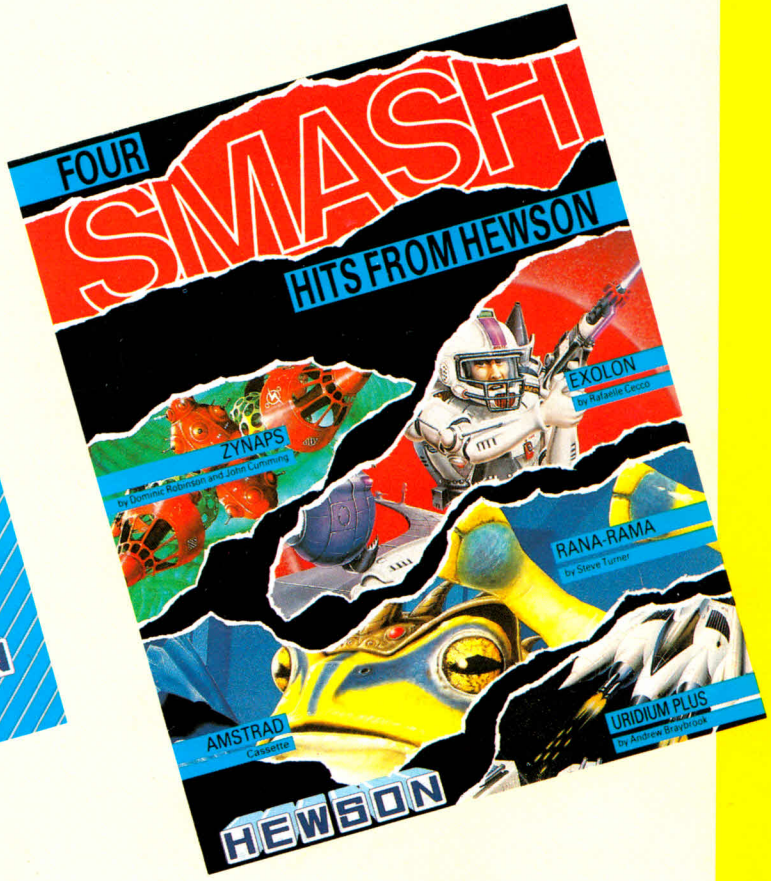
The Aussie Mag for Amstrad owners

THE AMSTRAD USER

Issue No. 55 $4.25 August 1989



- ***Three pages of exciting CPC type-ins + Assembly Language programming + Structured Programming***
- ***LocoMail Mailshots explained + CP/M Plus Tutorial + more Algorithms + last Time & Magik maps***
- ***Backup tips + Leisure Suit Larry 2 Hints + PC Accounts***

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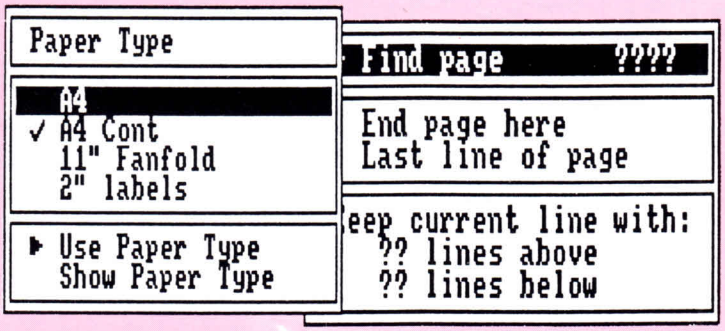

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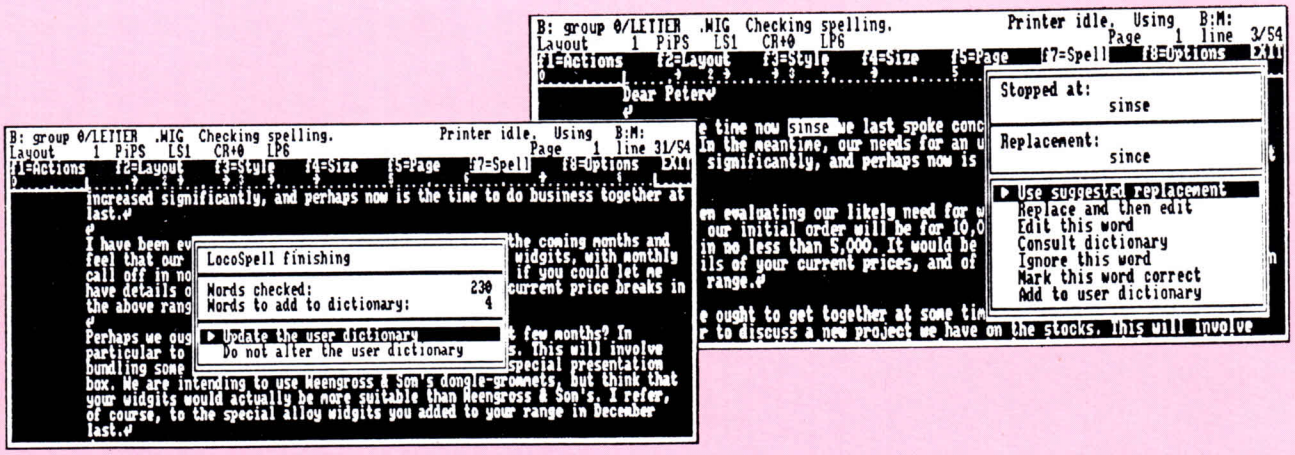

TOGETHER LOCOSCRIPT 2 AND LOCOSPELL MAKE YOUR PCW MUCH BETTER - BUT THAT'S NOT ALL...

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THE AMSTRAD USER

Issue No. 55 - August 1989

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All enquiries and contacts concerning this Publication should be made in the first instance by writing to The Amstrad User, 641 High Street Road, Mount Waverley, Victoria 3149, Australia. Urgent matters can be phoned through on (03) 233 9661.
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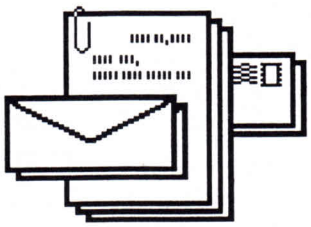
LETTERS TO THE EDITOR



A monthly selection of your comments, hints and tips, advice and news - all shared for the benefit of Australasian Amstrad users.

I have a PCW 8512 and use it all the time, however as all the computers at school are IBM's I can't take my projects home. So I am enquiring as to whether it is possible to connect a 5.25" disc drive to my 8512? If so where can I get one? What else do I need beside a drive? and what is the approximate price? If it is possible to connect a 5.25" drive to my machine, do I then need a special program to make IBM style programs work on my PCW or can I just run them straight away? If I do need a special program to make IBM software run on my 8512 what is its name? Where can I get it? And what will it cost?

I will be a very happy little vegemite if you can answer these few questions and will subscribe for life (!!) if the answers are yes.

Sean Rintel, St. Lucia Qld.

While you can add a 5.25" disc drive to your PCW this will not turn it into an IBM compatible computer. Even importing or exporting files on 5.25" discs in ASCII format wont really help. Sorry, but it looks like we have lost your life subscription.

We have just upgraded to the top of the range PC 1640DD and Hardcard 30Mb with EGA monitor and would like help with an unbiased opinion on which of all the books you have listed would be the most helpful to start with!!! - neither of us are programmer only 'Users'. On the CPC 6128 I found I could manage most of what I needed with Mini-Office II and AMS 'Stop Press' used in conjunction with a Star NX-10 Printer (we have not upgraded the printer to this point in time). I had also just started using 'Brainstorm' as an organiser for lectures, notes etc. that I occasionally give.

The magazine gets better and better - now we just have to go back and read ALL the sections we've been ignoring on the PC's.

Anne M. Baines, Blaxland NSW

You have quite a choice if you are in the beginners class. There are self-teach audio tape and disc packs, and a long list of "Using..." books. Only you can decide in what area you are having trouble and make a selection from the above.

I see that the perennial problem of re-inking printer ribbons has appeared once more (Errol Brandt-TAU June). There has been a lot of advice on how to do this operation but nothing about WHAT to do it WITH.

Errol Brandt obviously inked his ribbon with a Spirit based ink which dried-up very quickly, when he should have used an oil-base one.

An oil base (Glycerine is used mainly) is added to stop the ink drying out and is used in the printing industry and is or was used in the old duplicating machines. I have a tube which I've been using for about two years now and I've had no trouble as regards clogging. This ink never dries - it is absorbed. Look at your hands after reading or handling a newspaper for a while and you'll see what I mean!

Can you imagine having an ink that clogged up the holes on the art work of newspapers? Or an ink that clogs the perforations on a duplicating stencil? Or which has to be thoroughly cleaned off after every use.

Another type of ink used on recording instruments in industry for recording performances of various equipment and efficiency levels of machinery etc. Although it has a glycerine base it is much thinner and is unsuitable for printers as the ribbon cannot retain its load of ink and it will leak out into the ribbon cassette.

The third type is the spirit-based ink as used in stamp pads which is quick drying and as anyone who has used one often, the lid has to be kept closed to prevent it drying out.

If this type of ink is used then it's 'GOOD BYE PRINT-HEAD' as it sometimes contains 'GUM ARABIC' which sets like concrete.

If ever you get into this predicament, there is sometimes a reprieve. Soaking the tip of print head in methylated spirits should loosen the hardened ink without any damage, then a wipe with a cotton wool bud should remove most of the hardened ink. I've done it on similar items, but never on a print-head.

Methylated Spirits is a good insulator and many plastics are not affected by it, so it should not cause any electrical problems.

A good way of testing whether or not a particular type of ink is suitable is to put a blob on a piece of paper and leave it for a couple of days. If it dries out then it's no good. If on the other hand it has a ring of oil (looking as though it's wet) around it, then it's pretty safe

to use. If it's dry to the touch overnight it will certainly clog your print-head.

Clogging up of print-heads can sometimes occur if one gets greedy, tries to get too much ink on the ribbon, resulting in smearing of printed work and build up on the head. This can be removed quite easily by obtaining a small bottle of glycerine and putting a small spot on a piece of lint-free cloth or paper then placing it behind the print-head overnight.

Removing the head and dabbing with a cotton wool bud, lightly smeared with glycerine is an excellent way of cleaning the head of excess oily ink.

I think the present format of your magazine is excellent, giving the widest coverage to the range of Amstrads available.

I'm a retired person on a pension with an old steam driven CPC 464 (tape), but I still like to look at the more advanced stuff and dream of the day when I win the Lotto and 'up-date' to something B I G.

Another point I'd like to raise is - how about giving an occasional profile of writers of regular articles in the TAU.

I often wonder what the person is like behind those uninformative names one sees appended to the articles.

John Cole, Ingham Qld.

I would like to suggest an amendment to the "Beyond Logic" program in issues 52 and 53. The program itself is all right, but the screen printer is too slow and sometimes stops (mine does anyway) due to garbage collection, I think. Changing line 360 to read:

```
360 PRINT#1,CHR$(15)CHR$(1)USING
"&";UDC$(A);:NEXT Z:NEXT I
```

makes the print screen routine faster.

"Beyond Logic" is a good program, although Aaron and Ian mustn't have decided to use TRAIL or TRIAL screens (and there was even a room mentioned).

Jason Hood, Nth.Rockhampton Qld.

I have an Amstrad CPC6128, Pace RS232 interface and a reasonably good modem. I have a good knowledge of modem communication and the operation of BBS systems, therefore I have been taking a special interest in your articles regarding such matters.

