make sure Protext knows where to find the name of the suburb as described below.

One blank line exactly should separate the end of one person's entry from the start of the next. Your data file will look something like the example on the left.

Suppose this file is called ADDR.DAT. You can now make up your mailmerge letter on the same disc as the one with your address file.

Take a letter

Assume for now that the only personalising you want to do is to have each recipient's name and address on the left near the top of the letter, and have their first name after the "Dear ". Set up a document called CONCERT.LTR say with the following at the top of the file:

```
>df addr.dat
>rv name surname title
>rv add1 add2 add3 add4
>rv suburb state
>rv postcode composers dummy
```

Any line with an angled bracket on the left hand side is a 'stored command' and is treated by Protext as an instruction, not a line to be printed. All your usual stored commands to set up the headers, footers, margins and paper types should also be in the file. For mailmerging runs, >cp on (continuous paper on) is needed to set the printer up for continuous stationery.

First, 'df' tells Protext to look for a file called ADDR.DAT and read things from that file. The first 'rv' command will take the next three things it sees there ('John', 'Smith' and '-') and call them name, surname and title (rv stands for read variables).

The next rv command assigns the four lines of address to 'add1' to 'add4', and the next makes 'suburb' equal to Glen Waverley (state is blank), and so on. The 'dummy' is needed to make Protext skip the blank line to get to the next person's details.

When Protext comes to do this for Dr Jones' record things will be a bit different. Name, surname and title will be OK but add2 is blank. When 'rv' sees a blank, it gives up trying to read the rest of the variables in the line, so add3 and add4 are forgotten about. Protext moves to the next rv which assigns the suburb and state, then reads postcode, composers and dummy with the next. You shouldn't normally have two blank lines together, so if 'composers' is blank, then you don't have another blank for the dummy. Otherwise Protext thinks the first blank is the end-of-record marker, gets out of step and thinks the next person's name is blank.

Outlook variable

Now you can type the text of the letter, and if you put the

Save trees

With your letter complete, you could enter the command print(or p) for draft quality and printq (or pq) for high quality, and Protext would start merrily churning out letters one after the other, working through ADDR.DAT until it could go no further.

However, the trickier the mailshot you are doing the more likely it is that you've got someone's name where you meant the street, or made some other foul-up. An astoundingly useful function of Protext exists for you to print the lot to the screen first - that way you can see each letter being made up and can check that all the names and addresses are in the right place, saving all that wasted paper if there's a mistake.

Just enter the command ps (print screen) and you'll see each letter being written before your very eyes. If anything looks wrong you can press [STOP], go back to the address file and amend it until the letters print out OK, and you can then pq to get your hard (but fair) copies. Before printing out anything to screen or paper, you should save the letter and address files.

name of a variable between two & signs, protext will substitute the current value of the variable - ie. in the first letter when it sees &surnames& it will print 'Smith'; at &postcode&, it will print '3150' etc. So, continuing from the above, your letter might read something like:

```
Avant Garde Icelandic Music Club
7 Seoul Street
Richmond 3121


February 5th 1988


&names& &surnames&
&add1&
&add2&
&add3&
&add4&
&suburb&
&state&
&postcode&


Dear &name&,
Just to tell you...
```

etc. Note that in printing the address Protext smartly misses out blank lines, so that Dr Jones won't have any gaps in her address - add2 to add4 will just be omitted.

Get personal

This is all very well and is a genuine mail merged letter, but merely scratches the surface of Protext's depths. To make the letter more sophisticated, it might be nice to have some flexibility to the content. You may have realised that in the layout of the example just given, if you don't know someone's first name your letter looks very silly - an addressee 'B. Zimmerman' would be greeted as 'Dear B.'

Using the same address data file as before, you can arrange to have people you know well addressed as "Dear John" etc., but others as "Dear Dr Jones", and to include details on transport to the concert venue for those living outside Melbourne.

To handle the first point you'll need to make use of that 'title' variable that mysteriously never got used before. Instead of the line "Dear &name&" in the letter, have the following:

```
>if title="-"
Dear &name&
>el
Dear &title& &surname&
>ei
Just to tell you...
```

and so on. When the condition after an if is true, Protext prints everything between that line and the corresponding >ei ('end if') line. Otherwise, the line following >el ('else') is printed - so here, all names with "-" for the title have the first name printed after 'Dear'; otherwise Protext prints the title (Dr, Mr, Ms, Col., etc) and the surname.

To get 'Dr C. Jones', etc., for the addressee's name and address, you can use the routine:

```
>if title="-"
&name& &surname&
>el
>sv initial=name[1]
&title& &initial&. &surname&
>ei
```

The 'sv' command sets the value of a variable and the '1' in square brackets gets the first letter of the variable it's attached to, so here a new variable called 'initial' is created with a value of the first letter of 'name'. Hence 'Catherine' becomes 'C' followed by the full stop after &initial&, and the whole line would read "Dr C. Jones'.

Now for the transport details. At the bottom of the letter you might have:

```
...and I look forward to seeing you there.
>if town<>"Melbourne"
The Concert Hall is five minutes' walk  from
Flinders Street station...
```

This ensures all those people at addresses not in Melbourne get directions to the concert hall - <> is protext's way of saying 'not equal to '.

Stay composed

To get maximum support for your concert it would be nice to personalise the letters a bit more - for example, you could mention in the letter any pieces being played by each member's favourite composers.

Nameist prejudice

You might find once you've used rv to read someone's details off the data file that you don't want to send them a letter - maybe the person is a member of your family, all of whom belong to the club.

Suppose you include the stored command

```
>sk surname=Bassingthwaite
```

or whatever your name happens to be. The 'sk' command means the current person's letter won't be printed if the following condition is true, and Protext will move to the next set of variables.

Naturally, the 'sk' line has to go after the 'rv' commands so that the correct surname is known, but before the first printed line of the letter. All Bassingthwaites will be missed off the mail merge list. If your family name is Smith, you can't use this trick so easily.

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Suppose that, in addition to Eriksson's sonata for half a piano there are also works by Leosson and Sigurdsson. So, for John Smith's letter, the first paragraph should end:

```
...and works by Sigurdsson.
```

For Dr. Jones, who doesn't like any of the featured composers it should end:

```
...and other works.
```

To insert this text into the *middle of a paragraph* by a simple stored command isn't possible, as the stored command, and hence the text following it, always has to start on a new line.

You can, however, insert *variables* into the text anywhere - as was done with the names and addresses - so to get round this you have to create a variable (called 'blurb' say) whose contents are the required composers' names (or "other works") and insert that.

After the 'rv' line, a series of commands like the following will have the required effect:

```
>sv blurb="other works"
>if "Sigurdsson" in composers
>sv blurb="works by Sigurdsson"
>ei
```

followed later by a paragraph in the letter reading

```
..."Sonata for Half a Piano and Six Igneous
Rocks", and &blurb&.
```

Here the 'sv' command makes 'blurb' equal to the text "other works" first, but changes it to the appropriate name if it appears in the addressee's list of favourites. The routine uses the `in` function, which is fairly self-explanatory (`not in` is sometimes useful as the opposite of `in`.) To cope with all possibilities several statements like this will be needed.

The first paragraph of the letter should then have the optimum eye-catching effect for each recipient. And don't worry about the formatting; Protext takes care of that automatically.

Once you've checked all is OK via `ps`, load your continuous paper, start printing properly with `pq` and off you go for a walk and a nice glass of Perrier water while Protext does the hard work.

The whole truth

There is another command to read variables from a file, 'ru' rather than 'rv'. If you use 'ru', a line from the data file is assigned to each variable whether the line is blank or not. This can be useful, particularly if you have created your data file from a database program.

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Pactronics

The Great Escape

Alec Rae gives a few hints to help you get the upper hand with Escape Codes

Fed up with always doing what your PCW tells you? Depressed with the fact that every time a program snarls "Pick an option" or "Press any key to continue" you have to jump to comply? Now is the chance to get your own back and tell the PCW what to do. All you need to do is to learn a long and eminently forget-table list of hieroglyphics called Escape Codes.

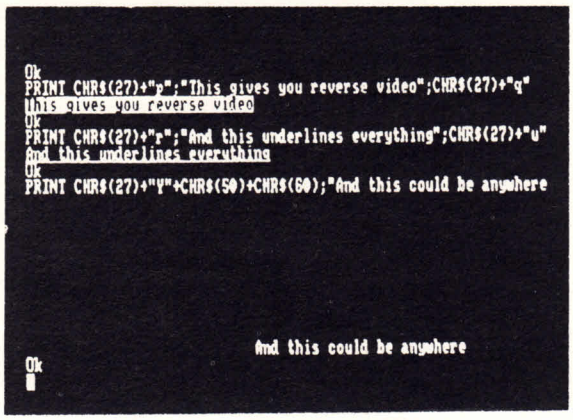
Before we start let's dispense with all the jokes about Colditz. Many people have tried to explain why Escape Codes are called Escape Codes but its easier just to accept the fact and get on with it.

It is not much easier understanding what they are. In simple terms you use them when you want the screen or the printer to do something. If you want to clear the screen or display something in reverse (black on green) you use an Escape Code. If you want to print your text condensed or underlined just rack your brains for the suitable obscure series of letters and numbers.

People who have dabbled with BASIC may know escape codes already. They are the bits of BASIC that usually start CHR$(27) with a letter or number and if you try to produce any fancy output from BASIC you are bound to come across them.

Soul of a machine

Imagine what happens when you print some text on the screen. Behind the scenes, the PCW sends a stream of characters from its main processor over to the part that controls what is on the screen. Mostly, whenever the screen controller receives a character it just displays it at the next



▲ A few screen commands in BASIC and their effect

character position on the screen. However, some characters are special and say to the screen controller, "Wait! Don't just print this character, do something special instead." The 'something special' might be starting a new line or clearing the screen, for example.

The most important special character is known as the 'Escape' character. When the screen controller sees Escape in the incoming stream of characters it knows that the next few characters will contain some command and should not be printed literally. To understand what you can do you will need to understand a little about what 'ASCII codes' are.

Under the ASCII system every character such as alphabetic letters, punctuation marks and digits is represented by a standard number code between 32 and 127 called (surprise, surprise) its ASCII code. For instance, every program should recognise number 65 as a capital A. A list of the complete codes are given on pages 113 to118 of your CP/M manual.

Codes from 0 to 31 are reserved for special screen commands like doing carriage returns or making the beeper sound. A so-called 'ASCII file' is merely a file which conforms to these conventions and so can be read by any program. LocoScript documents are not ASCII files.

BASIC talk

If you have ever done any BASIC programming you will have come across the CHR$ function in print statements, and this is tied in with ASCII codes very closely. If you write a PRINT statement such as

```
PRINT CHR$(65)
```

you will see the character A appear on the screen. CHR$(in a PRINT statement) sends the number you give it to the screen as an ASCII code, and as revealed earlier 65 comes out as A. One of the most useful commands to remember is

```
PRINT CHR$(27)+"E"+CHR$(27)+"H"
```

which clears the screen. CHR$(27) sends the 'Escape code' to the screen, and the following "E" or "H" respectively clear the screen and send the cursor up to the top left corner.

The key to the escape codes for controlling the screen lies secreted away in the 'Terminal Characteristics' section at the back of the CP/M manual (pages 140/141 in the 8256 manual). If the manual says you can do something with the Escape sequence ESC p it just means that you should send CHR$(27) followed by "p", ie. in BASIC you would type

Smart ideas

It's a bit difficult to extract the really useful control codes from amongst the general ones, so here are the Top Ten Escape Sequences. They are presented as if typed from BASIC.

PRINT CHR$(27)+"E"+CHR$(27)+"H" - clear the screen.
PRINT CHR$(27)+"Y"+CHR$(32+r)+CHR$(32+c) - sends the screen cursor to row r, column c.
LPRINT CHR$(27)+"R"+CHR$(0) - sets the printer to US characters so £ comes out as #
LPRINT CHR$(27)+"d" - makes the current settings the default so a printer reset doesn't lose them.
PRINT CHR$(27)+"p" - enters reverse video screen printing.
PRINT CHR$(27)+"q" - returns to normal screen printing.
PRINT CHR$(7) - sounds the PCW beeper.
LPRINT CHR$(27)+"m"+CHR$91) - enters high quality print mode.
LPRINT CHR$(27)+"E" - starts bold printing.
LPRINT CHR$(27)+"p"+CHR$(1) - starts proportional spaced printing.

```
PRINT CHR$(27)+"p"
```

Normally in BASIC it doesn't matter whether you use upper or lower case but with escape codes it does matter - P and p are different.

All this and CP/M too

Of course it isn't only from BASIC that these screen control commands are useful. To make the screen do your bidding all you have to do is find some way of sending it the ASCII codes in question. Using BASIC's PRINT statement is one way, another is to create a file on your disc containing the codes and then, at CP/M's A> prompt, use the command

```
TYPE filename
```

The only problem, is how to create a file containing ASCII codes such as 27, 1 and 0. Any codes below 32 you simply can't type at the keyboard (well, not easily anyway). The answer is to use our quick create-an-escape-sequence-file BASIC program shown in the box.

Then if you want to use reverse video (black on green) for text create a file called REV (for example) with the correct codes in it (ESC p, so type N 27 L p at the prompts). Write TYPE REV and everything printed on the screen after that is in Reverse Video.

"I talk to the printer...

As well as telling the screen what to do, Escape codes can also be used to tell the printer what to do.

In the same way that the screen interprets certain sequences of characters (usually beginning with Escape, ASCII code 27) as instruction to do something, the printer also responds to Escape sequences. By sending the right codes you can make the printer change from high quality to draft, into bold, italic, enlarged or whatever you like.

Many commercial programs (like word processors) allow you to control print styles. If you put a 'bold' command in your word processed text what happens is that when it comes to print out, the program looks up the escape code for bold and sends it to the printer at that point.

You can experiment with the printer control codes from BASIC using the LPRINT statement. All the codes that the PCW printer will respond to are given in the back of the CP/M manual, pages 126 to 137 for 8000 series owners.

Typically you will see an entry telling you that to change to bold text is ESC E or that italic is ESC 4. Some entries have three items, for instance to go from draft to high quality is ESC m 1. Some only have one, like to backspace is BS with (8) added later.

Remembering that ESC is CHR$(27), in BASIC you do each of these examples as follows:

```
LPRINT CHR$(27)+"E"
```

The Amstrad User Patent Code File Maker

Here, free with The Amstrad User, is the simplest way to create files containing any of these wonderful escape codes. Type the program in BASIC (instructions for using BASIC are in our March TAU issue38 (PCW Type-ins) if you aren't sure what to do) and save it. When you run it, it will ask for a file name. If you are going to create a file to set up all text to be underlined, use something you will remember - UNDER for example.

You are then asked whether you are going to type in a number, letter or if you want to end. Type N, L or E and press [RETURN]. You are then asked for the number or letter in question. Type it, press [RETURN], the program will write it to the file and ask for the next.

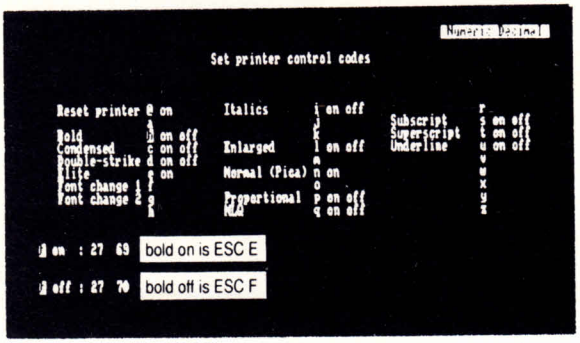
So for a file to underline text on screen (the manual reveals that ESC r is the secret code needed) enter N[RETURN]27[RETURN] for ESC, then L[RETURN]r[RETURN], and finally E to end. To use it type TYPE UNDER to CP/M. The back-to-normal file to stop underlining needs ESC u.

```
10 INPUT "Filename";f$
20 OPEN "O",1,f$
30 INPUT "Number, Letter or End (N, L or E)";c$
40 c$=UPPER$(c$)
50 IF c$="E" THEN CLOSE #1:END
60 INPUT "Type the number or letter";d$
70 d=VAL(d$)
80 IF c$="N" THEN PRINT #1,CHR$(d);
90 IF c$="L" THEN PRINT #1,d$;
100 GOTO 30
```

```
LPRINT CHR$(27)+"4"
LPRINT CHR$(27)+"m"+CHR$(1)
LPRINT CHR$(8)
```

To explain, for ESC always send ASCII code 27. Always send the second item in the sequence as a literal character, "E", "4" or "m". If there is a final digit - usually 0 or 1 - send that as a CHR$ code. If there is only a single item, called BS or DC4 or something meaningless with a number in brackets after it, send only the number as a CHR$ code.

As with the screen control examples the best way to send escape codes to the printer is to make up a file containing the codes with the help of the BASIC file creator program shown in the box on the previous page.



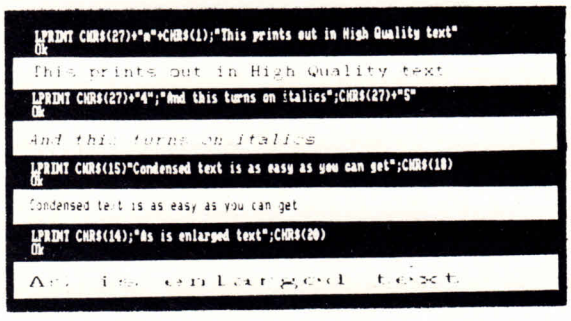
▲ Using your new found knowledge of escape codes, program installation screens (this one is from Protext) should make sense. This defines what ASCII codes are sent to the printer for each Protext print command.

If you want to set your printer up to use condensed text at 8 lines per inch, you look up in the manual that the code for condensed is SI (15) and for 8 lines per inch is ESC 0. Using the BASIC program as described, pick a file name like COND and then you will need to do N 15 N 27 L O E, each separated by a [RETURN] after each reply to a prompt of course.

Now you need to use CP/M to send the file COND to the printer. The best way of doing this is to use PIP by saying PIP LPT:=COND

(this assumes you have PIP.COM on the same disc as your newly created COND file). All text printed subsequently will be in this condensed close-spaced format.

The best way to return to normal type on the printer is to use the [PTR] key and select the RESET option on the status line.



▲ Sending Escape codes to printer from Basic, and the results

The devil's alternative

The principle of Escape codes can be used directly from CP/M without having to create files or use BASIC at all. CP/M on the PCW is set up so that the [EXIT] key sends the code for Escape. On many computers such as the PC1512 OR 1640, the key that corresponds to [EXIT] is actually marked [ESC] for Escape. If, at the A> prompt, you type [EXIT]E[EXIT]H the screen magically clears. This is the same as the `CHR$(27)+"E"+ CHR$(27)+"H"` you see in virtually every BASIC program when you want to clear the screen.

What has happened is that if you give any command to CP/M that it does not understand it will just echo back what you have just written with a question mark. (This happens if you have the wrong disc in the drive when you try to run a program: how often have you tried to run PIP and got `PIP?` in reply?)

If you type [EXIT]E[EXIT]H[RETURN] the PCW doesn't understand and echoes back Escape E Escape H?. This the PCW screen does recognise as the Escape sequence to erase everything on the screen and then leave a question mark there.

Crystal clear

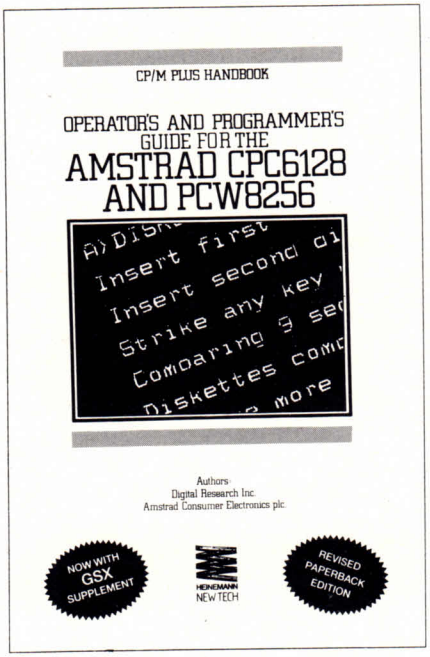
For those who like to know the meaning of every acronym, ASCII stands for American Standard Code for Information Interchange. To prove you are clever you should pronounce this "asskey", saying "A.S.C. 2" is a dead giveaway that you are a novice.

CP/M PLUS HANDBOOK

A review in The Amstrad User (October 1986) said "quite simply, it's the only book you'll ever need on the technical side of CP/M Plus".
Now with a GSX supplement, it's even more valuable.

If you are a beginner, it's not for you - it is very technical.

If you are more advanced, you may want to take advantage of the new price. Don't pay $89 when you can now get it from The Amstrad User for just $49.95 plus postage ($52.95 for non-subscribers)



For ordering details turn to page 64

Maxi Mini Office

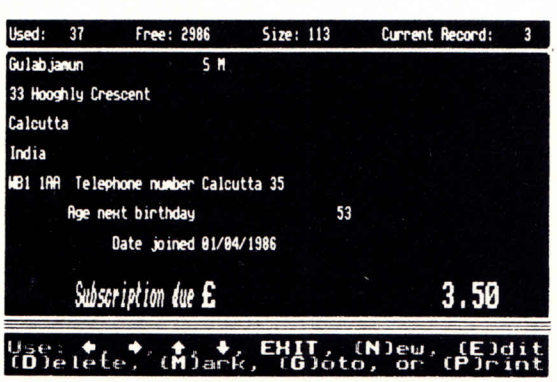
Rob Ainsley looks at an all-in-one database, spreadsheet, word processor, graphics and comms pack. Can it be true?

After the euphoria of printing your first LocoScript letter or running your first BASIC listing subsides, what next? All the magazines talk confidently of spreadsheets, databases, communications, graphics packages and so on. Sure, it would be nice to be able to buy them all, but there just isn't enough time to try them all out, and there isn't enough money to buy one of each.

Seeing a gap in the market for a good economical suite of office-use programs, Database Software have developed Mini Office Professional. This is a follow up to their best-selling Mini Office II pack which has sold exceptionally well on other computers - although Professional is a whole new program, not an adaptation. For your money you get two floppy discs comprising an integrated package of a database, a spreadsheet, a graphics program, a wordprocessor and communications functions. It sounds too good to be true.

The database

Everybody who has a PCW has the LocoScript word processor, so it's actually a database which is the popular first choice of new software. The Mini Office database is a pretty standard card index type, much the same as First Base, for example. You set up your fields (name, address, telephone number) and choose the type of field - text string, a number, a date or an amount to be calculated from some other fields such as balance of account. The range of functions available for calculations is powerful and includes IFs and NOTs as well as the arithmetical operators. Impressively, you can have up to 255 fields (the high-powered dBase II can only take 32 fields) so you could use this for a variety of specialist applications, for example logging results from detailed questionnaires.



▲ A record from the database

You are shown a blank 'card' and mark out the position and size of each field using the cursor keys - you can also insert text headings if you want. The functions of editing data, sorting, printing out 'reports' from your data and so on, are chosen from menus, and all are done quite easily and logically.

As with any good database, you can select certain records over one or more fields - for example, all your Melbourne customers, or all your Sydney customers who owe you money - and make them into a new database, leaving the old one intact. You can sort too, over a combination of fields, so you might have your customers re-sorted in order of how much money they owe you, with those owing the same amounts (for example nothing) sorted by region and sub-sorted alphabetically within each region.

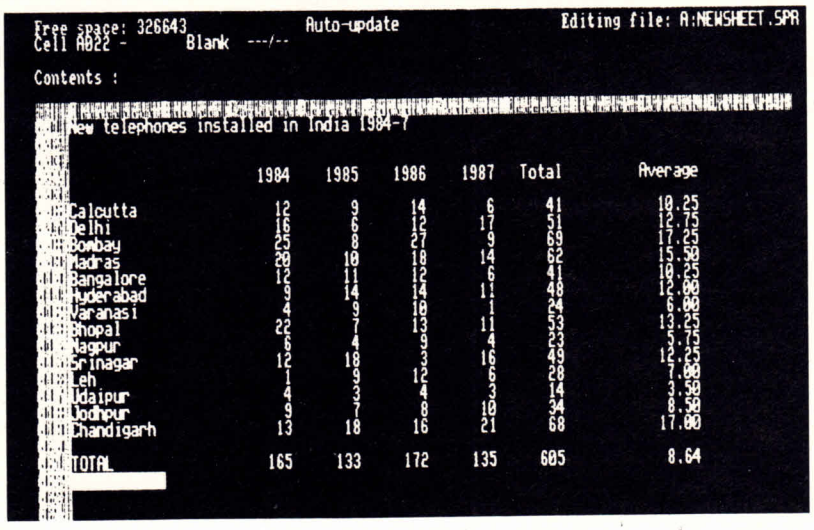
Handsome prints

The print facilities allow you to print out the contents of each card you have defined, with nice touches such as having the option of putting the field names in italics. You may wish to print only certain items of information from each field, for example names and addresses only for a labelling run. In this case you would use the 'Reports/ Labels' option which allows you to select any combination of fields and print them out a label-sized form with additional text if required. A thoughtful feature is that you can select a 'test print' to print out just the first two rows of labels, and hence check the alignments.