I have a problem running basic programs downloaded from BBS systems that support CP/M and Amstrad file areas. The most obvious BBS to use is the AMSTRAD BBS-SYDNEY. (As Helen Bradley reviewed in issue No. 53 June). Although I have been able to run some (very few) BASIC programs downloaded from the excellent local BBS system, I cannot

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run programs downloaded from the AMSTRAD BBS.

When I try to run a program I get "DIRECT COMMAND FOUND" message. Because of STD cost it's hard to get help from the SYSOP, although he did suggest a MALLARD COMPILER. I am still very much a learner as far as computer language goes, but there must be a simple solution to my problem.

As a matter of interest, I sent via XMODEM a downloaded P.D. BASIC program that I could actually run, to a user with the same setup as myself. He tried to run the program but got "DIRECT COMMAND FOUND". What can I do?

Anyway, thanks for the MAG. It's been a great help to me and my kids.

Let's get a MELBOURNE BASED AMSTRAD BBS HAPPENING. I'd be pleased to help in anyway I can. Although I have a lot to learn, BBS sys are my main interest. We need more Amstrad CP/M Modem Communication facilities.

Ross Bowen, Frankston Vic.

You will often get 'Direct Command Found' message if running a PCW Mallard Basic program on a CPC. It doesn't explain the error with the program you passed on to your friend though - this has us stumped.

I got a 6128 two and a half years ago and 2 Amstrad User magazines with it. Since then, I have been searching everywhere for these magazines, and I found one at a local newsagents in the town where I now live. This has been confiscated by so many teachers because my friends are all so interested in the magazine.

I would like to know is, how do you put a program onto a disc once you've typed it out especially when your mother tells you to come and have your dinner, and you've got to turn the computer off.

Peter Harrington, Busselton W.A.

Read Chapter 3, page 71 of your User Instructions.

On June 14th 1989, I purchased my first copy of The Amstrad User, it's an enlightenment to see so much software available in Australia, but I am after a particular item of software and I hope you may be able to help.

I have an Amstrad 1640 PC with 20 megabytes, I am a student studying Law and Theology (I know this sounds a weird mixture but I am) and as such, write lots of essays and papers, I have WordStar 1512 Word Processor but the problem is I have lousy grammar and punctuation, etc. etc. I am a product of the public school system in Australia, so I am after a software system that corrects grammar and punctuation much the same way a spelling checker works.

I don't know if such a thing is available but it seems like a good idea.

Anthony Gowe, West Hobart Tas.

Write to Editor's Choice Software, 4224 - 24th Avenue West, Seattle, WA 98199, USA for details of a product called Grammatik III. It may do want you are asking but not having seen it we cannot confirm whether or not your PC1640 is capable of handling it.

In MAILBAG in the July issue of TAU, A.L. Palmer gives an assembly language program for clearing the PCW screen from CP/M+, and excellent instructions on how to assemble and run the program. However, if you are prepared to accept a single "?" on your cleared screen, there is a much simpler way of achieving it.

After the CP/M prompt A>, simply press the keys EXIT E EXIT H RETURN, and presto, your screen is cleared, with a query and A- prompt in the top LH corner.

It might be of interest to consider how this comes about. The code that the screen system must receive in order to persuade it to clear itself and return the cursor to the "home" (top LH) position is usually written as ESC E ESC H , where ESC is the non-printing "escape" code. Of course, these must be sent to the screen as ASCII codes, so what the screen actually receives (and expects) is the codes for these characters, i.e. 27 69 27 72, (in binary).

One possible way of initiating this sequence of codes to the screen would be by the BASIC statement:

PRINT CHR$(27); CHR$(69); CHR$(27); CHR$(72);

or the equivalent statement:

PRINT CHR$(27); "E"; CHR$(27); "H";

Of course, these specifically BASIC statements are not possible from within CP/M. However the EXIT key will produce ASCII code 27, i.e. "escape", so pressing EXIT E EXIT H sends the code sequence that we want, 27 69 27 72, to CP/M, when the RETURN key is finally pressed. But unfortunately this is not the code that goes to the screen, as the designer of the system has reasonably decided that the screen should show us what keys have been pressed, and EXIT, ie ESCAPE, being a "control" character that can alternatively be produced as CONTROL [(which is ALT [on the Amstrad - try it) must therefore be shown on the screen in the standard representation for control characters, ^[E^[H, and the codes that have to be sent to the screen to produce that display are 94 91 69 94 91 72 - not what we want.

But all is not lost. The sequence we want has been sent to CP/M, which not being able to make sense of it, does what it always does under these circumstances - regurgitates the complete sequence with a question mark appended. This time the sequence does get to the screen, and produces the desired response, screen clear and cursor home. CP/M's final querulous"?" remains, as the only printable character of the message.

David Greenhaigh, N. Freemantle W.A.

Address all letters to:
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NEWS BREAK

Our monthly update on the gossip, news, releases and the general Amstrad scene from both home and abroad

PC2286 vs FD-10 Manual

The Amstrad 5.25" external disc drive (FD-10) appears to be a popular add-on for PC2000 series owners. For those with a PC2086 there are no problems in getting their computer to recognise that the drive is attached. The manual clearly states that you need to enter the command DEVICE SETDF /D:1 /T:0. Alas, PC2286 owners will have no success at all.

Out research has discovered that the manual supplied with the FD-10 only refers to the PC2086. By referring to the PC2286 manual, no mention is made of the command DEVICE SETDF. To put PC2286 owners out of their misery, we can reveal that the SETUP procedure should be used instead.

The old adage 'when in doubt read the manual' seems to hold good - but which one?

FLIPPER2 ARRIVES

A revised version of Flipper is now available. The previous version which had trouble with LocoScript2 and wouldn't work with Mini Office professional has now been fixed.

If you haven't heard of Flipper, it is a piece of software which allows PCW owners to set up environments within their computer. Put simply you can, for example, have LocoScript2 and CP/M Plus loaded in your PCW at the same time and flip between the two almost instantly. You can even set up two LocoScript2 environments and edit two documents. The package comes on one disc with four programs - the main program (Flip2) plus three utilities. The utilities allow you to reset the environment back to what it was when you first started, save the dormant half of your PCW and load again at a later date. Flipper2 uses the M drive so is better suited to an 8512 or 9512 model with more available memory.

RECKON UPDATE

Reckon Software Publishers and Distributors recently annouced additions to their growing range of Amstrad PC software.

Complete Introduction Courses are audio/disk-based courses for new users. A range of courses to teach you about your new Amstrad computer, the fundamentals of DOS and Basic. Combined audio cassettes and interactive computer-based tutorials make these courses extremely effective. Each course also has a powerful "on-screen" manual and three software programs: TinyWord, TinyBase and TinyCalc. These are used with the tutorial to teach the typical application areas of word processing, database and spreadsheet. There is a course for each Amstrad computer taking you from novice to expert for $59.00

In-House Accountant is the automated accounting package for small business. Handles all aspects of accounting including invoicing, statements and full reporting. Designed specifically for those people that would rather spend time running their business than looking after the books. Version 2.01 of this proven, integrated accounting package is nowavailable at an introductory price of $249.00

The latest version of the very successful desktop publishing package **Fleet Street Editor** now comes with Bitstream Fontware. The package is soon to be published by Reckon which means it will be even greater value for money.

Both versions of **Iankey Typing Tutors**, Europe's best selling typing tutors, are now published in Australia by Reckon. One is the Crash Course for those with no keyboard skills; the other is the Two Fingers to Touch Typing Conversion course, for those of us that are familiar with the keyboard but still cannot touch-type. The two versions are priced at $69.00 each.

TOP SELLING LINES

Following the end of the financial year, we thought you would be interested in a list of the most popular software and books sold by mail order during 88/89.

TOP 10 CPC GAMES

1. Leaderboard Par 3
2. Game Set and Match 2
3. Nigel Mansell's Grand Prix
4. We are the Champions
5. Time and Magik Trilogy
6. Konami Arcade Collection
7. Magnificent 7
8. Elite Collection
9. Gold Silver Bronze
10. Afterburner

TOP 10 PC GAMES

1. MS Flight Simulator
2. Test Drive 2
3. Silpheed
4. King's Quest 4
5. Galactic Conqueror
6. Battle Tech
7. Space Quest 3
8. Kings Quest 3
9. Leisure Suit Larry 2
10. Scrabble de luxe

TOP 10 NON-GAMES

1. PCW Year Disc 1
2. Stop Press with Mouse
3. LocoScript2
4. Masterfile 8000
5. Masterfile PC
6. LocoSpell2
7. LocoFont Set 1
8. LocoMail2
9. Touch 'n' Go
10. Money Manager

TOP 5 BOOKS

1. Basic 2 User Manual
2. CP/M+ Handbook
3. All in one business computing
4. Exploiting MS-DOS
5. Desktop Publishing on the PCW

First with the Best!!

STORMLORD

The evil Queen is conquering the peaceful realm of the STORMLORD. Her marauding minions have captured and imprisoned the fairies that mantain the tranquility. STORMLORD cannot stand by and allow his peaceful land to be transformed into a war ravaged territory. STORMLORD'S task is to free the imprisoned and restore the peace and tranquility to his land. Not an easy task, but it's just another days work when you're the STORMLORD.

EMLYN HUGHES INTERNATIONAL SOCCER

The greatest soccer simulator EVER released on the C64 is now available for your CPC. Bursting with high speed arcade action, EMLYN HUGHES INTERNATIONAL SOCCER offers the most realistic gameplay yet. It goes miles beyond all other soccer games; dipping kicks, headers, diving headers, sliding tackles, barging and side stepping, free kicks, throw-ins, goal kicks, corners and penalties give you all the moves of REAL soccer. EMLYN HUGHES INTERNATIONAL SOCCER allows you to enter your own teams of star players, set their skill levels individually, and manage them for the whole season. The fitness of each player changes constantly, so you may have difficult selection problems. One or two people can play or you can watch two computer teams play each other, or stack the odds in your favour and play two people against the computer.

PACTRONICS have a wide range of top quality games (disk or tape) to cater for all tastes, for example:

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The new FUN SCHOOL 2 series is educational software designed for children. The series places special emphasis on what children are looking for, ease of start up, simple to use and rewarding. The series comprises three separate volumes suitable for ages 2-6, 6-8 and over 8's. Each volume allows the user (or parent/teacher) to adjust the level of difficulty for each player. All volumes contain eight separate programmes designed to test various facets of logic, planning, predicting, mathematics and problem solving.

Quotes from The Amstrad User, July 1989:

"FUN SCHOOL 2 is a series of software really worth looking at."

"FUN SCHOOL 2, if used correctly, can be a great help and an effective teaching aid"

"All of this praise beckons the question: Can we please see lots more?"

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MAIL ORDER: The Amstrad User, 641 High Street Road, Mount Waverley, Vic 3149. **(03) 233 9661**

FORTHCOMING UK RELEASES

New title releases for the CPCs are traditionally thin on the ground at this time of year, as most of them come from the UK which goes into 'summer holiday' mode from June through to August. However, news is filtering through of new releases and re-releases which should arrive in Australia (importers willing) over the next six months.

For sheer escapism, the James Bond movies are considered by many as a class in their own. Unfortunately, conversions from the big screen to the smaller CPC screen have not always been as successful. However, Domark intend to put this right with the fourth and latest Bond offering - **Licence to Kill.**

The game follows the film theme closely where 007 embarks upon a personal vendetta against drug baron Sanchez. There's plenty of action, including chases through shark-infested waters and a clever helicopter sequence to catch Sanchez before he reaches the border with a large delivery of drugs.

Domark have also announced the signing of a distribution contract with Broderbund, an American software house. The first two games to be produced will be **Wings of Fury** - a flight simulator and **The Ancient Art of War** - a wargame simulator which allows you to do battle against famous leaders such as Alexander the Great and Ghengis Khan.

Under their Tengen label, they have also announced a number of releases the best of which is probably **Hard Drivin'** - one of the most popular car racing arcade games.

A new software company called Screen 7 is soon to release **Jaws.** Based on one of the most successful films in history, you take on the role of Police Chief Brody to clear the waters of the multi-teethed monster. In order to do this certain lethal weapons have to be recovered from the seabed - but watch your back!

Electronic Arts will be releasing **Navy Moves** - the sequel obviously enough to Army Moves. It will have four combat areas in a two-part game and the aim is to destroy a U-5544 nuclear submarine before it destroys everything else.

Garfield will return later this year, courtesy of Softek subsidiary label The Edge. In a game called **In Winter's Tail**, the furry cat must be guided down a ski slope to a lasagna factory where he consumes the contents. Then it's on to hunt the chicken which lays the chocolate eggs and finishing with a skating sequence.

Other comic conversions from The Edge are also planned, based upon the **Uncanny X-Men**. The first will probably feature Wolverine.

On the budget front, Ocean's 'Hit Squad" label (announced in this magazine a few months ago) are expected to re-release **Rambo, Daley Thompson** and **Enduro Racer** at a budget price. Ocean plan to release three budget games each month dropping into a film, arcade and sports theme. The next three off the rank will be **Yie Ar Kung Fu, Miami Vice** and **Green Beret.** Ocean have also been seeking to acquire other software houses titles for their new budget label and may in the future add **Barbarian** or **Crazy Cars** to the range.

On the other side of the coin, Alternative claim to be the first budget software house to release former Ocean full-price hits when they announced the impending release of **Army Moves** and **Game Over.**

It seems that there is a software war about to boil over, hopefully, to the benefit of all.

...AND FOR THE PC

Now that Firebird have been taken over by Microprose, the dust is beginning to settle and reveal some exciting releases in the 16-bit arena. First there's **The Sentinel** with some 10000 full colour landscapes and then **Spacecutter Plus,** a mouse controlled shoot-em-up with (would you believe?) over four billion locations. From Electronic Arts will come Populous, a game which give the player god-like powers!

One of the most exciting is probably **Jetfighter: The Adventure** which will surely rival most of the popular flight simulators. Apparently the graphics are very smooth and the San Francisco Bay area representation is akin to MS-Flight Simulator v3. There are 30 missions to accomplish using simulations of the F-14 Tomcat, F-16 Falcon and the F/A-18 Hornet.

From Electronic Arts comes **688 Attack Sub** (reviewed elsewhere in this magazine), a submarine battle simulation of a complex nature. Naturally, in VGA mode you get the full 256 colours used creating some stunning graphics, but it works well (although not as colourful) in CGA and EGA modes. It has nine missions acted out in real locations and is capable of having two players pitted against each other via the modem option.

Also from Electronic Arts is **Wasteland,** a sort of Bards Tale brought up-to-date. The game takes place in post-holocaust America in 1999 where you have to locate other survivors to build a new society. It contains a deal of dry humour and the facility to 'split-up' your party.

Serious wargamers will be delighted to see **Waterloo** from Mirrorsoft. Unlike other wargames, this one is viewed through the eyes of a selected commander, from either Napoleon (or Wellington) down through the ranks. In addition, a wargame from CCS called **Vulcan** should be available soon. It features the Tunisian Campaign 1942-43, a scenario which has not been chosen before.

MASTERFILE PC *VERSION 3*

Integrated Data filing, Document filing, Word-Processing, Mail-Merge

Every business has two kinds of filing requirement: data field-oriented which we call Data filing and free text which we call Document filing The traditional approach was to have one program for each - a database (DB) and a word-processor (WP). MASTERFILE PC has already established its reputation as a high-power relational DB at a popular price, but now with the version 3 we have added a powerful WP function. And since both DB and WP functions are managed by the one program, only one system of menus and dialogue need be learned, and there is a natural data-merge function to combine data with text into a mail-merge operation.

MASTERFILE-DB

Address lists • Sales Ledger • Bought Ledger • Inventories • Stock Control • Patient files • Job progress • Price lists • Bank analysis • Shares Portfolio • Photographic index • Property Details • Invoices

There are two main kinds of DB system on the market; those that require time and programming skills to set up and those that have virtually instant usability. MASTERFILE with its totally menu-driven approach is of the latter variety; and yet it offers huge flexibility in data presentation and manipulation.

MASTERFILE Data Filing is unusual in that it offers variable-length records within a direct-access file with a capacity of up to 16Mb or 32,768 records. There can be up to 80 data fields per record, each variable-length up to 254 characters, and data can be character, numeric, or date. Up to 32 user-designed screen/print formats can be used, so that from one data file you can present data as a summary index, and index card, mailing label, whatever, and add such effects as heading, boxes, panels. The relational aspect means that any record being displayed can pick up data from up to four other data files on a key-match basis.

An essential ingredient of a DB system is to be able to search the file and pick out records which match a given set of criteria. MASTERFILE's search functions are impressive and it can search on multiple criteria on any data (not just key fields), with speed and ease.

Arithmetic operations can be defined to operate on and derive numeric data e.g. taxes, percentages, price mark-ups. You can even perform date-arithmetic such as is required for ageing of accounts and subscription renewals. The logic can include IF/THEN/GOTO constructs for the sophisticated user.

Printing is buffered, so that up to 5 pages of printing can be stacked while you use the program to get on with other tasks. Printer controls can be set to control style and pagination.

We could also mention sorting, import, export, encryption, passwords, date-stamping, serialising, and host of other features - but we don't wish to bore you; if you wish to know more, just ask us!

MASTERFILE-WP

•Letters • Reports • Memos • Journal Extracts • Bibliographic references • Your Next Novel.

Just about every PC user already has some kind of WP system, but the chances are that yours is the kind where each document is a separate DOS file. With MASTERFILE, you can keep all your documents in one large DOS file (up to 16Mb), and manage all your letters, memos, journal extracts as individual documents on a private directory basis; except that our directory (we call in an Index) lets you have useful 30-character names and you can search on the basis of document name, date of last change, or on the text contents themselves. In effect MASTERFILE combines the searching power of DB with the free-format text handling of WP.

MASTERFILE WP Document file has its own selective back-up/restore system, and you can also import and export text files from and to other text systems.

MASTERFILE WP allows up to 6 documents to be open at a time, using the same window or different windows, any of which can be adjusted for size, position, style and colour. The basic WP functions are all there, and some novel ones too - such as 'spot' colour to highlight your text. You can tailor your own printer driver and expansion keys simply by editing two specially-named documents. Maximum document size is 64K, about 20 pages.

Printing options include multi-copy, partial print, pagination, headers and footers, left margin, system date/day/time stamps, serial numbering. And you can arrange selective text insertion from a MASTERFILE DB file for a mail-merge and several-across label operations. Printing uses the same buffer system as DB, leaving you free to do other tasks while a document is being printed.

HELP AND LEARN

The detailed manual is augmented with tutorial and several demonstration files. And, for the new (or the forgetful) user, HELP can be summoned at the press of a key to augment whatever menu you are looking at. There is even a facility for customising your own HELP frames using the WP function. MASTERFILE can learn too! To program a function key, you just press the 'LEARN' key then use the system normally, then press the function key. Or, you can store the function key in the file for long-term use.

How can MASTERFILE combined DB and WP program run in only a 256K MS-DOS environment? The answer is because it is compact, being totally coded in Assembler - unlike most other commercial software. If you have 512K or more, then MASTERFILE will make even better use of the available RAM. And the minimum disc configuration? Just one floppy. But users with hard discs can take fullest advantage of the large capacity. And what about the monitor? Any type from monochrome to VGA, and yes of course you can customise your preferred colour scheme.

MASTERFILE PC will run any PC-compatible, including any Amstrad PC/PPC, and is available on 3.5" or 5.25" formats in two editions:

Standard: DB only, but with read-only/demonstration WP functions.
Full: DB + WP

You can start with Standard and upgrade to Full later. Campbell Systems in the U.K. also offer upgrades to registered users of MASTERFILE PC version 2 or earlier.

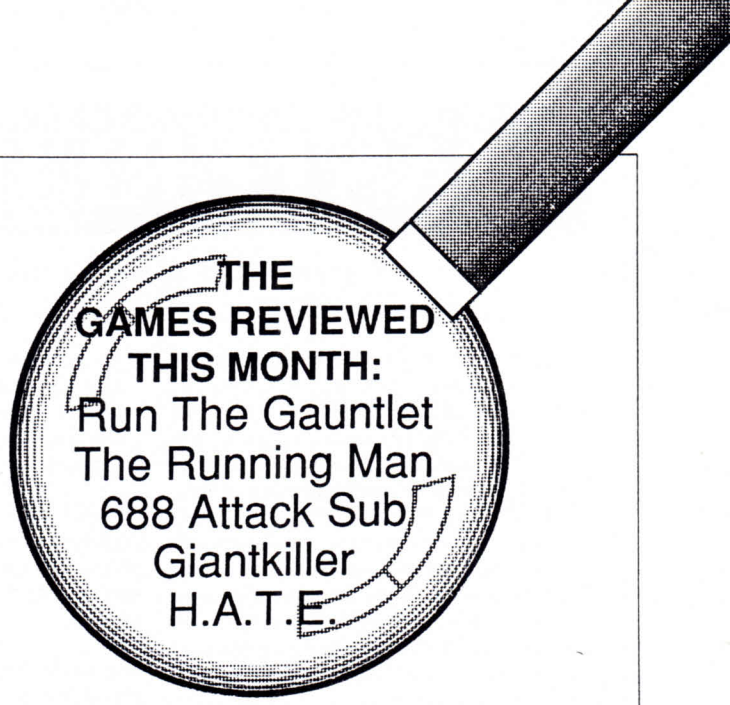
Prices, incl P&P are **$199.00** (Standard) or **$269.00** (Full). All mail order enquiries to:

The Amstrad User
1/641 High Street Road
Mount Waverley 3149
Phone **(03) 233 9661**

or in Melbourne call at The Amstrad User computer shop, also at the above address.

ACTION TESTS!

More Amstrad games titles get the stress test from the Joystick Wizard and friends!



RUN THE GAUNTLET

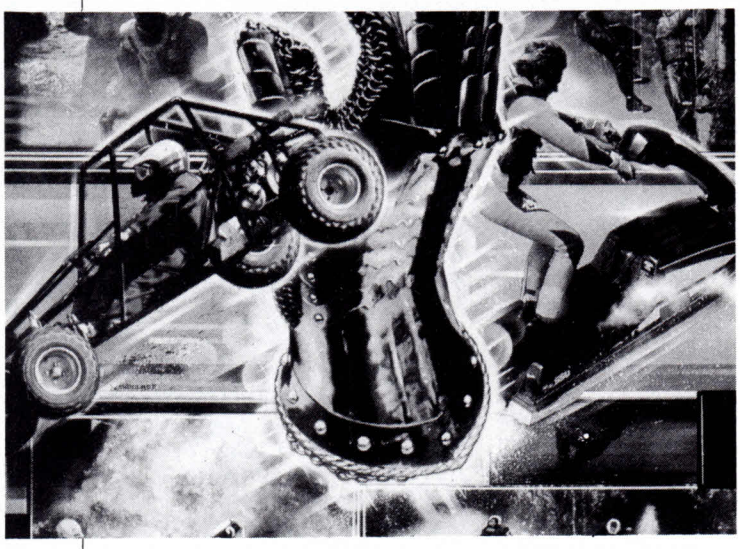
A multi-element package of fun from Ocean

CPC Tape - $26.95
CPC Disc - $39.95

Being a multi-element package, Run the Gauntlet is also multi-loading on the tape version. Like other multi-loading tape titles, it really takes an age to load and is a great incentive to owning a disc drive. Of course, 6128 owners already have one so they do not have a problem, bit I pity those with just a tape deck if they want this game.