You can do simple arithmetic on numberS stored in fields, and you can also ask for the total of some field over all the records - so you could find the total amount of money owed you, for example. A novel feature is the ability to change all figures an any field at a stroke: for example, if you wish to raise subscription rates payable, you can add $1 to this field in all records automatically, without having to alter each one! You can use data from your database to input to the word processor for use in simple mailshot runs.

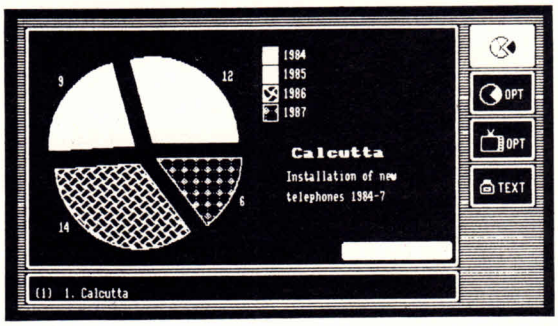
The only real minus point is that there doesn't seem to be a way of importing or exporting data, so you can't use data

you've prepared under another database in this one or vice versa. Overall this is an excellent database and just by itself would be well worth the money. There are some nice touches to it and the ability to transfer data to the word processor part of Mini Office relatively simply will be invaluable to many users.



	1984	1985	1986	1987	Total	Average
Calcutta	12	9	14	6	41	10.25
Delhi	16	6	12	17	51	12.75
Bombay	25	8	27	9	69	17.25
Madras	20	10	18	14	62	15.50
Bangalore	12	11	12	6	41	10.25
Hyderabad	9	14	14	11	48	12.00
Varanasi	4	9	10	1	24	6.00
Bhopal	22	7	13	11	53	13.25
Nagpur	6	4	9	4	23	5.75
Srinagar	12	18	3	16	49	12.25
Leh	1	9	12	6	28	7.00
Udaipur	4	3	4	3	14	3.50
Jodhpur	9	7	8	10	34	8.50
Chandigarh	13	18	16	21	68	17.00
TOTAL	165	133	172	135	605	8.64

▲ Details of a database . . .
and the resulting pie chart ▼



The spreadsheet

A spreadsheet - as regular readers will know - is a computerised doodling pad where you enter rows and rows of figures and can add them up, average them, and do a host of tricks to see what would happen if only you got that bank loan.

The spreadsheet and the graphics modules in Mini Office go together nicely. The idea is that you can make a file of your spreadsheet data and use the graphics module to make it into a pie-chart or histogram, which is a lot clearer than a column, of figures. The spreadsheet itself is a pretty standard one with the usual features of entering numbers or text, doing arithmetic and 'replacing' (copying) entries etc.

There are commands from A to Z ('automatic cursor mode' to 'zero all unlocked numeric cells') and most of them are reasonably easy to remember. Using 'auto-update', you can have all your recalculations done automatically (ie. when you alter any entry on an existing spreadsheet all the figures affected by it are immediately changed) or have it done manually only when you require it, by pressing the [f3] key.

When you come to print out your spreadsheet you can select various options such as draft or high quality, whether or not to print row or column headings, set the width of the printer, highlight certain rows or columns or specific cells by printing them in bold, etc.

Well, print me sideways

A particularly welcome feature of Mini Office's spreadsheet is the ability to print out a spreadsheet sideways.

Spreadsheets can get quite wide, with too many columns to fit across an A4 sheet. By selecting the 'sideways' option from the print menu, you can rotate the whole spreadsheet through ninety degrees as it is printed, so that the columns come out down the page and the rows across (if you use continuous stationery, you can print out massive spreadsheets this way).

There's no 'sort' facility (as there is on most other spreadsheet programs) so you can't rearrange your columns into alphabetical order, though this is hardly a major problem for the average user. According to the blurb on the box, the maximum size of spreadsheet which can be handled is 320k, which should be big enough for most purposes - SuperCalc's maximum is around 50k.

You can save your spreadsheets to disc, of course, and on Mini Office you have the additional option of saving part of the spreadsheet ('a window') for conversion into a graph - say the months January to December and the corresponding sales figures for each month.

Mini Office's spreadsheet has some excellent features not found on other more expensive spreadsheets, is easy to use, and can produce smart and efficient-looking results.

Graphically described

Having set up a data file from your spreadsheet, you can use it in the graphics program, or alternatively you can make up a data file just by typing in entries at the keyboard and use that. The graphics module will then turn these figures into a pie chart, a line graph, or a bar chart. You can include any text on these charts or graphs at any point, with the usual choice between double-width, double-height or normal characters, in normal, bold or dim text. You also have a selection of borders to place around your text. Screens can be printed out normally or sideways, or saved for later use, and you can even select 2- or 3-dimensional display.

The graphics side is one area where the manual is pretty weak, and you'll probably need a lot of experimenting to get your first graph of a spreadsheet's results. This is not a full-blown graphics package - you can't draw or create shapes of your own, as on a purpose-built program; it's just

an extremely useful add-on to the spreadsheet, and a useful utility for illustrating figures. Being simple and easy to use yet powerful, this would be ideal for business reports and the presentation of data in general.

The word processor

You've probably already got a word processor, so the one supplied with Mini Office won't be the main reason for buying the package. However, since it ties in closely with the rest of the Mini Office utilities there are arguments for learning to use it at least as an alternative to LocoScript.

According to the advertising blurb in the UK, the word processor's three winning features are that it's lightning fast, displays a word count while editing and has double height characters - the wording has obviously been aimed at disgruntled LocoScripters. However, as there isn't actually a word counter at all on Mini Office, still less one you can see while editing, the advertising copy writers don't seem to have talked to the programmers recently. And you can do double height text, but only in draft quality.

The good news though is that it's every bit as fast as it's claimed - so call it one and half marks out of three. Even LocoScript 2, though fast relative to Loco 1, can't compete; you can zip from top to bottom of your 60k document in under a second. The search-and-replace works fast too.

Unlike LocoScript's menus, the word processor uses those 'control codes' you either love or hate - [SHIFT]-[ALT]-H defines a header, [ALT]-H marks the end; [SHIFT]-[ALT]-J justifies text; [EXTRA]-M marks a block of text and [SHIFT]-[ALT]-[DEL] deletes the block thus defined, and so on. As with WordStar or Protext, the codes seem stupid and difficult until you get used to them, when they seem logical and easy.

Reversed priorities

There are some pleasant surprises in the word processor too. You can print out in reverse video, ie. white letters on a black background; and there are those double height letters.

DIY manual

The accompanying manual to all this is a slim, compact 67-page effort, and being ringbound it folds flat for easy reading. The features of each program are described reasonably clearly, with an example of each, though there really isn't enough detail for folks who've never used a spreadsheet before, or who don't know what a database is. The sheer power of each of the programs means a lot of explaining has to be done, and while 67 pages is a handy set of flashcards to the functions on each module, to do the suite full justice would take something like twenty times that amount.

Having said this, Mini Office is a well-designed package and once you have mastered the basics of how the menu system works you should be able to find your way around with a little common sense.

Clever use of the PCW screen puts all the control characters (like the returns or tab characters in LocoScript) in a dim dark green for clear contrast with text as you read. Another splendid feature is the ability to print out to the screen an image of the final printed version, complete with headers, page numbers, double height letters, italics, bolds and so on, so saving much wasted paper and frustration.

The 'disc management' system is similar to LocoScript in that you have the directory displayed and can move the cursor over the file you wish to edit or print. These main functions are chosen via a menu. Mini Office files cannot be read by LocoScript or vice versa, unless you make an intermediate ASCII file.

The most convenient use for Mini's word processor is integrating it with the database. You can use customer files, for example, created under the database, and set up a mailmerge letter skeleton with blanks for the computer to fill in with details from each customer - name, address, products, balance, etc. It's not a full mailmerger, and does not claim to be, because you can't do conditionals such as 'only print this paragraph if the customer hasn't paid for six months'; however, you can approximate this ability by selecting certain sets first from the database (eg. customers who haven't paid for six months) and do a letter for each set.

It's a good word processor, but it can't be expected to compare with LocoScript or Protext, of course. You may still prefer the convenience and familiarity of LocoScript for much of your work, or the power and flexibility of Protext for your bulk text/processing, but as an integrated part of the database/spreadsheet/graphics system of Mini Office it is very useful.

The communications kit

Gearing up your PCW to speak to the outside world is everyone's Walter Mitty dream. Unfortunately this usually involves you in the expense of buying a modem, paying phone bills and struggling with generally unfriendly software.

The comms software provided with Mini Office is as comprehensive as many other packages on the market, and certainly offers far more than Sage Chit-Chat, one of the current 'standard' packages. It can display both ordinary text screens and the 'Viewdata' block graphics screens used by Viatel. For the cognoscenti, you are offered baud rates from 75 to 9600, separately set for receive and transmit, straight terminal emulation and XMODEM and KERMIT file transfer protocols for error-proof transfer of long files.

You can save setups under names and recall them, so once you have worked out the correct baud rates/parities etc. for a service you can forget them again and you can define keys. Beginners will be pleased to know that Mini Office's comms setup comes pre-configured to let you use both Viatel and teletext.

It's getting a bit tedious ending every section by saying, "This part alone is worth the money", but it's true. Why spend a lot of money on a comms pack when Mini Office Professional does it all quite adequately?

The epoch making Mini

There will be a lot of shaking heads in disbelief at this package. Any one of the programs could be sold at the price and get a satisfactory review - to have the five together for that price is simply astonishing. Each of the programs is well-written, easy to use, and there are many innovative features not found on more expensive packages. On a higher level, you have the convenience of integrating your database with your word processor, and your spreadsheet with your graphics module, without having to move into another package. If only there'd been a word counter, as the box claims there is, there would have been nothing to find wrong with it.

Small businesses and clubs using PCWs will find the database ideal for customer records, the spreadsheet invaluable for budgets and projections, and the graphics package great for reports. For anyone else, if you're thinking of buying a good standard database or spreadsheet, it's difficult to think of a reason to buy anything else - and you'll be getting four other excellent programs effectively for free. For really heavy in-depth demands Mini Office won't replace the heavyweights like LocoMail, dBAse, Masterfile, or Protext, but as an all-purpose package it's in a class of its own.

Mini Office Professional has done for software what the PCW did for computer hardware. It has broken new ground in good program design and value for money. If this doesn't become a standard business package, there's no justice.

Mini Office Professional is distributed by Pactronics P/L and should be available at your local dealer for $129.00 You can also purchase the package through The Amstrad User at the same price, post free.

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In addition we can also provide updates to LocoScript 2. The current version being offered is 2.16. Please note that this particular update service is for existing LocoScript 2 owners only. If you have LocoScript 1 and want to upgrade to Loco 2, you will need to purchase the new software package (current price $72.95).

To obtain your upgrade or update to each piece of software you must do the following:

1. Locate your **original** disc - not a back-up.
2. Place in a padded post bag, enclosing a cheque or money order for $18.50 for each disc being returned (or quote your Bankcard, Mastercard or Visa credit card number and expiry date).
3. Include a note of your name and address to which the upgrade or update is to be sent and the item or items you are returning for upgrade or update.
4. Seal the packet, write your name and address on the reverse side and send by CERTIFIED MAIL to:

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1/245 Springvale Road
Glen Waverley
Vic 3150

PLEASE NOTE: Returning your **original** disc provides proof of purchase. Under no circumstances will we provide upgrades or updates on copies or your own blank discs. Your original disc(s) will be returned to Locomotive Software in Surrey, England along with your name and address for registration purposes.
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Into bat with Autoexec

Chris Collins discusses this all important batch file and brings three more Shareware items to your notice

AUTOEXEC.BAT !! Now that I've worried a lot of the computer beginners out there, let's get on with this month's column. AUTOEXEC.BAT is the most important batch file available to any PC user, and one that no PC user should be scared of.

Back to the beginning. If a file of the name AUTOEXEC.BAT is found in the root directory of a disc that you use to boot your PC, DOS will AUTOmatically EXECute it after it boots.