Run the Gauntlet is split into three events selected at random and each is further split into events taking place on water, land or an assault course.

The water course makes use of a speedboats, jet skis, inflatables or a hovercraft. On land you use a buggy, a supercat (an amphibious six-wheel vehicle), a quad (a fast four-wheel bike) or a meteor. The land differs from the water in that it undulated quite considerably in some places which means you 'take off' if you are travelling too fast. Each of the modes of transport have their peculiar methods of handling and discovering how to control them is half the fun. Some, however, will require some perseverance and although the controls are quite simple, the behaviour of the different craft takes some learning. Obstacles are placed to hinder your progress, and although hitting them doesn't end things it will slow you down. Explosions burst around your vehicle, sometimes spinning it , sometimes launching it into the air. Colliding with computer controlled vehicles causes even wilder spinning.



The assault course doesn't require any vehicles, just a strong arm and an equally strong joystick. It entails scaling nets, balancing on logs and wading through water and mud pits while avoiding obstacles as you go.

Up to four players can be pitted against each other, not at the same time though. This facility makes the game more competitive with the person gaining the lowest score being eliminated (from the game that is!).

On the surface it would seem that there is a tremendous variety with all the different types of vehicles, but play it enough times and you will discover that there are only a few different courses/backgrounds to race round. As the game has lots of different events you tend to forget this fact. A useful feature is the provision of a map in the top right hand corner of the screen to warn you of what's coming up.

The graphics are quite smooth and relatively fast flip screens (OK on green screens) but if criticism was to be made I would argue that the sprites themselves are a bit on the small side. The sound is limited to raising and lowering of engine noises with the speed of a vehicle. Overall, Run the Gauntlet is good fun (for disk drive owners at least), with plenty of challenges and vehicle variety to keep you on your toes/joystick.

H.A.T.E.

A sophisticated futuristic shoot-em-up from Gremlin

CPC Tape - $26.95
CPC Disc - $39.95

So what does H.A.T.E. stand for? Hunt All The Elephants? Harass All Tax Evaders? Having A Terrible Experience? Well, none of those. In fact it stands for Hostile All Terrain Encounter - and hostile is the salient word!

In essence, the game takes place some hundreds of years into the future where prospective fighter pilots and/or tank commanders get 'live' experience of action in the field. As part of their training course they get sent to a place called Stripworld, a state-of-the-art military action simulator. This is represented on the screen by a diagonally scrolling (Zaxxon style) strip of land.

The game commences with your Star Fighter waiting on the runway. The ship has minimum armoury but sufficient to dispose of the first level aliens. This takes you to the next level (there are thirty levels in all) where you pick up a Ground Assault Vehicle, a machine which hovers across the surface of the strip but which has more fighting power than the Star Fighter, in particular shells to fire. If you think that it all sounds too easy - think again. During each level you will encounter a nuclear reactor. If you manage to destroy this, you pick up a plasma cell to tow along to the end of that particular level. If you do not arrive with a plasma cell you lose one of your four lives.

But it doesn't end there! Even if you have a plasma cell in tow you can lose it by taking a direct hit on your craft as you make for the end of the level. As this happens often, it is wise to pick up as many as you can. There are heaps of things to avoid - often hidden under trapdoors - such as missiles, bolts, mines and fighters to name a few.

Although the game lacks brilliant colour, this certainly does not detract from the overall excitement. Because the theme is military simulation, you don't necessarily die when you lose all four lives. As long as you have passed level two then you will only be sent back two levels. In fact the screen provides two scores - one showing the best score to date on the mission and the other your current score.

The sound effects are loud, but special mention should be made of the music. It is very well written and if you get a chance to play it through a large speaker do so. The graphics are really smooth but perhaps lack colour. The action is fast and furious and the challenge on the higher levels takes it into the 'sweat inducing'

THE RUNNING MAN

Arnold Schwartzenegger hits the CPC screen

CPC Tape - $26.95
CPC Disc - $39.95

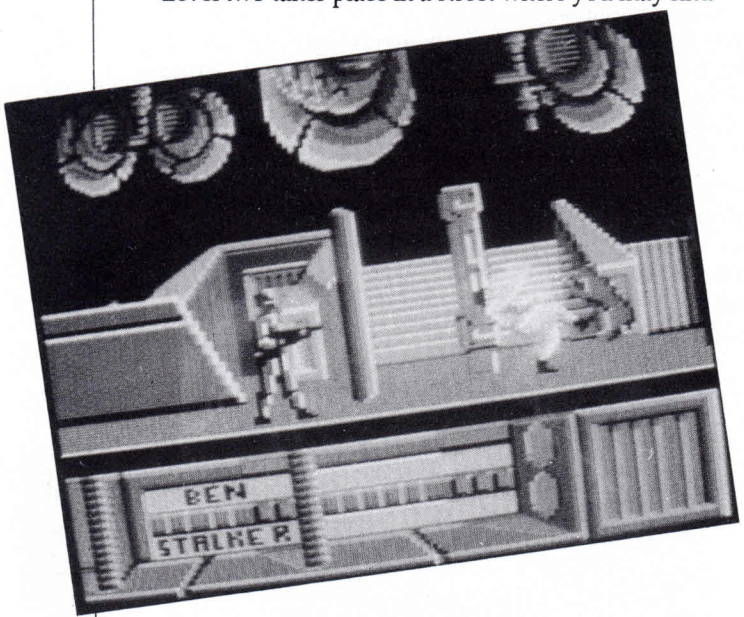
From the novel by Steven King came the film which spawned various computer game formats - fortunately one of them for the Amstrad. If you have not read the book or seen the film, it won't spoil things to give you a brief scenario.

Set in the future, a TV game show called The Running Man is a popular broadcast. It features US state prisoners condemned to be executed, who are taken from Death Row to entertain the viewers by attempting to survive a series Kill Zones hatched up by the host of the show, Damon Killian. Arnold Schwarzenegger, alias Ben Richards, has been selected as the next contestant/victim, and the story revolves around his determination to survive and destroy Damon Killian.

The computer game, naturally enough, features the Kill Zones and you as the unarmed Ben Richards. The first zone is an empty ice rink, empty that is except for a particularly nasty piece of work called SubZero who has a hockey stick with a razor sharp blade and a supply of exploding pucks. To reach him you must fight off guard dogs and cross a pit. The confrontation with SubZero involves delivering enough kicks and punches to dispose of him while avoiding his fatal stick and pucks. During the fight, and subsequent fights, an energy bar is displayed at the bottom of the screen. Run out of energy and you're done for unless you can find a medical kit, wait in

a safe place or figure out a puzzle. This is the only way to recover your energy, and as you will find, the puzzle appears after each level, but the medical kit doesn't come into play until the second level.

Level two takes place in a street where you may find some weapons (a piece of lead pipe and a brick) to defeat the next opponent BuzzSaw with his teflon-coated chainsaw. But watch out for the dogs again. In the next level you can be armed with a spiked club and have to avoid bolts of electric power being hurled at you by Dynamo. The final and most difficult Kill Zone has you fighting FireBall. He is armed with a flame thrower which doubles up as a jet pack. If you manage to get past this final opponent you return to the television studio where you must despatch a few guards and avoid the dogs before you wreak revenge on Damon Killian.



Unlike other combat games where you need to clear screen after screen of villains to meet Mr. Big in the final confrontation, The Running Man was different. Each screen had, if you like, a Mr. Big and required different skills and methods to get past him. The puzzle at the end of each level also reminded you that you were still playing a TV game and at least gave you a chance to recover before the next encounter. Although there are only four Kill Zones (plus the final screen), I found each quite difficult and sufficiently different to maintain my interest and determination to continue. Put another way, it has a good grab factor. The graphics are well presented with sensible colours (OK for green screens) and the sound is adequate. I liked it.

688 ATTACK SUB

Tension and action under the sea from Electronic Arts

PC 5.25" - $59.95

The sonar screen showed nothing as I pushed the speed up from standard to flank. I knew the tankers were somewhere between me and the Straits of Gibraltar and I also knew there were several KONI class frigates in the area assigned to protect the Libyan tankers. Suddenly, a contact. Bearing 003 degrees. Distance 15.6 nautical miles and heading out of the straits. This must be a tanker! To show up so clearly at that distance! I ordered it targeted and sent an active sonar pulse so as we could analyse its sound signature. It came back as a ship so at least it wasn't the Libyans' sub that was supposed to be in the area. The sound man got a certain fix. It was a tanker! Throttles to stop. Periscope depth. Change to periscope control. Up scope, and there she was. A nice, fat, slow shape on the horizon. Switch to weapons control. Still too far for torpedoes, so it will have to be missiles. Select missiles and fire one! Wait until the second is armed and then give the tanker that one as well. Now dive! dive! and set engines to flank because all hell is about to break loose! And there are still three more tankers to go! Down to 345 feet and watch the bottom as she comes up fast! Level off and swing north. Another contact on the sonar! And another! Travelling at 43 knots and my depth - have to be torpedoes and they ain't friendly! Select noisemakers and cut engines, fire noisemaker and swing hard starboard, gently rising as we go. Watch the sonar screen. Will the torps take the bait? Watch and wait. Watch and wait. Yes! There they go, chasing the noisemaker. Now, who fired them and where is he? I'll show him what an angry Los Angeles class submarine can do to his precious rust bucket. Got the swine in the sonar screen! 8 miles astern! Inside torpedo range. Fire two torps and we can forget him. All ahead flank! Let's find these stinkin' tankers and head for home, boys!

This is a typical scenario from the new Electronic Arts game 688 ATTACK SUB. If you found this exciting let me tell you, you ain't seen nuthin' yet! This and several other scenarios make up a game that takes you from practice on the firing range to full scale war in a series of escalating missions that pit you against the Soviets in an exciting and extremely playable simulation of submarine warfare. If you feel so inclined you may take the side of the Russians commanding an ALPHA class sub, complete with pseudo cryllic controls and a totally different set of characteristics to the American sub. When you tire of playing against the computer you can take on a friend over a modem link, each of you taking the part of a sub commander on one side or the other. The missions are not always equal, so the stronger player should have no advantage if he/she is given the weaker side.