The reason for having an AUTOEXEC.BAT file is to automatically perform all of the commands that you would otherwise have to enter yourself every time you boot your system. AUTOEXEC.BAT files tend to fall into two broad categories, those that load memory resident programs (Sidekick and Deskteam are two of these), and those that customise your system to suit your way of working.

What we shall do is to use the following AUTOEXEC.BAT file, and then go through it line by line to explain it to you.

```
PATH c:\;c:\dos;c:\utility
PROMPT $e[1;33;40m$p$g$g$
GRAPHICS
CD\DESKTEAM
DESKTEAM /M
CD\
CLS
```

In the setup category, by far the most important command available to a hard disc user is the PATH command. The PATH command gives DOS a list of directories to search, if it can't find a program file in the current directory. The directories listed in a PATH command must be separated by semi-colons, and must include a drive specifier. So the following PATH command is okay:

```
PATH c:\;c:\dos;c:\utility
```

but the following is not:

```
PATH c:\;\dos;\utility
```

What the above basically means is that if you tell DOS to go looking for a file called TEST.EXE it will look in the directory we are currently logged into first. If it cannot be found in this directory, DOS will then look in the root directory of drive c: (c:\) for the file. Failing that DOS will then check the DOS directory on c: (c:\dos), and failing that the directory DOS will finally check the utility directory of c: drive (c:\utility). If TEST.EXE still cannot be found in that directory, DOS will return a "File not found" error.

Thus you can keep your hard disc organised and very manageable, by placing the program files that you use in their own separate directories, and you will still have access to them from any position on your hard disc. As part of this organisation, you should place all of your batch files in a special directory (say, c:\BATCH) and have it accessed in the PATH command.

PROMPT is probably the second most important command available to a hard disc user. This command enables you to change DOS's normal prompt (A>, B> and so on) to something that suits you better. Some people make very tricky use of the command's capabilities to display a multi-line prompt that includes the time and date.

But for most people, the biggest use is to let us know the current logged directory and the current logged drive. To do this, in our AUTOEXEC.BAT file, we include the following line:

```
PROMPT $P$G$G
```

This instructs DOS to construct a

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prompt that contains the current drive and path ($P) followed by two greater-than symbols (GG). With the prompt command, we can also issue ANSI escape sequences to change the screen colours. So our prompt command could grow to the following:

```
PROMPT $e[1;33;40m$p$g$g$
```

What this now tells DOS is that we want to reset the screen colours to yellow text (33) on a black background (40m). Also, because we have included a 1 as the first number, we want the colours to be bright or highlighted. This is then followed by our other prompt command.

These numbers can be changed to suit yourself. The first pair of numbers is the foreground colour, and ranges between 30 and 40. The second pair of numbers, which range between 40 and 50, are for the background colour. However, for any of these commands to be effective, you must include the following line in your config.sys file:

```
device=ansi.sys
```

otherwise none of the above will work. This tells DOS to load the ANSI.SYS extended screen and keyboard command file.

Having now setup our PATH and PROMPT commands, the next thing to do is to load any memory resident programs that we may wish to use. GRAPHICS is a DOS command file that will allow you to use <PrtSc> to print a graphics screen. Normally, using <PrtSc> will only print a text based screen.

The next three command lines are used to load DESKTEAM. This is a shareware version of Sidekick, and I find it very useful. The first line changes the current logged directory to C:\DESKTEAM. The next line instructs DESKTEAM to load itself into memory, and go resident, and the final line logs us back to the root directory.

The final line in the example AUTOEXEC.BAT file simply clears the screen, making the PC ready for us to use.

With all these commands, your PC will now be custom tailored to suit you. The above AUTOEXEC.BAT file, which at first seemed so formidable, is simply a list of commands that you would have had to enter by hand to setup your system and to load all of your TSR (Terminate and Stay Resident) programs. And AUTOEXEC.BAT does it all automatically.

Program Diskettes

Now, that we've got all of that out of the way, we'd better get on with this month's program diskettes. The three diskettes this month include a printer enhancement program, a small accounting package and a diskette full of menu programs.

LQ - Printer Utility

LQ is Letter Quality and claims to allow you to get Letter Quality printing out of your dot matrix printer, even if your printer doesn't support letter quality.

LQ can be run as a memory resident accessory, operating behind your word processor or other favourite program, or it can operate in program mode. In program mode, LQ simply carries out it's job on a simple text file with embedded commands. In either mode, a software print spooler of up to 200k can be brought into operation if required.

Whilst it allows separate fonts, LQ also supports proportional spacing, extra large printing and graphics. These graphics will also allow for the printing of letterheads, if you are willing to put in the effort to design them. Seventeen fonts are available for you to use, although only four can be in memory at any one time. However, these fonts can be swapped in and out of memory as required.

Configuration and installation couldn't be simpler. If you have an Epson or compatible printer, you can use the configuration file supplied. If you have an oddball primer that isn't quite Epson compatible, it is possible to write your own configuration file. This is explained quite simply in the manual.

Installation of the other options is also simple. It is possible to change the fonts that load on startup, change the printer port that the output is going to, change the size of the print spooler, and also to change the popup keys if necessary. These popup keys are what is used in memory resident mode to tell LQ that you want it to start. After setting all these things, the changes can be saved, and are written to LQ, so that they come into operation any time that you use the program.

Some of the other things that you will need to know about LQ are as follows: LQ will work with PC Write, 11" or A4 paper is acceptable, and it will also accept single sheet or continuous feed paper. LQ also allows for the editing of character sets, and then for the saving of these modified character sets to disc for further use.

As you can see, these options mean that no one should have trouble getting LQ to work with their setup. The documentation included on the diskette is good, the donation asked for by the author is only US$35, and LQ occupies approximately 60K of memory. LQ comes on only one diskette.

PC Accounting

This diskette contains 4 separate accounting programs, although they all fit together. The programs on the diskette include PC-AR (Accounts Receivable), PC-AP (Accounts Payable), PC-GL (General Ledger), and PC-PR (Payroll). Although these are American programs, in almost all circumstances that wouldn't make any difference in Australia. The only program that it makes a significant difference in is the Payroll program, and then only with tax rates.

As all four programs are very similar, I will just give you a quick look at one program and then mention the differences if they apply.

All of the four programs work completely in RAM, so subsequently they are very fast. However, this also means that you must save your work regularly, as a power failure will wipe all data in memory.

All programs allow for the printing of various reports, each of course dependent on the program in use. There appear to be quite a lot of reports available and this will also allow for a hardcopy of all data to be kept.

The programs modify the bootup code on the keyboard to allow for the use of the numeric keypad for almost all purposes. Some data will have to be entered within the QWERTY section of the keyboard, but as with a calculator,

numeric data is entered through the keypad.

As all this data is in the computer, it appears to be a waste to use it only for accounting purposes. So all the programs also allow for the printing of mailing labels, complete lists of vendors, or single vendor labels.

The ESC key is a way out for you if you happen to get stuck. As with a lot of the other new programs being released, this feature is also incorporated here. So no matter how deep into the program you get, if you keep pressing ESC long enough, you will eventually get back to the main menu.

A configuration program is available to all registered users. This allows you to change the following parameters: colours, whether or not you have laser printer, the data drive, the accounting method used and the number of months to save. Some of these options can be called up on the command line, but they are rather complicated.

PC-GL is the general ledger program and allows for either a single entry accounting system or a double entry accounting system. All of the programs ask for a registration fee of US$35, and all four fit on the one disc. The documentation appears to be good, although it professes not to be able to teach you about accounting practices. Well worth looking at.

PD Menu Programs

This diskette contains five menuing type programs for you to look at. Although most of these programs are meant for hard disc users, a couple of them can be used with floppy diskettes.

The menuing programs on the diskette include the following:

POWERMENU
SHORTCUT
PCBOSS
AUTOMENU
STILL RIVER SHELL.

Whilst Powermenu and Automenu are really menu programs, the others can be classed as system shells. These programs sit over the top of DOS (very similarly to GEM), and allow you to carry out all your DOS command without having to know the correct syntax for all those DOS commands.

PCBOSS is almost a direct shareware copy of the commercial program 1DIR. Very easy to use, especially if you know your way around 1DIR. No documentation is available for PCBOSS, as it has an online help system included. The program occupies only 30k, including the online help. Can be loaded to be memory resident.

SHORTCUT appears to also be very similar to another commercial program, although I can't pin down which one it is. Documentation for this one is very good, running to approximately 48 pages. A bit larger in memory requirements than PCBOSS, but it also appears a little easier to learn.

Still River Shell is getting more up into the more complicated type of shell that is available. It is a lot more difficult to use, but is included here basically for you to try out.

Powermenu is a very colourful, very powerful, and very easy to set up menuing system. I find it the best program to use when I am setting up a hard disc system for a customer. It allows me access to all of the data files in the system, but if I need to keep the customer out of the system, I can do that also. The documentation is good, but after you have setup the first menu, you won't need to look at the documentation again.

This has been a quick look at these programs. The donations asked for the registration vary, from US$90 down to US$25. Have a look at all of them, and decide which one is for you.

As always, all of the discs mentioned in my articles are available. Cost is $10 for the first diskette, and $6 for any other diskette in the same order. To those of you writing for PC File III, it is no longer available and has been replaced by PC File+ (a two disc package). Send your orders to me at the following address:

C.J. Collins
The Amstrad User
1/245, Springvale Road
Glen Waverley 3150

Well that's it for this month. I've run out of ideas for command lectures, but no doubt I will find another obscure one for the next issue.
Until then, KEEP ON COMPUTING!

>PC HELP

Being at the 'sharp end', so to speak, of user enquiries, it has become patently obvious that there is a large number of Amstrad PC owners who are quite new to this style of machine and Basic programming. Even those who have moved up from CPCs or PCWs have stumbled. The manual supplied with your PC probably doesn't help either. So, to pave the way to an easier start with Basic2, we've put together this introduction.

Let's make it clear from the beginning - the version of Basic you are using is very fast. Running on the 8MHz, 8086 processor, it takes more expensive multi-user machines to beat it. If you don't believe that, take a look at the APC standard benchmark tests.

One of the most notable differences between the implementation of Basic on the Amstrad PC and others, especially to CPC or PCW upgraders, is the fact that line numbers are optional. In Basic2 they merely act as labels so don't necessarily define the sequence of execution of the program.

We digress, as nothing can be achieved without proper working discs to house programs and data.

Making a working disc

In fact, the aim is to create two discs; one a boot-up disc containing the first part of GEM and two; a non-system disc containing the GEM desktop and Basic2. While it is possible to get a GEM system and Desktop on one disc, this leaves little or no room for other applications such as Basic2. What you must remember is that the GEM start-up disc must be formatted as an MS-

DOS system disk and not as a DOS Plus disc as supplied with your machine. This is achieved by using the '/s' suffix after a format command issued from an MS-DOS disc. You may have already worked out that MS-DOS consumes less space in terms of memory and disc than DOS Plus, yet GEM still works quite happily.

We hope that it is not necessary to give a detailed explanation on how to create the discs as shown below. In this respect the manual is reasonably clear. However, you could refer to page 325 and use XCOPY which will enable you to copy the files together with the directory structure. In addition, if you have a single drive machine you can avoid RSI through disc swapping by creating a large RAM disc, copying the required files there and then back to the disc when complete. (Don't forget to put it back to 34k when you have finished).

You may notice, again to save space, that the calculator, print spooler and clock have been deleted. Take a look at page 159 of your manual for details of the Snapshot name change.

Two batch files are also required on the boot-up disc, namely AUTOEXEC.BAT and GEMRUN.BAT. You will probably find them easiest to create using RPED found on disc three supplied with your machine. Both these batch files should contain the commands identified in the box on the right.

Ready, set . . .

You should now have a boot-up disc with the first part of GEM, and another disc holding Basic2 and the GEM Desktop, the latter normally being referred to as a non-system disc. If you want to be really smart, turn to page 173 of your manual, boot up the system with your new discs, select the Basic2 directory by double clicking on it and then save the Desktop.

Ok, let's try a program. Re-boot then double click on Basic2, click on the edit window and type in the program shown in Listing One.