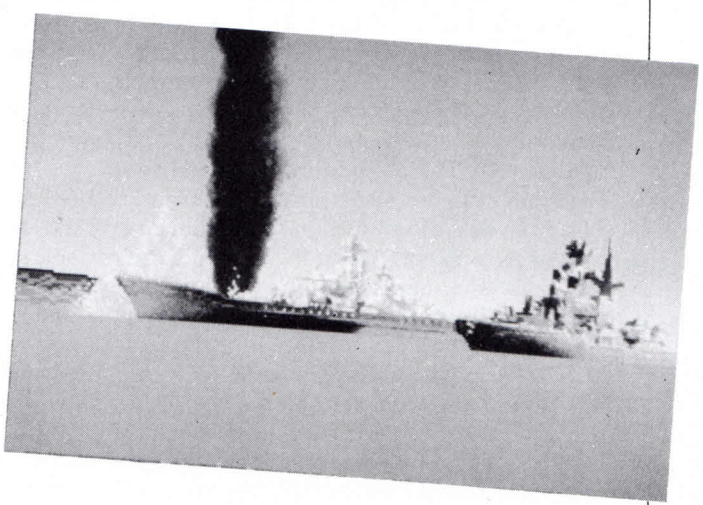
The game is played by moving around control screens

of the sub and using the controls there to set various options. The game starts with game configuration where you set up the various parameters for play, for instance, standard or beginner level play, modem or no modem game, and sound choice. If you are playing a modem game and you have an auto dial modem you can set up the phone number here and dial it. There is also a manual answer option for those without a Hayes compatible modem. From this screen you go onto mission choice where you can select which type of game you wish to play. You are given the choice here of playing either the American sub commander or the Russian. When this is complete you move to the starting station or CONN (conning tower).From here you must go to the radio room to receive your mission orders and put in your security code (which consists of typing a word from a section of the manual, randomly chosen). Once you have your mission orders, its on to any of the other control stations to set your various options. These include the engine station where engine speed and dive depth are selected as well as setting your course. You should visit weapons control early in the game to select and arm all your weapons (which can take some time, especially for missiles) and don't forget to re-select the torpedo tubes because if you don't, and try to fire a missile at a target from below periscope depth, all you get is a polite reminder from the crew - very embarrassing! Navigation station provides options for selecting way-points which are pre-determined destinations. Up to nine way-points can be selected. These automatically turn on the auto-pilot but do not set your engine speed nor do they take into account the fact that you could ram into the bottom if you don't watch your depth. Altering the rudder setting while on auto-pilot will turn off the auto pilot, but once you have made the course correction you can turn on the auto-pilot again to head back to the selected waypoint. Sonar control is your listening post and its importance varies with the mission. The status station will give you a report on the damage done to you, and don't forget that no repairs are carried out during the course of the mission as the crew are too busy. So if your torpedo tubes are damaged early in the peace, they are damaged for the whole game.

Once found, the enemy should be dispatched as quickly as possible and your escape made. In some scenarios, all you are required to do is to evade the enemy for three minutes. This is not that easy, as the enemy is quite intelligent even when the computer is the enemy. Each mission has several different starting points and enemy behaviour is varied also, so just playing a scenario once will not give you a sure method for outwitting the bad guys. You move through the various control screens by means of a mouse or function keys or the tab key, the enter key and the arrow keys. The whole game can be played by means of the tab, enter and arrow keys, but in practice I found that the best combination was a mouse and the tab key with some use of the function keys. There is no save game option, but there is a pause mode so that you can read the manual to try to figure out what to do next. There is also an online help mode accessed by the now familiar F 1 key. It sounds like a dogs breakfast, but in reality this is the easiest game interface I have come across in a long while, and the designers are to be congratulated for the thought that went into it.

In the package you get a manual, which describes all the missions and all the options, a sew on patch which is quite attractive, and the game disc (5.25") and lots of advertising material for Electronic Arts other releases. Graphics modes supported are VGA and MCGA, EGA, CGA, Hercules and a special Tandy mode. Sound is also catered for with something called a COVOX speech thing, but you can use the internal speaker as well. I found it was better to turn the sound off as it brought all action to a halt when it was being played and this could be disastrous in the critical parts of the game.

Included in the manual are some instructions on how to avoid enemy torpedoes which also work for enemy



subs and the designers notes which give you an insight into how the various game design options were approached.

One of the designers stated aims, was to provide a simulation that was realistic as well as playable and at least as good as a flight simulator. To my mind they have done this and more. The game controls are excellent and add to your enjoyment of playing the game because you are not hunting for some obscure key combination for some necessary function, the navigation system has automatic options that are sensible and easy to use but can be over ridden by manual control at any time, and the graphics are excellent on EGA and adequate on CGA. Each mission has a predetermined time limit although you are not told this on all missions and the modem option allows unlimited differing gameplay within the basic scenarios.

This game is destined to be included in my list of favourites for a long time to come.

- Shane Kelly

GIANTKILLER

Maths for kids made fun by Topologika

CPC Disc - $49.95
PCW - $54.95

Giantkiller is the first mathematical adventure game for children, based loosely on the fair story "Jack and the Beanstalk", by PETER KILLWORTH, the author of the adventure games "Castle of Riddles", "Countdown to Doom", "Philosopher's Quest" and "Return to Doom".

The packaging is very simple consisting of a plain type-written information booklet and the disc inside a clear plastic folder. It is not something that would immediately catch your attention, but then what educational package does, unless that is what you are particularly looking for.

The game is recommended for ages 10 and upwards particularly the 10-14 age group.

The booklet is very comprehensive covering such topics as "What is an Adventure Game", "Children and Giantkiller" and a full program guide with hints and maps of various locations. There is a letter to the player from Peter Killworth explaining what you have to do and listing the eleven treasures that have to be found, as well as a list of the main words that the computer understands. There is information about how Giantkiller can be used in group work in the classroom as a great deal of satisfaction can be gained by children discussing ways of solving the various puzzles and can lead onto other mathematical work. Worksheets are provided for use in group or individual sessions and emphasis is put on the concept of mapping.

So what is Giantkiller all about? As previously stated it is based loosely on Jack and the Beanstalk, and you take the part of either Jack or Jackie and have to go to market to buy a pig. Being an adventure game you have to type in instructions for anything to happen, there is no mind-zapping, joystick-bashing in this game! The aims of the game are to explore everywhere, collect all the treasures and solve the problems to arrive at the maximum score of 250 points.

How did this player go? With the help of an 11 year old and the book she scores 230 - nearly made it. This was after several attempts over many days and much frustration, especially when she got as far as inside the castle and on discovering the mouse, realised that she should have found some cheese somewhere! In the early part of the game the puzzles involve calculator work, simple spatial investigations and co-ordinates. As you progress through the game the puzzles become more complex and involve such topics as tessellations, topology, mapwork and time/space puzzles.

Once the Giant's castle is reached there are more objects to pick up and even some action eg the cat chases you; the giant throws you out of the window and you can't now re-enter as you do not have any more cheese to throw at the mouse! This is where the option to SAVE is a bonus, as long as it is done at the right time. If done at the wrong time, for instance, if the cat or the giant are chasing you, it can cost you a life!

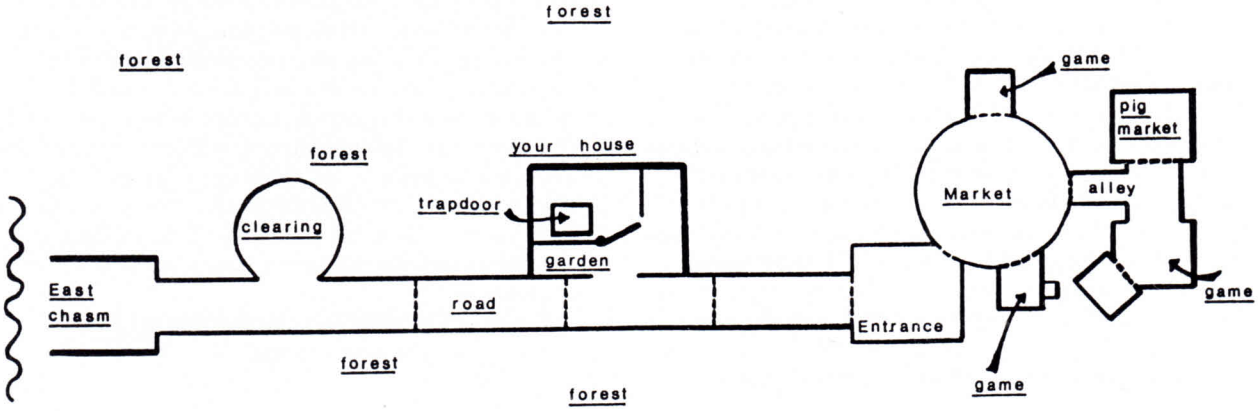
You are able to cheat by following the suggestions in the book. Possible routes and solutions to puzzles are given, although due to the random nature of the game the puzzles are not always exactly the same.

There are password letters to collect and rules of the game to write down to be used at a later stage. As in all fairy stories, help is on hand in the form of a Fairy Godperson and three magic words.

There are a tremendous number of mathematical concepts to be learnt with this game if you have the time and the patience to persevere with it. A child not used to adventure games may become frustrated and find it boring to begin with, but if they persevere, will get more out of it as they progress. Certainly it is a game to be played with other children and/or a parent/teacher as there is much to discuss and solutions to be thought out.

An intriguing game and one that can keep you typing away at the keyboard for hours in an endeavour to find your way around the various locations, solve the puzzles, pick up treasures and thus progress to the next section and gain those maximum 250 points.

- N. Davies



MASTERFILE III

FOR THE AMSTRAD CPC6128
(ALSO CPC464/664 WITH DK'TRONICS 64K RAM)

FIRMLY ESTABLISHED...

MASTERFILE III is now firmly established as THE filing system for the CPC6128.

For the benefit of newcomers to the CPC machines: MASTERFILE III is a powerful and flexible data filing and retrieval system. All "database" systems require that your data is organised into fields and records. Unlike most, MASTERFILE does not commit you to field lengths or formats, since ALL data is variable-length and optional. Files are not preformatted, and only used bytes are saved to disc. Also, unlike the rest, MASTERFILE allows multiple user-defined ways of viewing/printing your data. And unique in its price range, MASTERFILE offers RELATIONAL FILE options, whereby common data can be entered just once and shared by many records. Maximum field size is 240, maximum fields per record is over 50, and maximum file size is 64K. Room for 1,000 full names and addresses, for example. Only one disc drive is required. It is menu driven throughout, and comes with detailed illustrated manual, and example files.

SO VERY VERSATILE...

Just about ANY kind of information can be handled by MASTERFILE. You can EXPORT the data to other systems (eg. PROTEXT/MERGE and TASWORD). You can even merge your own USER BASIC to MASTERFILE for customised file processing, or build new files from other computer sources. The speed of SEARCH of MASTERFILE is second to none. Records can be sorted ascending/descending, character or signed numeric, even embedded keys such as surnames. Other functions are field-to-field calculations, and several-across label printing. We simply don't have room to list all the features; give us a call if you are still in doubt of the power of MASTERFILE III.

ALL THIS POWER...

This is no toy thrown together in BASIC and half-tested, but real machine-coded computing power professionally constructed. We have had IBM and Apricot users beg us for a MASTERFILE for their machines - when they had seen the earlier CPC MASTERFILE.

MASTERCALC 128

THE MODERN CPC6128 SPREADSHEET SYSTEM

This is the sister program to the famous MASTERFILE III, and is a fast and friendly spread-sheet program with high capacity (over 7,000 cells) and impressive speed. Like MASTERFILE, it is entirely machine coded. Like MASTERFILE, it needs just one disc drive and does not use CP/M and it uses the same optimised RAM bank-switch code. "Another exceptional utility from Campbell" said Popular Computing Weekly of the original MASTERCALC. The "128" edition is more powerful.

All spread-sheet systems allow manipulation of any array of numeric data.
What sets MASTERCALC 128 apart from the rest are these features:

Full-screen or split screen windows; variable column display width; variable column formats, 0-7 decimal places; columns can be formatted individually; ultra high-precision floating point arithmetic; direct totals and sub-totals; up to 99 relocatable formulae (usually 10 is ample!); formulae up to 75 characters, and arithmetic expressions, plus conditions, relative cell references; instant highlight of computed data; store text anywhere; pop-up help menu; 40/80 column mode; auto cursor-advance; text output to printer or to disc for word processing; fast hi-res histogram of any 3 rows; Epson screen dump; detailed manual with illustrated tutorial.

For the enthusiast, there is even USER BASIC access to the cell data, so that special operations can be performed. For example, it is possible to ship data to/from MASTERFILE III.

MASTERCALC 128 costs just $99.00 and **MASTERFILE III** costs $109.00 including postage and packing, and if you request air-mail within Australia, we'll do that at no extra charge too! (If you live outside Australia please add $4.00 for air-mail cost. Bankcard, Mastercard or Visa accepted).

Send your order now to:

THE AMSTRAD USER
641 High Street Road
Mount Waverley
Victoria 3149 **Tel: (03) 233 9661**

LASTING LISTINGS

Here's some terrific type-ins to try on the CPC. There's Troy Cox's Spelling Tutor for the CPC, a string design emulator and a brain teaser too!

SPELLING TUTOR

Michael Pickersgill of Launceston in Tasmania has been hard at work banging his CPC keyboard and there have been some fruitful results! First off this month is his translation of Troy Cox's Spelling Tutor program for the PC from our April Magazine. As was the case with the original program, you can customise it as you wish. You can improve on your spelling at the same time too!

```
1 REM *** Spelling tutor adapted from
2 REM Troy Cox's PC program, April 1989
3 REM by M.Pickersgill to suit CPC 6128
4 REM *** THE AMSTRAD USER, AUG '89 ***
10 MODE 1
20 INK 1,25:LOCATE 17,2:PRINT "HELLO!"
25 LOCATE 10,4:INPUT "Tell me your name";name$
30 PRINT:PRINT "Hello "+name$+" my name is Arnold and I
 am going to help you learn to spell"
40 PRINT:PRINT "How old are you ";name$;:INPUT age
50 IF age >10 THEN delay =1000 ELSE delay=11000-(age*10
00)
90 LOCATE 10,20:PRINT "Press any key"
95 k$=INKEY$:IF k$="" THEN 95
96 CLS:
100 num=102:DIM word$(num):' Num= nomber of words in da
ta
110 FOR i=1 TO num:READ word$(i):NEXT
150 CLS:INPUT "How many words to be practised";words
160 IF words<0 OR words >num THEN 150
165 WHILE x<words
166 RANDOMIZE TIME
170 ww=INT(RND*(num-1))+1
200 PEN 2:a$="The word is "
205 LOCATE 10,10:PRINT SPACE$(30)
210 LOCATE 10,10:PRINT a$;
220 FOR t=1 TO 550:NEXT:PRINT" .";
230 FOR t=1 TO 550:NEXT:PRINT" .";
240 FOR t=1 TO 550:NEXT:PRINT" .";
250 PRINT word$(ww):PEN 1
260 FOR t=1 TO delay:NEXT
270 LOCATE 10,10:PRINT SPACE$(30)
280 LOCATE 10,10:INPUT "What was the word";try$:try$=UP
PER$(try$)
300 IF try$=word$(ww) THEN cor=cor+1:m$="Correct !!":PE
N 2:ELSE wro=wro+1:m$="Wrong !!":PEN 3
315 IF LEFT$(m$,1)="W" THEN LOCATE 15,22:PRINT word$(ww
)
320 LOCATE 15,20:PRINT m$
330 FOR t=1 TO 2000:NEXT
335 LOCATE 15,20:PRINT SPACE$(20)
337 LOCATE 15,22:PRINT SPACE$(20)
340 x=x+1:WEND
500 CLS
510 PEN 2:LOCATE 6,6:PRINT name$+" YOUR RESULTS WERE:"
520 LOCATE 5,11:PRINT STR$(cor)+" Words spelled correct
ly and "
530 PEN 3:LOCATE 5,13:PRINT STR$(wro)+" Words spelled i
ncorrectly."
540 PEN 1:LOCATE 10,18:PRINT "Another go Y/N"
550 k$=INKEY$:IF K$="" THEN 550
560 IF k$="y" OR k$="Y" THEN x=0:GOTO 150 ELSE END
10000 DATA APRON,ARMOUR,AUTUMN,AXE,BABY,BACON,BANANA,BA
ND,BANJO
10010 DATA BARREL,BARROW,BATH,BEACH,BEAM,BEAN,BEAR,BEAV
ER
10020 DATA CABIN,CAGE,CAKE,CAMEL,CAMERA,CANAL,CANARY,CA
PTAIN,CAR
10030 DATA EAGLE,EAR,EARTH,EAST,ACHO,EEL,EGG,EIGHT,ELBO
W,ELECTRIC
10040 DATA  GAME,GANG,GATE,GERM,GHOST,GIANT,GIPSY,GIRAF
FE,GIRL,GLASS
10050 DATA IGLOO,IDIOT,INSECT,INSTRUMENT,JEEP,JIGSAW,JU
MPER,KANGAROO
10060 DATA MOTHER,MOUSE,MOUTH,MY,NAIL,NANNY,NEEDLE,NOON
,OBLONG,ONION
10070 DATA POTATO,PRISON,PRINCESS,PUDDLE,QUICK,QWACK,RA
BBIT,RADIO,RAILWAY,RUBBISH
10080 DATA SMOKE,SNAIL,SNAKE,SNOW,SNOWDROP,STAIR,STALK,
STALL,STAMP
10090 DATA TENT,THREE,THROAT,TIGER,TIE,TIN,TIP,TISSUE,T
INY,TOFFEE
10100 DATA VINEGAR,VIOLIN,VOLCANO,VOLUME,WAFER,WATER,WA
X,WAVE,WEEK
```

STRING DESIGNER

Staying with Michael a bit longer, here is a new twist on an old theme. Remember when in craft classes at school or elsewhere you were taught how to bang nails into planks of wood and then run thread or string around the nails to form pretty patterns? The wood was always too hard, the nails too long, the string too short and your thumb soon too painful to continue after you'd gone to work with the hammer.

To make things a lot simpler, here's a simple basic listing which takes all the fuss away yet still lets you create complex and colourful pictures which can then be saved to disc.

AMENDMENTS FOR CPC464 USERS

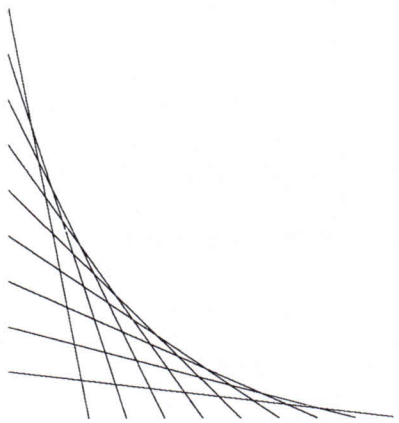
For 464 users the following lines need to be amended to read as follows:

```
15 GOSUB 8010:TAGOFF:n=1:tw=0
1005 IF tw=1 THEN MOVE xp,yp:PRINT CHR$(250);
1040 PLOT a,b,col:x1(k,tw)=a:y1(k,tw)=b
2020 MOVE x1(k,tw),y1(k,tw):DRAW
x1(k,tw+1),y1(k,tw+1)
5025 MOVE xp,yp:PRINT CHR$(250);:CLS#1
6090 MOVE xp,yp:PRINT CHR$(250);:MOVE x,y:PRINT
CHR$(250);:yp=y:xp=x
6500 PLOT x,y,col
9110 MOVE x1,y1:DRAW x2,y2
```

```
1 ' **** STRINGS ****
2 ' M.Pickersgill
3 ' The Amstrad User Aug, '89
4 '
5 ' program to simulate string patterns
10 GOSUB 7000:GOSUB 9000:' initialise & title screen
12 GOSUB 8000
15 GOSUB 8010:TAGOFF:n=1:tw=0:GRAPHICS PEN 1
16 x=320:y=200:yp=y:xp=x:
20 GOSUB 6000:'move pointer
1000 ' draw lines
1005 IF tw=1 THEN MOVE xp,yp,1:PRINT CHR$(250);
1020 a=px(1):d=((px(2)-px(1))/20):b=py(1):c=((py(2)-py(
1))/20)
1030 FOR k=1 TO 20
1040 PLOT a,b,col:x1(k,tw)=a:y1(k,tw)=b
1050 a=a+d:b=b+c
1060 NEXT
1070 n=1:tw=tw+1:IF tw<2 THEN 6030 ELSE 2000
2000 ' join lines
2005 tw=0
2010 FOR k=1 TO 20
```

```
2020 MOVE x1(k,tw),y1(k,tw),col,3:DRAW x1(k,tw+1),y1(k,
tw+1)
2030 NEXT
2035 GOTO 15
2040 END
3000 'instructions
3010 CLS:PEN 3:LOCATE 17,2:PRINT "STRINGS"
3020 LOCATE 1,4:PRINT"Use the arrow keys or joystick to
 move  cursor around screen."
3030 PRINT:PRINT "Use Space or Fire to plot the start a
nd end of lines. Two lines must be set up  and then the
 program will string them  together. For best results
keep the  start of second line close to end of  fi
rst line.
3040 PRINT:PRINT "Use Keys 1,2 & 3 to change between
  colours. The current colour is displayedat the botto
m left corner.
3050 LOCATE 13,24:PRINT"PRESS ANY KEY"
3060 IF INKEY$="" THEN 3060
3070 RETURN
4000 'load screen
4010 CLS#1:LOCATE#1,1,1:PEN#1,3:PRINT#1,"Loading are yo
u sure Y/N"
4020 k$=INKEY$:IF k$="" THEN 4020
4025 IF k$="Y" OR k$="y" THEN 4030 ELSE CLS#1:GOSUB 801
0:GOTO 6030
4026 GOTO 4020
4030 CLS#1:LOCATE#1,1,1:INPUT#1,"Enter Filename";n$
4040 n$=n$+".scr"
4050 MODE 1:LOAD n$
4060 GOTO 12
5000 'save screen
5010 CLS#1:LOCATE#1,1,1:INPUT#1,"Enter Filename";n$
5020 n$=n$+".SCR"
5025 MOVE xp,yp,1:PRINT CHR$(250);:CLS#1
5030 SAVE n$,b,49152,16384
5040 MOVE xp,yp:PRINT CHR$(250);:GOSUB 8010
5050 RETURN
6000 'move pointer
6010 PRINT xon$
6020 TAG:MOVE 320,200:PRINT CHR$(250);
6030 a$=INKEY$:IF a$="" THEN 6030
```

```
6035 IF INKEY(62)<>-1 THEN CLS:GOTO 15
6040 IF INKEY(72)=0 OR INKEY(0)<>-1 AND y<398 THEN y=y+
10
6045 IF INKEY(64)<>-1 THEN col=1:GOSUB 8010
6050 IF INKEY(75)=0 OR INKEY(1)<>-1 AND x<624 THEN x=x+
10
6055 IF INKEY(65)<>-1 THEN col=2:GOSUB 8010
6060 IF INKEY(73)=0 OR INKEY(2)<>-1 AND y>50 THEN y=y-1
0
6065 IF INKEY(57)<>-1 THEN col=3 :GOSUB 8010
6070 IF INKEY(74)=0 OR INKEY(8)<>-1 AND x>16 THEN x=x-1
0
6075 IF INKEY(60)<>-1 THEN GOSUB 5000
6076 IF INKEY(36)<>-1 THEN GOTO 4000
6080 IF INKEY(76)=0 OR INKEY(47)<>-1 THEN GOSUB 6500
6085 IF n>2 THEN GOTO 1000
6090 MOVE xp,yp,1:PRINT CHR$(250);:MOVE x,y:PRINT CHR$(
250);:yp=y:xp=x
6100 GOTO 6030
6500 PLOT x,y,col:GRAPHICS PEN 1
6510 px(n)=x:py(n)=y:n=n+1
6600 RETURN
7000 MODE 1:INK 0,0:INK 1,26:INK 2,20:INK 3,25
7005 DIM x1(20,2),y1(20,2)
7010 x=320:y=200:yp=y:xp=x:xon$=CHR$(23)+CHR$(1):xof$=C
HR$(23)+CHR$(0)
7020 SYMBOL 250,252,248,240,248,220,142,7,2
7030 col=1
7050 RETURN
8000 WINDOW#1,1,40,24,25
8010 LOCATE#1,2,1:PEN#1,col:PRINT#1,"COLOUR";col
8020 LOCATE #1,12,1:PEN#1,1:PRINT#1,"<C>=CLEAR"
8030 LOCATE#1,23,1:PRINT#1,"<S>=SAVE"
8040 LOCATE #1,33,1:PRINT#1, "<L>=LOAD"
8100 RETURN
9000 ' title screen
9010 x1=0:y1=98:x2=15:y2=398:col=1:GOSUB 9100
9020 x1=30:y1=68:x2=45:y2=368:col=2:GOSUB 9100
9030 x1=60:y1=38:x2=75:y2=338:col=3:GOSUB 9100
9040 LOCATE 13,13:PRINT "STRING DESIGNS"
9050 LOCATE 11,23:PRINT "Instructions (Y/N)
9060 a$=INKEY$:IF a$="" THEN 9060
9070 IF a$="Y" OR a$="y" THEN GOSUB 3000
9080 CLS:col=1
9090 RETURN
9100 FOR n=1 TO 20
9110 MOVE x1,y1,col:DRAW x2,y2
9120 y1=y1+15:x2=x2+15
9130 NEXT
9140 RETURN
```