Although it's a short program, you may well make a mistake. To correct it, merely point the arrow to the error, click and the cursor will be placed in that position ready for the correction to

GEM BOOT DISC

```
 Directory of  A:\

COMMAND   COM    23612
GEMBOOT       <DIR>
GEMSYS        <DIR>
AUTOEXEC  BAT      179
MOUSE     COM     6984
RAMDRIVE  SYS     6566
CONFIG    SYS       61
GEMRUN    BAT        9
        8 File(s)

 Directory of   A:\GEMBOOT

.             <DIR>
..            <DIR>
SNAPSHOT  ACC    13312
SNAPSHOT  RSC     1408
GEM       EXE    64000
GEM       RSC     5390
        6 File(s)

 Directory of  A:\GEMSYS

.             <DIR>
..            <DIR>
METAFIL6  SYS     5120
GEMVDI    EXE     7680
AMSTRAD   SYS    39936
ASSIGN    SYS      739
        6 File(s)
```

BASIC 2 DISC

```
 Directory of  A:\

BASIC2        <DIR>
GEMDESK       <DIR>
GEMSYS        <DIR>
       3 Files(s)

 Directory of  A:\BASIC2
.             <DIR>
..            <DIR>
BASIC2   APP      81920
BASIC2   RSC      11546
PROGRAMS      <DIR>
       5 File(s)

 Directory of  A:\GEMDESK

.             <DIR>
..            <DIR>
DESKTOP  APP     46848
DESKLO   ICN      9054
DESKTOP  INF       511
DESKTOP  RSC     10332
       6 File(s)

Directory of  A:\GEMSYS

.             <DIR>
..            <DIR>
AMSLSS10 FNT      1522
AMSLSS14 FNT      2282
AMSLSS18 FNT      3238
EPSHTR07 FNT      2816
EPSHSS07 FNT      2582
EPSHSS10 FNT      4696
EPSHSS14 FNT      8546
EPSHTR10 FNT      4736
EPSHTR14 FNT      8448
AMSLTR10 FNT      1920
EPSMONH6 FNT     38912
AMSLTR14 FNT      2432
AMSLTR18 FNT      3456
METAFIL6 SYS      5120
OUTPUT   RSC     10502
DEFAULT  OPT       204
OUTPUT   APP     54352
      19 File(s)
```

▼ **Contents of AUTOEXEC.BAT File:**

```
echo off
mouse
if not exist c:\command.com copy \command.com c:\ >nul
set compspec=c:\command.com
if not exist c:\gemrun.bat copy \gemrun.bat c:\>nul
cd \gemsys
```

▼ **Contents of GEMRUN.BAT:**

```
c:gemrun
```

be made. Once you are satisfied that all is well, run the program by pressing F9 and watch in amazement. When you get fed up, stop the program by pressing a mouse button then start experimenting - different line styles or making the display multi coloured.

You may find some ideas in Listing Two.

"Trust her to send me the wrong sort of file"

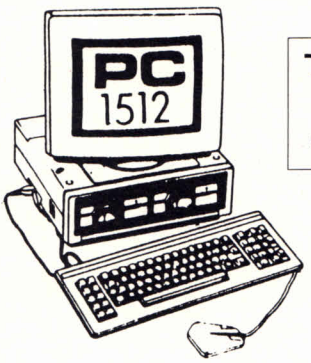
Listing One

```
CLS : WINDOW  OPEN
WINDOW FULL : OPTION DEGREES
y=2500 : d=2500
x=2500 : gosub patt
x=5700 : GOSUB patt
while button = -1 : WEND
END
LABEL patt
 FOR ang=0 TO 358 STEP 2
  LINE x:y, x-d*SIN(ang);y+d*COS(ang) STYLE 4
  REM try adding COLOUR (ang MOD 16)
 NEXT ang
RETURN
```

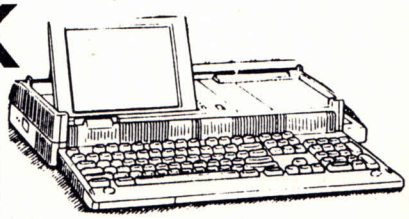
Listing Two

```
CLS : WINDOW  OPEN
WINDOW FULL : OPTION DEGREES
FOR n=10 TO 0 STEP -1
d=150*n
xc=4000 : yc=2500
x=xc-200*n : y=yc+100*n : GOSUB patt
x=xc+200*n : y=yc+100*n : GOSUB patt
x=xc+200*n : y=yc-100*n : GOSUB patt
x=xc-200*n : y=yc-100*n : GOSUB patt
NEXT n
while button = -1 : WEND
END
LABEL patt
 FOR ang=0 TO 358 STEP 2
  LINE x:y, x-d*SIN(ang);y+d*COS(ang) STYLE 4 COLOUR n
  REM try adding COLOUR (ang MOD 16)
 NEXT ang
RETURN
```


INFO-LINK



Talk to the Office



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Relocating Z80 Code, Part 1

by Petr Lukes

BASIC is flexible, but sometimes it is necessary to resort to machine language to carry out some tasks at reasonable speed or to perform tasks which cannot be done in BASIC (such as accessing sideways ROMS). The machine language must be stored in a reserved part of memory, and it helps if the routine is relocatable so that its placement does not interfere with other memory requirements.

Most auxiliary routines are short and any internal branching can be handled by relative jumps in the range of +129 to -126 bytes. Unfortunately we do not have relative CALLs, but the enclosed routine demonstrates how this lack can be overcome. It is CPC-specific, but it is probable that it could be adapted for the PCW which uses the same processor.

The Z80 processor implements eight RESTARTS, which are CALLs to locations in low memory starting at address 0000. Each restart location consists of eight bytes which can be used by the operating system to carry out its housekeeping tasks. The CPC O/S does not use RST 6, leaving a convenient fixed location which makes it possible to find the address of the current instruction.

Each CALL and its one-byte cousin RST leaves a return address on the stack and normally a corresponding RETurn takes this address off the stack and uses it to resume execution at the byte following the calling instruction. In our case the two bytes at the RST 6 location exchange the address which is pointed to by the Stack Pointer with the contents of the HL register [EX (SP), HL] and the 'JP (HL)' returns to the correct address to resume execution. This is effectively a return with a copy of the Program Counter (PC) in HL, and it allows us to jump to a subroutine, where the first three bytes increment the HL register twice to get past the two-byte instruction 'JR xx', and again exchange the top of the stack with HL. This leaves the correct address for the next RET as well as restoring the original value in HL.

The demonstration converts a two-byte binary number into hexadecimal notation and prints it. The length of the conversion routine does not really warrant implementing it as a subroutine, but it will serve as an example. Execution time and one byte could be saved by replacing the sequence 'CALL TXT_OUTPUT and RET' by 'JP TXT_OUTPUT', but the seemingly missing RET could obscure the program flow.

This implementation of relocatable CALLs using relative jumps is efficient, does not corrupt any registers, and should solve most problems. Relocatable CALLs and jumps outside the relative range, and buffer pointers, can be implemented by sacrificing two register pairs (HL or IX or IY for the current address, and BC or DE for the necessary increment), but complexity increases. This will be shown in RELOC2.

```
10 PRINT"RELOC1 Relocatable Z80 code LKS 871227"
20 DIM reloc1%(23)'Store for machine code
30 'Set up RST 6 with sequence  EX (SP),HL  JP (HL). RST 6 i
s available to the user and is a one-byte CALL 0030. Address
 of the byte following it is PUSHed on the stack.
40 'The two bytes at 0030,1 exchange the top of stack and co
ntents of HL. The JP (HL) is then equivalent to RET, but the
 original value in HL is on the stack and HL has a copy of t
he Programme Counter.
50 x$="ld hl,e9e3":DATA 21,e3,e9
60 x$="ld (0030),hl":DATA 22,30,00
70 'Example: convert a binary number to hexadecimal digits
80 'Get number into HL
90 x$="ld l,(ix+0)  ld h,(ix+1)":DATA dd,6e,00, dd,66,01
100 x$="ld a,h":DATA 7c
110 x$="rst 6":DATA f7
120 x$="jr Sh [equivalent to CALL Sh]":DATA 18,0d
130 x$="ld a,h":DATA 7c
140 x$="rst 6":DATA f7
150 x$="jr Sc [equivalent to CALL Sc]":DATA 18,0d
160 'Low byte, high nibble
170 x$="ld a,l":DATA 7d
180 x$="rst 6":DATA f7
190 x$="jr Sh":DATA 18,05
200 'Low byte, low nibble
210 x$="ld a,l":DATA 7d
220 x$="rst 6":DATA f7
230 x$="jr Sc":DATA 18,05
240 x$="ret":DATA c9
250 'Subroutine
260 'High nibble: rotate high bits into low bits
270 x$="Sh: rra rra rra rra":DATA 1f, 1f, 1f, 1f
280 'Common: return address on stack [HL points to byte foll
owing RST 6]
290 x$="Sc: inc hl  inc hl [point past the JR xx]":DATA 23,2
3
300 x$="ex (sp),hl [and stack it, recovering original HL]":D
ATA e3
310 x$="Sl: and 0f [zero high bits]":DATA e6,0f
320 x$="add a,90  daa  adc a,40  daa":DATA c6,90, 27, ce,40,
 27
330 x$="call txt_output":DATA cd,5a,bb
340 x$="ret":DATA c9
350 FOR a=0 TO 23:READ x$,y$:reloc1%(a)=VAL("&"+y$+x$)':PRIN
T a,x$y$
360 NEXT a
370 ON ERROR GOTO 430
380 PRINT:INPUT"Enter number -32768 to +65535 ";a:b=UNT(a)
390 PRINT"Converting decimal "a"to hex"
400 PRINT"Conversion by BASIC "HEX$(b,4)
410 PRINT"Conversion by m/l   ";:CALL @reloc1%(0),b:PRINT
420 GOTO 380
430 PRINT"Entry is outside integer limits":RESUME 380
```

Starfox and F-15 Strike Eagle

The reviews this month consist of two widely different battles - a choice between sophisticated alien zapping or flight simulated warfare

STARFOX

Reaktor
(Joystick or Keys)

I'll bet lots of you remember the Starstrike games. Number One was one of the earliest Amstrad shoot-em-ups and number two featured solid 3D ships. The team that brought you those games and did the conversion of Starglider calls itself Realtime, and this is the latest project.

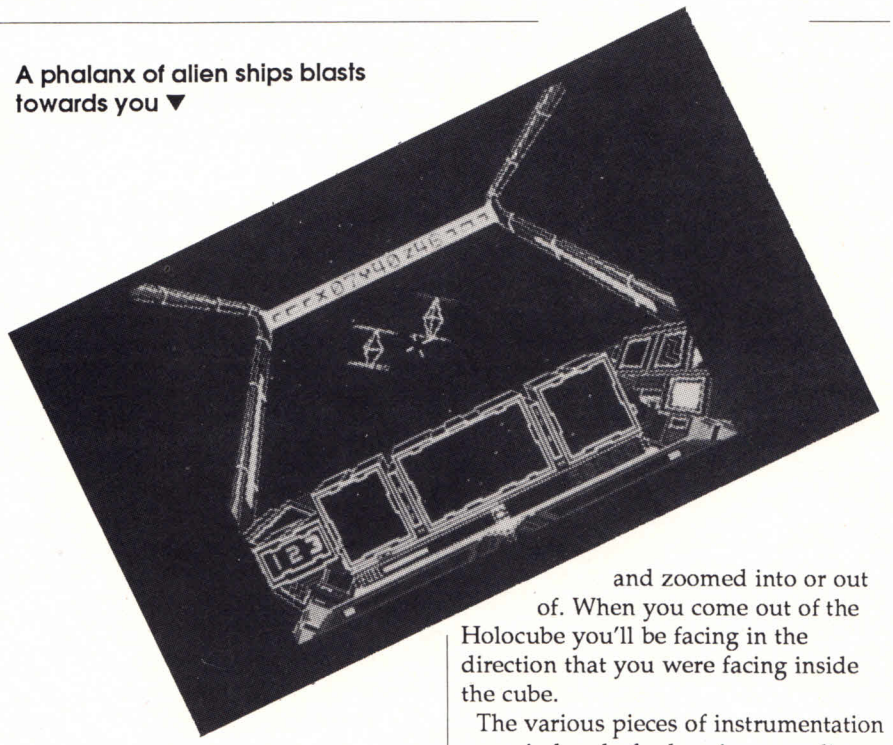
It's another game set in space and features filled-in 3D graphics similar to those in Starstrike II. It takes place within a cube called the Rubicon, where you have to complete eight tasks to get through the eight levels of play. The cube contains eight home planets, an invading planet, fuel ships, storms and an awful lot of hostile ships.

Your cockpit display provides information on your co-ordinates, weapon selected, fuel, speed and rear-view monitors. The alien ships come in several varieties - all solid and all fast. They attack in convoys, each convoy attacking in waves of one, two or three at a time.

You are initially armed with a weak laser but can upgrade your weaponry later. You'll need multiple hits with this to destroy ships, which explode in a satisfying ball of light. The task on the first level is to wipe out enough aliens, made much easier by a visit to a planet.

You first have to locate planets by flying near them - the instructions tell you how to find the first two. You can then activate an autopilot that flies you to the planet. You have to fly down a wormhole without damaging your shields against its sides, and dock with a mothership orbiting the planet. This graphic sequence is delightful, particularly when the mothership's tractor-beams pull you in stern first so that you first view the sequence in the rear monitors, and then are enclosed at the front.

A phalanx of alien ships blasts towards you ▼



The planets refuel the ship, replenish the shields and allow you to take on board more powerful weaponry. Each weapon produces a different graphic effect when used, but you can only find out their relative strengths through trial and error. This is important because on the next level the aliens will have adopted the weapon you used previously and developed a defence against it. This means you have to upgrade in the right order or get killed very fast.

Once the planets and alien convoys are detected they appear on the Holo cube, a three-dimensional map of the Rubicon which can be viewed, rotated and zoomed into or out of. When you come out of the Holocube you'll be facing in the direction that you were facing inside the cube.

The various pieces of instrumentation come in handy for keeping you alive. There's the enemy-locate option that automatically swings you to face an incoming ship, very useful because they're quite difficult to track otherwise. The fuel and shield indicators show you when you should run for safety or try to find a fuel ship. These provide another good docking sequence as you refuel through the nose of the ship.

The combat is enjoyable and testing, but the crucial aspect is the missions you're set. On the second level you have to find an electron storm and report its location to one of the planets, as well as bumping off a good few aliens. The game now becomes a real battle not just to shoot ships but to complete tasks and get through the levels, not forgetting the strategic side of choosing weapons. A very slick and enjoyable package, stuffed full of great graphics and gameplay.

F-15 STRIKE EAGLE

Microprose
(Joystick or Keys)

You may be forgiven for thinking "Oh, no, not another flight simulation," but Microprose has come out with another classic. To my mind this one incorporates the skill and agility needed to fly, with the excitement of air battle.

What sets this aside from the others is the four skill levels: arcade, rookie, pilot and ace. Arcade doesn't give a true flight simulation but lets you get used to the aircraft's systems. The other three levels allow true flight simulation with the line of the horizon changing as you bank the aircraft.

Your plane's cockpit is very sophisticated with all the latest technology crammed into it - there's even an ejector seat. You have a radar with three different range options. There is a display of weapons status showing how many of the on-board weapons you've used. It also shows when auxiliary fuel tanks have been used. This is very useful, as you might want to drop them to make your remaining fuel last longer. You also have a Horizontal Situation Display showing a map of the area over which your mission will be flown.

Your purpose is to fly eight missions, described fully in the manual. You can take any of the first seven missions but must complete the seventh mission to be able to try the eighth. The first mission is set in Libya in 1981. You must patrol the area and engage with any hostile aircraft only after they have shown some sign of attack. It doesn't really matter whether they engage you first or not - you won't be penalized for it.

The job is to fly over the enemy air-command centre and blow it up You do this by arming your bomb. This will produce a small web in the middle of the screen. When the triangle, which represents the target, is in the sights, press Fire. Then you must fly back to base.

There is no landing or taking off in this flight simulation. It's just mid-air flight and the massacre of as many enemy bases and planes as possible. Your fuel is limited and will deplete at a rate comparable to your speed. You have ten speeds and an "afterburner" option. This will increase your thrust to 100%. If you need rapid deceleration you can use speed brakes.

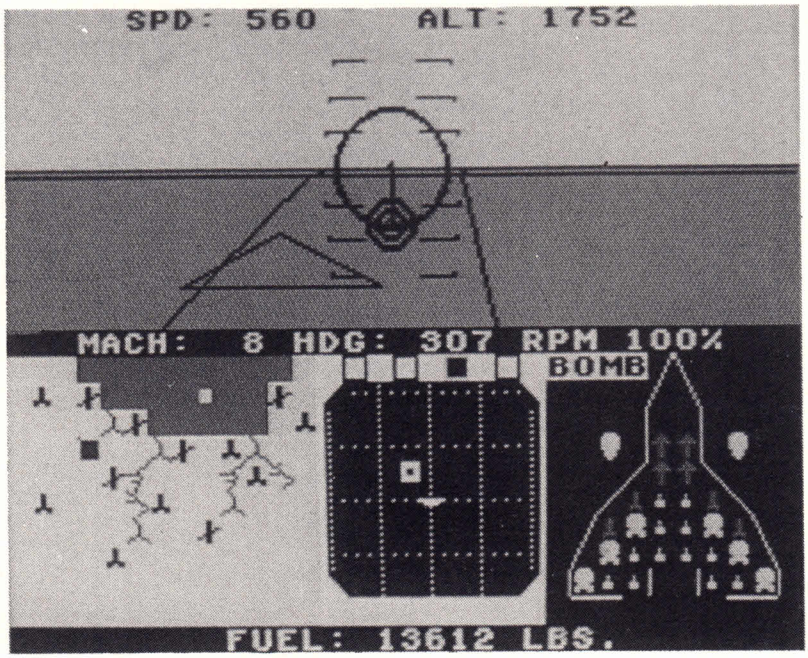
Enemy planes will deploy air-to-air missiles, which you must avoid or confuse. This also applies to surface-to-air missiles. You have an on-board ECM jamming system which will confuse incoming radar-homing missiles. You can release a flare to divert heat-seeking missiles. You can engage enemy aircraft with medium-range missiles, short-range missiles or cannon gunfire.

The second mission is to fly into Egypt (1973) and destroy the command centre. The rest of the missions take the same format steadily getting harder. The third is Haiphong 1972, then Syria 1984, Hanoi 1972, Iraq 1981 and the Persian Gulf 1984. I didn't pass this on the "arcade" level.

The politics leave a lot to be desired. I am sure that Microprose released it in the UK (a conversion of the American original) only after the present UK government allowed British bases to be used in the recent American raid over Libya - oh, didn't I tell you? That's the eighth mission. You must re-enact the part played by the F-15 in that conflict.

I personally found this game extremely exciting. At first I thought it just plane sailing, but when "incoming SAM" messages and the like started to appear on the screen, my blood started to race. When I got hit, the plane became extremely difficult to control and I battled with it all the way back to the base - but ran out of fuel just before reaching it. I ejected and was saved by my comrades.

The ground underneath you is a grid scrolling left to right and up and down. All targets appear in vector graphics. As I say, I liked it. You might think me a flight-simulation fan. You're right.



▲ Your F-15 engages over enemy territory

Machine Code graphics

This month Gary Koh moves onto creating simple graphics in machine code

This month in part 3 of our series on graphics, we will be looking at simple machine code routines and at the graphics routines in the firmware.

Now we start to get down to the more interesting part of the series. Basic is rather too slow for a lot of the things we need to do. Because of this and other things, machine code routines and programs will be presented in this series from now on. A knowledge of machine code is not necessary to be able to understand this since most of the routines will be self-contained and loaded into memory with basic programs.

To start with we will be looking at very simple machine code programs that call routines in the Firmware. 464 owners have 32 kb of ROM inside their machine. 16kb of this is taken up by Basic. The other 16 kb is occupied by the Firmware. There are over 250 routines in the Firmware. These routines are divided into 9 different sections. The 3 sections we are interested in are the Text VDU, the Graphics VDU and the Screen Pack.

Taken collectively these are known as the Display system. The Display system takes up almost 6000 bytes of the firmware. 4000 bytes of this is code and fixed data. The other 2048 bytes is data for the character matrixes. Adding to this the 16kb taken up by the screen and 380 bytes of workspace in RAM you can see that it takes up a lot of memory.

The Graphics VDU takes care of graphics. The Text VDU takes care of the text display. The routines of the Screen Pack are used by both the Graphics VDU and the Text VDU. The sections we will be concerning ourselves with this month are the Graphics VDU and the Text VDU. The Screen Pack deals mainly with low level functions like scrolling, calculating screen addresses etc. Unless you want to use your own graphics routines and bypass the Graphics VDU and Text VDU it isn't much use using the routines in the Screen Pack.

(The month we will be looking at 8 routines. Instead of having 8 separate small programs, all the routines are placed into the one program, each routine is called a Sub Routine. Six of the Sub Routines need to call up Sub Routine 1. Sub Routine 1 is the routine that Pokes all the necessary machine code data into the correct locations, - Ed).

Sub Routine 2 & 3 are pretty trivial listings since they emulate the Plot and Draw statements in Basic. In fact most of the Firmware routines are subroutines that are called this way. If you have an assembler you might like to type in the mnemonics which are to the right of the op-codes. (In other words the hexadecimal numbers just after the Data statements.) If you don't have an assembler just ignore the strange words in the data statements and don't bother to type them in.

Although they may be instructive they don't perform much of a function. Since there are equivalent commands in Basic to almost all of the routines in the Text and Graphics VDU there is not much use in simply writing machine code routines to call them. What they do provide are basic "building blocks" which can be used to write other graphics routines (eg. a routine to draw a circle would use the GRA Plot Absolute routine from the firmware).

Sub Routine 4 emulates the 664 and 6128 command `COPYCHR$`. For those who are still bemused the machine code routine in List4 simply reads a character from the screen.

Sub Routine 5 is a good example of a routine that uses the basic "building blocks" (eg. the Firmware graphics routines) to draw a more complicated shape. In this case it is a filled box. However, you don't need to stick to shapes. Other types of routines are flood fill routines, sprite routines and graphing routines. (We will be covering these things in greater detail in a later part of the series.)

The next listing, Sub Routine 6, is actually more of a self-contained program than a graphics routine. This program gives an indication of how fast machine-code routines can be. No assembly listing is provided for this program as the assembly listing is too long. Sub Routine 7 is a Basic version of Sub Routine 6. Just as a indication of speed Sub Routine 6 takes 1.87 seconds to run and Sub Routine 7 takes 12.64 seconds. Sub Routine 6 is 104 bytes long and Sub Routine 7 without the Rems is 151 bytes long. So overall Sub Routine 6 is 6.6 times faster and 1.45 times more compact than Sub Routine 7.

(Note: the timings might vary from machine to machine.)

The last Sub Routine this month is a plot algorithm given in Basic. Now you may ask, who in their right mind would write a plot routine when one is already nicely provided for you? Well the simple answer is speed. The plot routine given on the Amstrad is what I will call a "top of the range" plot routine. Although it is very nice and has extra features like masking there is one major tradeoff - speed.

Some types of routines (eg. fill routines) don't require all these extra features. This is where the "low range" plot routines come in. They may lack a lot of features but they are fast. Normally these sort of routines aren't used except in specific graphics routines that require speed. To help this we will look at Sub Routine 8.

This Sub Routine has been over-REM'd and long explanatory variables used so it is easy to understand. Now, the first thing you have to do is find the screen address of the byte where the point is to be plotted. At this stage the routine aborts if it finds that the co-ordinates are off the screen.

The next thing it has to do is somehow plot the point. To do

this involves a lot of masking. The first thing it does is to extract the pen mask from a pen mask table. Then the pixel mask (which is also extracted from a table too) is masked about 4 or 5 times with the pen mask and the screen byte. The result is then transferred to the screen.

Normally if this routine was used in specific graphics routines it would be customised so it would work alongside the routine. Depending on the type of routine it could also be "integrated" into it. This may have been quite hard to understand. Until I start introducing routines which actually use the alternative plot routine I won't be able to explain in great detail some of the things I have said.

There are two machine code routines used. These routines find the screen offset and pen number. The routines each return a value which affects the way the point is plotted onto the screen. Oh yes, I forgot to say this. The routine only works in mode 1 (to help shorten and simplify things) and uses the present graphics pen colour to plot the point (you can't pass the colour to be plotted to the routine).

One final thing. Extract the lines 1340 to 1414, remove the RETURN in line 1410 and renumber the program so it starts at ten. This routine will be used at a latter stage in this series to Poke the data required for the machine code programs to work. (More on that in coming months).