LUCAS' PROBLEM

Here's a quick ten-liner that dropped onto the desk from somewhere. It's simple but one of those little brain teasers you won't leave until you solve. The concept is simple. A board consists of nine holes, in a row. Four blue chips are positioned in the first four holes and four red chips are positioned in the last four holes. The aim is to move all the blue chips to the last four holes and the reds chips across to the first four. Easy? Different coloured chips go in different directions - they can't go backwards! The chips move forwards by either jumping over one other chip into the vacant space, or if the space is immediately in front, just stepping into it. If all this sounds confusing, don't worry - all will be revealed after a few plays. Oh, and if you get stuck just press zero and the game starts again.

```
10 MODE 1:INK 3,6:INK 2,20:BORDER 0:CLS:INK 2,2:PAPER 3
20 LOCATE 13,2:PRINT"Lucas' Problem":PAPER 0:FOR x=2 TO
 37 STEP 4:FOR y=6 TO 8:LOCATE x+1,y:PRINT STRING$(3,14
3):NEXT y:LOCATE x+2,4:PRINT CHR$(49+(x\4)):NEXT:FOR a=
1 TO 4:a%(a)=1:a%(a+5)=2:NEXT
30 GOSUB 90:a=0:WHILE a=0:a$="":WHILE a$="":a$=UPPER$(I
NKEY$):WEND:a=VAL(a$):IF a$="0" THEN 80 ELSE WEND:c=a%(
a):IF c=0 THEN 30 ELSE IF c=2 THEN c=-1
40 IF a+c<1 OR a+c>9 THEN 30 ELSE IF a%(a+c)=0 THEN a%(
a+c)=a%(a):a%(a)=0
50 IF a+c+c<1 OR a+c+c>9 THEN 30 ELSE IF a%(a+c+c)=0 TH
EN a%(a+c+c)=a%(a):a%(a)=0
60 ok=-1:FOR b=0 TO 1:FOR a=1 TO 4:IF a%(a+(b*5))<>2-b
THEN ok=0
70 NEXT a,b:IF NOT(ok) THEN 30 ELSE GOSUB 90:LOCATE 15,
17:PRINT"Congratulations"
80 PEN 1:LOCATE 10,19:PRINT"Press any key to play":WHIL
E INKEY$="":WEND:RUN
90 FOR a=1 TO 9:x=143:IF a%(a)>0 THEN PEN a%(a)+1 ELSE
PEN 1
100 LOCATE a*4,7:PRINT CHR$(143):NEXT:PEN 1:RETURN
```

SEARCHING FOR FINALITY

Here's the last article in this series on Structured Programming by Paul Gerard. As the polish dries on this series, start looking forward to the next...

The main point of spending hours laboriously typing information into a computer data base is *retrieval*, or getting back what we have put in. One aspect of this is the ability to find one specific record by any field - for instance surname, account number and so on. This is covered by our "Locate Record" option in "Structured Data". Because we will often want to locate a specific record in this way it is usual for the first field to be what is called a "unique key". If the file is a personal phone book and all of your friends have different surnames then "Surname" might be a perfectly good "unique key" - otherwise we may well want to give each record a fixed number - like the "customer number" that the shops where you have accounts, use to identify you from other people of the same name.

There are two ways of searching a file - the first and the simplest is sequential searching. As you might guess from the name, this simply means searching the file sequentially from beginning to end. Our existing routine at 8220-8260 already does just that. This method of searching is simple, foolproof, and provided the sequence is short, fairly quick and efficient. Very long arrays are best searched by another technique (called binary or tree searching) which we will look at another time. For this program sequential searching will do fine.

If we have a look at the old routine at 8220 we can trace the search process. We will be changing this routine slightly for the final version of the program but the principle will, of course be the same.

Now this routine locates a single record - what we will often need to do however is to search for a group of records having something in common. If our file is a catalogue of all the games we have for Arnold, for instance, we may want a listing of all our adventure games, or all the games that the computing five-year old of the house will enjoy. This routine and the changes it necessitates in other parts of the program, constitute the bulk of the lines still to add to "Structured Data". First, since we want to put the routine at 9700 - we will need to renumber a few lines at the bottom of the "sort" thus:

```
9690 ERASE local1,local2
9695 LOCATE 12,15:PRINT"Sort completed !"
9697 GOSUB 800
9699 RETURN
```

Here is the "search" subroutine itself:

```
9700   search file
9705 keep=menu.number
9710 record=0:WHILE file.data$(0,point(record))<>"":rec
ord=record+1:WEND
9720 IF record<3 THEN CLS:LOCATE 4,10:PRINT"NOTHING WOR
TH SEARCHING HERE !":t!=500:GOSUB 700:RETURN
9725 foot=0
9730 mde=1:GOSUB 600:head=16:GOSUB 100
9740 menu.number=5:GOSUB 2030    menu
9750 IF choice=26 THEN menu.number=keep:RETURN
9752 CLS#1:CLS#3
9755 LOCATE 1,10:PRINT"Which field to search on >
     ";
9760 LOCATE 29,10:GOSUB 8500
9762 IF check=0 THEN 9752 ELSE WHILE INKEY$<>"":WEND
9765 CLS#3:LOCATE 1,10:PRINT"Type in search datum > ":
caps=TRUE:control=12:length=10:GOSUB 200:MID$(pivot$,1)
=UPPER$(user.input$)
9767 IF long=0 THEN 9765
9770 CLS#3:CLS#1:LOCATE 1,10:PRINT TAB(MAX(1,((15-(long
+LEN(file.data$(check-1,0))))/2))):"Searching for ":LEF
T$(pivot$,long);" in field ":file.data$(check-1,0);"
 "
9775 choice=choice-21
9780 FOR item=1 TO record-1
9790   ON choice GOSUB 9850,9860,9870,9880
9795   IF tick THEN foot=foot+1:t=point(item):point(ite
m)=point(foot):point(foot)=t
9800 NEXT
9810 IF foot=0 THEN CLS#3:LOCATE 1,10:PRINT TAB(MAX(1,(
(15-(long+LEN(file.data$(check-1,0))))/2)));"No match o
n ":LEFT$(pivot$,long);" in field ";file.data$(check-1,
0);"    ":GOSUB 800:menu.number=keep:RETURN
9820 CLS:head=17:GOSUB 100:menu.number=6:GOSUB 2030
9825 choice=choice-26
9830 ON choice GOTO 9840,9842,9844,9846,9848
9840 GOSUB 9000:mde=1:GOSUB 600:GOTO 9820
9842 GOSUB 8000:mde=1:GOSUB 600:GOTO 9820
9844 MID$(keep$,1)=file.name$:MID$(file.name$,1)="SUBFI
LE .DAT":record=foot+1:GOSUB 7010:MID$(file.name$,1)=ke
ep$:mde=1:GOSUB 600:GOTO 9820
9846 GOTO 9710
9848 menu.number=keep:RETURN
9850 IF LEFT$(pivot$,long)>UPPER$(file.data$(check-1,po
int(item))) THEN tick=TRUE ELSE tick=FALSE
9855 RETURN
```

```
9860 IF LEFT$(pivot$,long)<UPPER$(file.data$(check-1,po
int(item))) THEN tick=TRUE ELSE tick=FALSE
9865 RETURN
9870 IF LEFT$(pivot$,long)=LEFT$(UPPER$(file.data$(chec
k-1,point(item))),long) THEN tick=TRUE ELSE tick=FALSE
9875 RETURN
9880 IF INSTR(UPPER$(file.data$(check-1,point(item))),L
EFT$(pivot$,long)) THEN tick=TRUE ELSE tick=FALSE
9885 RETURN
```

As usual, this routine requires changes to line 40, as well as new headings, menu options and so on, which must be set up as follows (only lines needing to be changed here).

```
13110 DIM menu$(32)
13130  FOR i=1 TO 32:READ menu$(I):NEXT          Menu opt
ions
13140  DIM menu.length(6)
13150  FOR i=1 TO 6:READ menu.length(i):NEXT 'Menu leng
ths
13160  DIM start(6)
13170  FOR i=1 TO 6:READ start(i):NEXT          'Menu star
ting points
13210 DIM heading$(17)
13230  FOR i=1 TO 17:READ heading$(i):NEXT 'Heading val
ues
40117 DATA "Records less than datum","Records more than
 datum","Records equal to datum","Records containing da
tum","Return to main menu"
40118 DATA "List subfile","Edit subfile","Save subfile"
,"New Search","Return to main menu"
40130 DATA 5,4,8,4,5,5
40150 DATA 1,6,10,18,22,27
40220 DATA "Search File","Subfile Menu"
```

So that we can save, edit, and display the group of records we have found as if they were a complete file, some other bits of code will also require modification:

```
45   foot=records
8230 WHILE file.data$(1,point(record)) <> "" AND tick=0
 AND (foot=0 XOR foot>=record)
9020 WHILE file.data$(0,point(record))<>"" AND continue
=TRUE AND (foot=0 XOR foot>=record)
```