GARY'S GRAPHICS GLOSSARY

PIXEL MASK - **In mode 1 the 2nd pixel in a byte would occupy the following bits (marked by an *) - 0*000*00. Therefore the pixel mask for the 2nd pixel in a byte in mode 1 would be 68. The pixel mask is masked with the pen mask to extract the portion of the byte that directly relates to a certain pixel.**

PENMASK - **This is a value that is masked with the pixel mask. The pen masks for pens 0-3 in mode 1 are 00000000, 00001111,1111000, 1111111 respectively. If the second pen mask value is AND'd with the pixel mask given in the pixel mask definition above you get 00000100. However, because of certain other factors the pixel mask and pen mask have to be OR'd and XOR'd several times with the screen byte.**

```
1000 ' Machine Language Examples
1010 ' Of Graphics.
1020 ' Refer To Text.
1030 ' By Gary Koh.
1040 ' The Amstrad User April(1988)
1050 '
1060 MODE 2
1070 PRINT"SELECT ROUTINE TO EXECUTE"
1080 PRINT"2 ROUTINE TWO."
1090 PRINT"3 ROUTINE THREE."
1100 PRINT"4 ROUTINE FOUR."
1110 PRINT"5 ROUTINE FIVE."
1120 PRINT"6 ROUTINE SIX."
1130 PRINT"7 ROUTINE SEVEN."
1140 PRINT"8 ROUTINE EIGHT."
1150 a$=INKEY$:IF a$="" THEN 1150
1160 aa=(ASC(a$)-48)-1:IF  aa>7 OR aa<0 THEN 1150
1170 ON aa GOTO 1180,1200,1220,1240,1260,1280,1290
1180 RESTORE 1470
1190 GOSUB 1340:GOTO 1460
1200 RESTORE 1560
1210 GOSUB 1340:GOTO 1550
1220 RESTORE 1730
1230 GOSUB 1340:GOTO 1670
1240 RESTORE 1830
1250 GOSUB 1340:GOTO 1810
1260 RESTORE 2060
1270 GOSUB 1340:GOTO 2050
1280 GOTO 2230
1290 RESTORE 2620
1300 GOSUB 1340:GOTO 2330
1310 '
1320 ' Loader for Sub Routines (2 to 8)
1330 '
1340 MEMORY 38000:MODE 1
1350 READ length,cheksum
1360 FOR a=38001 TO 38000+length
1370 READ byte$
1380 byte=VAL("&"+byte$)
1390 cheq=cheq+byte
1400 POKE a,byte
1410 NEXT:RETURN
1420 IF cheksum<>cheq THEN PRINT"Error In Data..":END
1430 '
1440 ' Machine code version of PLOT 320,200 (Sub Routine 2
)
1450 '
1460 CALL 38001:END
1470 DATA 10,1142
1480 DATA 11,40,01 : LD DE,#140
1490 DATA 21,C8,00 : LD HL,#C8
1500 DATA CD,EA,BB : CALL #BBEA
1510 DATA C9       : RET
1520 '
1530 ' Machine code version of MOVE 1,1:DRAW 640,400 (Sub
Routine 3)
1540 '
1550 CALL 38001:END
1560 DATA 19,1800
1570 DATA 11,01,00 : LD DE,1
1580 DATA 21,01,00 : LD HL,1
1590 DATA CD,C0,BB : CALL #BBC0
1600 DATA 11,80,02 : LD DE,#280
1610 DATA 21,90,01 : LD HL,#190
1620 DATA CD,F6,BB : CALL #BBF6
1630 DATA C9       : RET
1640 '
1650 ' Read a character from screen (Sub Routine 4)
1660 '
1670 PRINT"AMSTRAD"
1680 FOR a=5 TO 7:LOCATE a,1
1690 CALL 38001:LOCATE a-4,5
1700 PRINT CHR$(PEEK(38008));
1710 NEXT:PRINT"iation"
```

```
1720 END
1730 DATA 8,1007
1740 DATA CD,60,BB : CALL #BB60
1750 DATA 32,78,94 : LD(STORE),A
1760 DATA C9       : RET
1770 DATA 00       : STORE : DEFB 00
1780 '
1790 ' Machine code routine to draw a coloured square (Sub
 Routine 5)
1800 '
1810 WHILE INKEY$="":MOVE INT(RND*640),INT(RND*400)
1820 POKE 38002,INT(RND*4):CALL 38001:WEND:END
1830 DATA 33,4974
1840 DATA 3E,02    : LD A,2
1850 DATA CD,E4,BB : CALL #BBE4
1860 DATA CD,C6,BB : CALL #BBC6
1870 DATA E5       : PUSH HL
1880 DATA D5       : PUSH DE
1890 DATA E1       : POP  HL
1900 DATA 01,30,00 : LD BC,48
1910 DATA 09       : ADD HL,BC
1920 DATA CD,CF,BB : CALL #BBCF
1930 DATA E1       : POP HL
1940 DATA E5       : PUSH HL
1950 DATA D1       : POP DE
1960 DATA EB       : EX DE,HL
1970 DATA 01,36,00 : LD BC,54
1980 DATA 09       : ADD HL,BC
1990 DATA CD,D2,BB : CALL #BBD2
2000 DATA CD,DB,BB : CALL #BBDB
2010 DATA C9       : RET
2020 '
2030 ' A graphics demo in machine code (Sub Routine 6)
2040 '
2050 CALL 38001:END
2060 DATA 104,11614
2070 DATA 3E,02,01,1A,1A,CD,32,BC
2080 DATA 3E,01,CD,0E,BC,11,64,00
2090 DATA 21,C8,00,CD,CF,BB,11,64
2100 DATA 00,21,C8,00,CD,D2,BB,3E
2110 DATA 03,CD,E4,BB,3E,01,CD,DE
2120 DATA BB,CD,DB,BB,11,00,00,21
2130 DATA C8,00,01,00,00,D5,E5,C5
2140 DATA EB,09,EB,CD,EA,BB,3E,42
2150 DATA CD,1E,BB,C1,E1,D1,C0,03
2160 DATA 03,2B,2B,E5,C5,37,3F,01
2170 DATA 62,00,ED,42,C1,E1,20,DD
2180 DATA 13,13,13,13,E5,37,3F,21
2190 DATA CC,00,ED,52,E1,20,C8,C9
2200 '
2210 ' Basic version of Sub-Routine 6 (Sub Routine 7)
2220 '
2230 INK 2,26:DEFINT x,y,c:MODE 1
2240 ORIGIN 0,0,100,200,100,200:CLG 3
2250 FOR x=0 TO 200 STEP 4:c=0
2260 FOR y=200 TO 100 STEP -2
2270 PLOT x+c,y,1:c=c+2
2280 NEXT:NEXT:END
2290 RESTORE 2610
2300 '
2310 ' Plot algorithm in Basic (Sub Routine 8)
2320 '
2330 GOSUB 2520
2340 FOR d=1 TO 100:x=INT(RND*640):y=INT(RND*400):PLOT 800
,0,INT(RND*4):GOSUB 2350:NEXT:END
2350 r=FIX((x MOD 8)/2):x=INT(x/8)
2360 offset%=0:CALL 38009,@offset%
2370 y=y/2:c=y:y=65408:FOR xc=1 TO c
2380 y=y-2048
2390 IF y<49152 THEN y=y+16304
2400 NEXT xc
2410 IF y<49152 OR y>65535 THEN STOP:RETURN
2420 y=y+x+offset%+(65535*offset%<0)
2430 CALL 38001:pennumber=PEEK(38008)
2440 penmask=penmask.table(pennumber)
2450 pixelmask=pixel.table(r)
2460 screenbyte=PEEK(y) AND (255-pixelmask)
2470 penmask=pixelmask AND penmask
2480 screenbyte=screenbyte OR penmask
2490 POKE y,screenbyte
2500 RETURN
2510 ' Initialize data tables and machine code
2520 DIM penmask.table(3),pixel.table(3)
2530 RESTORE 2580
2540 FOR a=0 TO 3:READ mask$:penmask.table(a)=VAL("&"+mask
$):NEXT
2550 FOR a=0 TO 3:READ mask$:pixel.table(a)=VAL("&"+mask$)
:NEXT
2560 RETURN
2570 ' Data for pen masks and pixel masks
2580 DATA 00,F0,0F,FF
2590 '
2600 DATA 88,44,22,11
2610 ' machine code routines
2620 DATA 22,2895
2630 DATA CD,E1,BB : CALL #BBE1
2640 DATA 32,78,94 : LD (STORE1),A
2650 DATA C9       : RET
2660 DATA 00       : STORE1: DEFB 00
2670 '
2680 DATA CD,0B,BC : CALL #BC0B
2690 DATA EB       : EX DE,HL
2700 DATA DD,6E,00 : LD L,(IX+0)
2710 DATA DD,66,01 : LD H,(IX+1)
2720 DATA 73       : LD (HL),E
2730 DATA 23       : INC HL
2740 DATA 72       : LD (HL),D
2750 DATA C9       : RET
```

Viatel as a postman

Kevin McLean continues his series on Viatel describing a few more of the services available

Electronic Messages

Being able to send and receive messages to other interested Amstrad, users or any computer for that matter, across Australia is a very handy tool indeed. All that needs to be known is the person's Viatel number, which is his/her phone number with the 0 moved....eg. in Brisbane the phone might be 07588942...viatel...75889420. Failing that, Viatel has a directory search available. With 20,000 users you have a lot of numbers! Just type the person's name and hit <return> and viatel's vax does the rest.

The beauty of electronic messaging can be demonstrated by an example. If you knew someone in Perth and found they'd left a message on for you a reply could be typed and sent instantly. When requiring a reply it pays to let the other end know when you will be on-line. Using this system it is possible to both stay on line and send short "packets" of info back and forth. It might be easier to ring up if the communication is long or involved, but for a short reply 5c per message is better. (as long as you can type reasonably!!) Some software allows off-line composing of messages, so when you connect, the message can be loaded as a file from disc. Special XMAS, GREETING, GET WELL, ETC cards can be sent for the same price roughly.

Computer Products

*17 connects to microcomputing which has a large amount of different computer products. These range from hardware to pencil sharpeners. I usually connect to see if any new companies are offering Amstrad software. There is only one at present. Viatel Computers in Victoria now have an Amstrad related BBS for those down south...03-2883599. Classified ads are good value for those looking to up-grade or sell their computers. The whole range of associated computer products is available through this viatel number and it pays to have a notebook with commonly accessed numbers, so you can go directly to the subject you are chasing. (I use the back of the viatel magazine!!) Books on how to use various programs more efficiently are available from the various vendors.

Sharemarket

There are a number of brokers who have joined Viatel and they offer a wide range of services. Moneywatch has "umbrella-ed" a lot of these brokers and for a joining fee you can access their services.

Sydney and Melbourne exchanges are monitored by Moneywatch and updated every 15 minutes or so. It costs 10c per security and again it pays to have a list of the companies you want to check handy. Some communication software allows downloading of various pages to disc for later perusal. Brokers differ in their idea of value for money and some have minimum charge fees for telebroking.

Apart from checking individual securities Moneywatch offer the PORTFOLIO MANAGER, which updates your shares automatically. (The arvo paper, a pad and pencil might be just as easy!!) For up to the minute fluctuations when buying or selling, checking with the computer might ease the mind, but I suppose that's what brokers are payed for!! TELEBROKING is a part of the services offered whereby orders for buying or selling shares can be placed from home or office. Some brokers have lowered their usual 2.5% fee to attract customers. In connection with bank services some telebroking can be done from home and payed for by bankcard through a bank service called telebank. A lot of these services depend on the individual as to whether they think it would be viable or not. If a person had a large number of securities a separate service called INFORMATION EXPRESS might be better to tap into. Accessed through a modem this service is more for the professional.

Banking

Bank computers can be accessed through Viatel to check balances and / or statements. Transactions can also be carried out if a joining fee is paid to the bank....(yes, yet another fee).

Tele-Banking Rates For Commonwealth Bank

150	Transactions/month = $2 each
150+	Transactions/month = $6 each
$10	Keyboard Hire/month
	+ Normal time charges.

Money can be transferred from one account to another (buying shares for example). Tele-shopping can be achieved on Viatel if connected to a bankcard service. SECURITY is the main worry here. Some recent happenings leave a little to be desired as far as the banks go. After all it is our money and THEY are the ones who are pushing for all these services to make THEIR lives easier, not ours. Up to the minute interest rates and investment advice can be obtained as well.

Travel

Land, sea and air travel services can be accessed through Viatel. Bookings can be made and trips paid for if required (and connected to all the right services). It might be easier to use the phone and let the travel agent do all the work, though. Interstate bookings of motels might be handy if planning a long trip with a lot of stops. Latest air fares can be checked and schedules from various towns and cities can be accessed.

Well that's the end of this lot, I hope I haven't confused too many people. The main thing to remember with Viatel is that time is money in connection fees. If you can get on-line and do all the things you want quickly I think Viatel could be worth it's money.

Adventurer's Attic

Philip Riley talks about a new Basic from Holland plus we have our regular Questions and Answers

As promised in the last Adventurers Attic this month we have something brand new, not yet seen in Australia. We are going to take a look at a new Basic that has been developed in Holland by Lirpa Loof Software, and called, believe it or not, ZIPPY Basic. No, we do not know what Lirpa Loof actually means. If we have any Dutch readers out there perhaps they could let us know.

Now you may be saying to yourself what am I doing talking about a new Basic in the adventure column? Well this Basic has some rather new ideas that may well benefit adventure writers everywhere. You see the Dutch have developed a Basic that requires no spaces in the programming, Zippy can in fact tell the difference between a command and a variable. This little feature alone cuts down the amount of memory used in a program considerably, remember each space takes up one byte of memory.

Apart from this what else can you expect from Zippy? Well, the graphics commands have been remodelled to work in a completely different manner. For instance this line in Locomotive Basic:

```
10 MOVE 100,100:DRAW 100,200:DRAW
200,200
```

can be changed to:

```
10 MOVE100,100:DRAW100,200,200,200
```

As you can see you only need one DRAW command to draw the two lines, Zippy will automatically move along the numbers in pairs and draw the lines needed. If you wish to state the ink to be used then this must be put within square brackets []. You only need to do this after the first x,y co-ordinates, after that all the lines will be drawn in that ink unless a new ink is specified.

Two new commands have been added to the graphics line up. These are BOX and CIRCLE. They do, rather obviously draw boxes and circles to the size specified by you.

```
PAINT x,y,[ink]
```

Rather obvious, it's a fast fill, care must be taken with this command or it will just go right on past the screen and slowly fill the rest of memory with your chosen colour. The x,y co-ordinates state the location that the fill will start from.

Multiple POKES are next on the list of new features. What are multiple POKES? Well to poke to consecutive memory locations in Locomotive Basic requires two POKE commands. With Zippy all that is required is:

```
POKE memory location,32,32
```

The memory location should be the lower of the two to be poked, the first number will be poked into that memory location and the second number will be poked into the highest location. You may have as many pokes from the one command that line length will allow, but of course they must all be in consecutive order.

Another new command is LAPRINT, this allows you to magnify a character vertically and horizontally to any size on the screen and to rotate it to any one of three positions (not including normal position). This allows you to print characters up the side of the screen as well as upside down.

RENAME is available only on the disc version and will rename a file on the disc.

Another useful command is KEYLIST. This will give you a list of the redefinable keys on the numeric keypad, very useful for all those people out there who redefine the keypad and then cannot remember which key to press for a particular function.

ZIPPY also contains a SEARCH command that will search through the Basic listing for a character or group of characters. When an occurrence of the characters is found the line is displayed on the screen, press any key to continue the search or the escape key to break out of the search.

As you can well imagine ZIPPY takes up a little more room in memory due to the added commands but still leaves just a little under 39K of memory free. Oh yes I nearly forgot, ZIPPY as his name implies is much faster than Locomotive Basic and compares in speed to LASER BASIC. ZIPPY is not yet available in Australia but every effort will be made to make it available to the Australian user. All in all it is a nice easy basic to use (unlike Laser Basic). The new style of commands may take a little getting used to but the savings in memory more than make up for any teething problems that may be experienced at the beginning. I am sure that we should have more news on this Basic next month and we will certainly let you know if we have.

Due to the fact that everybody has been finishing their letters in a rather boring fashion lately I have run out of finishes for the column. I have been having nightmares just trying to think of a way to finish off this month. Even now as I type I can see no end in sight, just an endless torrent of words that don't seem to be leading anywhere. I can't keep going on like this the editor won't like it. And yet still I cannot think of a big finish. Oh well I suppose there is only one thing for it, a little finish, but wait, what sort of a little finish should I use, oh no here we go again. My fingers

are going mad over the keys, but wait here comes something, yes a word is appearing in my mind, WOW ! - why didn't I think of this before. What a small finish it is yes here it comes now it has just reached my finger tips and is about to be typed, almost there now, not long to go here it is .....

GOODBYE.

QUESTIONS

And so on to the questions for this month, and the first one to raise its ugly head concerns Jewels of Babylon. Richard Jacquemin would like to know if it is possible to get back to the waterfall from the ravine.

The next two come from Craig Woodbridge and concern Seabase Delta. How do you get the hen to lay an egg and how do you get the cannonball out of the cannon?

Here's an oldie but a goody, Mordens Quest. S.A. Mah would like to know how to make the air in the aqualung last longer?

Here's another one from Richard who would like to know where exactly is the stalk in Return to Eden as he cannot find it?

Lloyd Thamm is having trouble finding a light in the Pawn. He has managed to get past the boulder and talked to the monk, but cannot find the light to go into the tree house.

Lloyd would also like to know how you leave the pod without drowning in the game Planetfall?

Chris Turnbull is having great difficulty killing the wizard in Knightlore. He has found the wizard walking around the cauldron and would like to know how to kill him. At this point in the game he has 10% and would like to know how to increase on this percentage.

More questions from S.A. Mah, this time concerning Imagination. Firstly how do you divert the dogs outside the airbase? How can you drink the elixir of strength in the citadel of the lords of half past nine? Can the large bells in the bell tower be rung? What is the "old and tasty" thing the bat in the caverns of doobris desires to devour? How can you take the metal yoyo from the lonely child of mildew (I suppose you would take candy from a baby as well, if you had the chance)? and finally what can you do with the shivering cow and its (good grief) udders, he has tried to milk the bovine but to no avail.

Douglas Mansell has a question for Mindshadow. What should he do once he has disposed of Jared (in part 2). Yes he has read the message but when he types in "THINK WILLIAM" it just says "There is something there".

Final question for this month is from Richard and concerns Hacker. He is having trouble when the security satellites have been activated and are sending out the security messages. No. 4 is the big problem when it asks for the location of the test site what should he do?

ANSWERS

Douglas Mansell has some answers for people who are sunk in Subsunk. To get the key off the shelf above the mattress wear the strainer from the kitchen and then type "jump". The second half of the map is under the dust at checkpoint Charlie and to get the aerial into the torpedo tube you will need to spread butter in the tube.

And that, as they say, is that, not much this month. Come on you lot we want more if we are going to take over the mag completely (a secret plot that is being hatched up in the attic). Now, before we go, forget the bicentennial because adventurers attic is two years old this month, so all you people out there who have contributed to the column pat yourselves on the back because we have made it this far. But we still need more letters if we are going to live to be three. You are near the end of the mag now so why not sit down and write a letter to us.

Adventure Helpers

Often we have been asked to start an adventure contact list in which we publish the names and addresses of readers who have finished particular adventures. Readers will then be able to write to these people with their problems and with any luck you should get an answer from them rather quicker than through the column. We will be starting next month with this service, and anyone who is interested should write to us with a list of the games that they have completed and please don't forget to put your address on the letter as well. We will have more on the subject next month.

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Hint Sheet

ZORK 1

THE GREAT UNDERGROUND EMPIRE

From Nick Watkin

Object: To collect the 20 treasures of Zork. This is not as easy as it may seem, some are just lying around, waiting to be picked up while others require the use of a little brain power to be added to the collection.

In the Beginning: Take a good look around the countryside surrounding the house. Pay particular attention to the trees.

House: Not all of the windows are boarded.

Living Room: What a nice carpet. As the name implies, a trophy case only has one purpose.

Dome Room: A rope would be useful here.

Egyptian Room: Take Sarcophagus to alter and pray.

Altar: Read all of the black book.

Loud Room: In one word, Describe the rooms acoustical effect.

Dam: If the green bubble on the control panel is glowing then turn the bolt, but you can't do it with your hands.

Thief: Let him steal the jewelled egg. Don't try to open it yourself.

Dam Base: You need a pump to inflate the pile of plastic. Drop all sharp objects before boarding the boat. If you should puncture the boat, then gunk will patch the hole.

Bat Room: Vampires and garlic never did mix too well.

Gas Room: No naked flames.

Shaft Room: Put screwdriver, ivory torch and coal in basket.

Coal Mine: Dropping useless objects helps. Check for downward passages.

Slide Room: The slide goes to a familiar place. Take the ride and see for yourself.

Frigid River: The red boy is more than it may seam.

Landing River: Leave the river now or pay the price.

Sandy Cave: Dig four times.

Aragin Falls: Wave the scepter.

Maze: Try dropping more useless objects. This one is not easy to make a map of, but it can be done. All directions work. (N, E, S, W, NE, SE, SW, NW, U and D).

Cyclops Room: Give him the lunch and then the bottle.

Thieves Room: Kill the thief with the nasty knife.

Machine Room: Put coal in the machine and turn machine on. You can't work the switch with your hands.

Grate Room: Use the skeleton key.

Clearing the Grate: Follow the ceremony mentioned in the black book, but drop the candles before ringing the bell. You need matches to light the candles and you must be holding the candles to light them. Don't take the torch and turn the lamp off before attempting the ceremony or it won't work.

Mirror Room: Try touching a mirror.

General Hints: Conserve battery power as much as possible. Praying at the alter will restore you to life. (If you are careless enough to lose it in the first place). Make sure you put all of your treasures in the trophy case or you won't find the last one. Anything left lying around the underground empire has a nasty habit of moving around on it's own accord but once the thief is dead things stay put.

Don't go into any dark places without a light.

Make an accurate map as you go through the underground empire.

Continuing on with our tradition, this hint sheet earns Nick a cheque for $25. Why not cash in on your experience and send your solutions (but don't give the whole game away) to:

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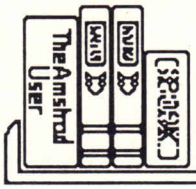

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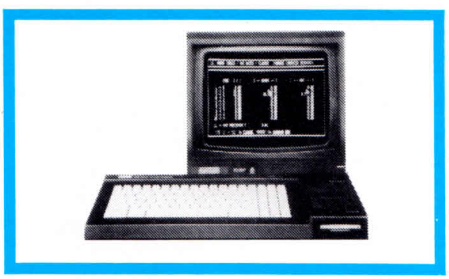

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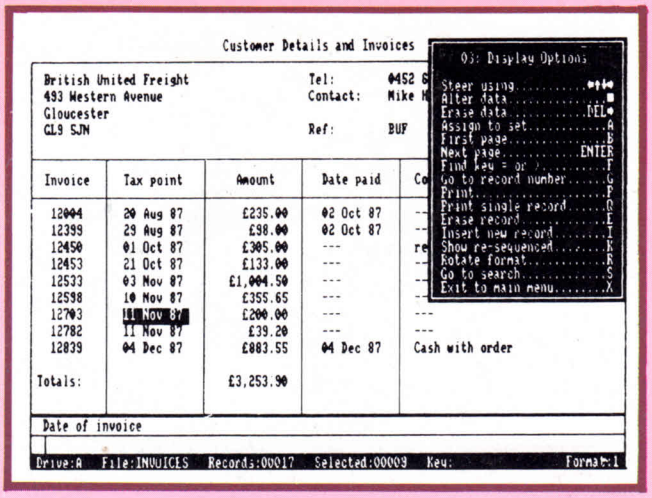

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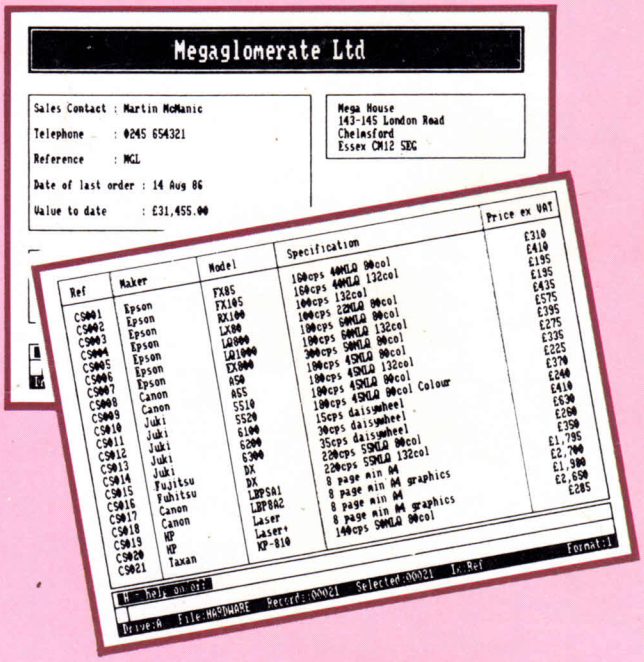

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