The other missing pieces of program required to complete "Structured Data" are the promised modifications to the "edit" routine and our "data overflow" lines. "Edit" you will remember, lacks a "delete record" function and is a little hard to get out of - here is the whole routine, as there have been rather too many fiddly alterations to pick out all the altered lines one by one. Note in particular that the "single item" search at 8220 has been further modified using an "INSTR" type match rather than "matching from the front" - as well as making the search more flexible this also fixes an odd "memory grabbing bug" that started to produce garbage collections when I tested the routine with a large file.

```
8000 ' edit record in memory
8010 head=12:GOSUB 8100 ' find record to be edited
8015 IF tick=0 THEN RETURN ELSE record=tick
8020 GOSUB 8300 ' display record
8030 GOSUB 8400 ' edit record
8090 RETURN
8100 ' find record
8110 GOSUB 400 ' draw record screen
8120 FOR field=0 TO fields-1
8140   GOSUB 900
8150 NEXT
8160 LOCATE (53-longest)/2,MIN(y.axis+5,23):PRINT"Which
 field to search by ? ";
8170 GOSUB 8500 ' find field
8195 IF check=0 THEN 8160 ELSE LOCATE (45-LEN(file.data
$(check-1,0)))/2,MIN(y.axis+5,23):PRINT "Type in the "f
ile.data$(check-1,0)" of the record you want";
8200 LOCATE ((30-longest)/2)+(longest+6),check+4
8210 caps=TRUE:length=48:control=12:GOSUB 200
8220 record=1:tick=0
8230 WHILE file.data$(1,point(record)) <> "" AND tick=0
 AND (foot=0 XOR foot>=record)
8240    IF INSTR(UPPER$(file.data$(check-1,point(record
))),LEFT$(user.input$,long)) THEN tick=record
8250    record=record+1
8260 WEND
8270 LOCATE 3,MIN(y.axis+5,23):PRINT SPACE$(77)
8280 IF tick=0 THEN LOCATE 18,MIN(y.axis+5,23):PRINT "N
o such record !  Do you want to try again ? ";:GOSUB 50
0:CLS#1:IF yes THEN CLS#3:GOTO 8120
8290 RETURN
8300 ' display record
8310 IF mde<>2 THEN GOSUB 600:GOSUB 400
8320 CLS#3
8330 FOR field=0 TO fields-1
8340  GOSUB 900 ' field name
8350  PRINT file.data$(field,point(record));
8360 NEXT
8390 RETURN
8400 ' edit record
8410 LOCATE 4,MIN(y.axis+5,23):PRINT"Which field to edi
t ? ([ENTER] to exit, 'K' to delete record)  ";
8420 GOSUB 8500 'find field
8425 IF long=0 THEN RETURN ELSE IF UPPER$(LEFT$(user.in
```

```
put$,long))="K" THEN GOSUB 8600:RETURN
8430 IF check=0 THEN RETURN ELSE LOCATE (45-LEN(file.da
ta$(check-1,0)))/2,MIN(y.axis+5,23):PRINT "Type in the
new "file.data$(check-1,0)" for this record";
8435 oldlong=LEN(file.data$(check-1,point(record)))
8440 LOCATE ((30-longest)/2)+(longest+6),check+4:PRINT
SPACE$(oldlong):LOCATE ((30-longest)/2)+(longest+6),che
ck+4
8450 caps=FALSE:length=48:control=12:GOSUB 200
8455 IF long=0 THEN RETURN
8460 IF long<=oldlong THEN MID$(file.data$(check-1,poin
t(record)),1)=SPACE$(oldlong):MID$(file.data$(check-1,p
oint(record)),1)=LEFT$(user.input$,long) ELSE file.data
$(check-1,point(record))=LEFT$(user.input$,long)
8470 LOCATE 3,MIN(y.axis+5,23):PRINT SPACE$(78)
8480 LOCATE 27,MIN(y.axis+5,23):PRINT"Is this record O.
K. now ? ";
8485 GOSUB 500:IF yes=TRUE THEN RETURN ELSE LOCATE 3,MI
N(y.axis+5,23):PRINT SPACE$(78):GOTO 8410
8490 RETURN
8500 ' find field
8510 caps=TRUE:length=longest:control=10:GOSUB 200
8520 field=0:check=0
8525 IF long=0 OR UPPER$(LEFT$(user.input$,long))="K" T
HEN RETURN
8530 WHILE check=0 AND field<fields
8540    IF LEFT$(user.input$,long)=LEFT$(file.data$(fie
ld,0),long) THEN check=field+1
8550    field=field+1
8560 WEND
8570 LOCATE 2,MIN(y.axis+5,23):PRINT SPACE$(78)
8590 RETURN
8600 ' delete record
8610 LOCATE 2,MIN(y.axis+5,23):PRINT SPACE$(76);:LOCATE
 12,MIN(y.axis+5,23):PRINT"Sure you want to delete the
above record from the file ?";:GOSUB 500:IF NOT yes THE
N RETURN
8620 extent=0:WHILE file.data$(0,point(extent))<>"":ext
ent=extent+1:WEND
8630 FOR i= record TO extent
8640   point(i)=point(i+1)
8650 NEXT
8660 file.data$(0,point(extent))=""
```

Finally, here is the "data over flow routine", with the lines that need changing in other places for it to function correctly, and a little "delete *.BAK" routine to wipe off all those backup files at the end of a session. If you have a nice megabyte drive for your data, or if you really find *.BAK files useful, then you can leave this bit out if you like!

```
3550 WHILE another
3560    GOSUB 3600:IF roomfor<1 THEN RETURN
3570    GOSUB 3700        Add data
3580    GOSUB 3800
3590 WEND
3595 RETURN

3620 roomfor=MIN(((FRE(0)\20)\fields)-(20-fields),recor
ds-record)
3630 IF roomfor<1 THEN GOSUB 3900:RETURN
3900 ' No more room
3910 CLS#3:LOCATE 28,10:PRINT"This file is now full !"
3920 GOSUB 800 ' Press any key
3930 RETURN

14000 ' End program
14010 CLS:PEN 0
14020 a$="*.bak"
14030 |ERA,@a$
```

Very well, that is the whole of "Structured Data" - at least I am not going to write any more! Just how useful is this little data base?

First, it is missing two really important functions that I hoped to include: the ability to print out lists of records, and the ability to do calculations of your data (assuming some of this is numeric). You will probably NOT wish to add either of these into the main program, as this will further restrict the already very limited area of memory available for data. What about writing an extra program to do these jobs? It will read files created by "Structured Data" and then print these out - perhaps in all kinds of different ways, depending on the kind of printed format you require, and perform all kinds of calculations as well.

What WILL "Structured Data" do? As a general data base, albeit one with a fairly limited file size, it is very flexible. Try the following files for instance:

1. Phone Book

Filename	:	PHONBOOK
Fields	:	5
Field Names	:	SURNAME, GIVEN NAMES, ADDRESS1, ADDRESS2, PHONE

2. Games Catalogue

Filename	:	OURGAMES
Fields	:	5
Field Names	:	GAME, DISC NUMBER, TYPE, AGE SUITABILITY, RATING

Don't be too frightened by the low number of "records available" when you start to add records in. Unless you put a lot into each field you will get more in than it says - the program is doing an estimate based on quite long records, short ones will take up less space. For both of the above files you should be able to get in nearly two hundred fair sized entries, even more if you

keep entries very succinct.

If you intend to use the program seriously, it will pay to get my final version - simply make sure you get this month's cassette by writing to the Amstrad User! If you have made alterations along the line you should still be able to slot these in with no worries as the careful structuring and the use of unchanging line numbers makes this easy.

You may even want to produce a "running version" that will work a fraction faster and will manage slightly larger files. The following steps will help.

1. RENUM the program. This spoils our nice numbering structure, but provided you never want to change the program this doesn't matter much. RENUM 1,1,1 will produce the best effect, and will save a good many bytes simply in line numbers!

2. Cut out REMS. Note: because of my funny habit of GOSUBing to REM lines you will want to leave the line number and the REM sign (') intact for lines that have only a REM and nothing else. This makes very little difference, and will in fact leave a little gap at the head of routines that will make the program easier to read. If you want to cut out the purely REM lines altogether you will have to move the first "operational" line of the subroutine to the line number of the REM line, then wipe the operational line. Thus:

```
6000 ' have fun
6100 PRINT "GA GA GA GA GA"
6200 RETURN
```

would become

```
6000 PRINT "GA GA GA GA GA"
6200 RETURN
```

3. Cut out any redundant spaces. You may have already done this, actually, or you may not have typed in the redundant spaces I put in, in one or two of the early routines. Personally I would keep at least one space indentation for loops but this is up to you.

4. Check through the program for lines that can be amalgamated. This will not save a lot of space, really - and it will make the program almost impossible to read. It is also very tricky indeed - check that the "amalgamated" version works precisely the same as the old one! "IF" lines are the worst trap - in fact do not amalgamate any lines with an "IF" in them. Also watch that you don't get rid of any line numbers used as "addresses" for GOSUB and GOTO statements. Best not to try this one, actually, unless you really know what you are doing.

Personally I would keep this program exactly as it is. When and if you start to feel its inadequacies, front up and purchase a professional database program (Masterfile is excellent, but so are several of the others). Because you will be used to the basic concepts of database management by this time you will find your new system much easier to use than otherwise would have been the case. If you really wanted to, you could go on working on "Structured Data" until it did everything a program like Masterfile can do - however you would have done a lot of unnecessary re-inventing of the wheel, to no real purpose except perhaps to have honed your programming skills.

Talking about programming skills, anyone who has worked through these articles so far, and who could by now write an application about as sophisticated as "Structured Data" for themselves, is probably thinking of learning a language other than BASIC. Part of this will be due to genuine frustration with BASIC's real faults, but a lot of it is really a kind of snobbery. Before you go plunging into PASCAL or "C", or even the wonders of machine code, do think about the following.

BASIC'S REAL FAULTS (ALL OF THEM)

1. It is called BASIC. This produces the quite erroneous impression that it is very easy to learn (it is in fact at least as hard to learn to program well in BASIC as in PASCAL), and worse, that it is in some way fundamentally limited - a sort of beginner's introduction to programming and nothing more. Many perfectly good applications have been written in BASIC - in spite of all the misinformed propaganda against it, it remains not only by far the most popular language of amateurs but a favorite of a surprisingly large number of professionals (although many of them won't admit it!)

2. It is very non-standard. BASIC on one machine, in other words, is likely to be different in many ways from others. PASCAL and "C" are rapidly catching up in this regard however, as new and enhanced versions of these languages come out, and the only languages that have managed to remain really standard are in fact dying.

3. It is fundamentally unsuited to compilation. A compiler is a program that takes our source code and turns it into object code that will run much faster and (in most cases) take up less memory, by being closer to the "machine language" our computer actually understands. Some languages were designed from the outset with compilation in mind (e.g. PASCAL and "C"), whereas others (e.g. BASIC, LOGO, dBASE) are interpreted languages, that is in their raw form they work by taking each instruction, turning it into machine code, doing it, then going on to the next instruction. This is a slow process and the main reason you can't write decent arcade games in BASIC! You CAN compile BASIC source code (at least in some dialects), but typically compiled BASIC is still much slower than (say) compiled PASCAL. To give you some idea, Locomotive BASIC, a purely interpreted version, is faster than many compiled BASICs. There have been a couple of attempts at writing compilers for Locomotive, but none of these has produced anything really usable. What all this boils down to is that BASIC is incurably slow. For many applications this hardly matters very much - when we really need something to work faster

than BASIC will allow, (the only example in a program like Structured Data would be our sort routine) then we can slot in machine code routines. Mind you, anyone overly concerned about the slowness of BASIC might be comforted to know that as interpreted languages go it is very fast, much quicker than LOGO or uncompiled dBASE for instance.

It is NOT a fault of BASIC that it is an "unstructured" language. Computer *programs* are structured, not languages. If this series has not demonstrated that it is perfectly possible to write clear structured source code in BASIC then I have been wasting my time. On the other hand you wouldn't believe the murky code that has been written in "C", dBASE (and even PASCAL), allegedly structured languages. To suggest that BASIC is too "free" is an insult to programmers which assumes we want to write lazy, unstructured code so much that we have to be forcibly prevented by features of the language.

All this is not to suggest that there are some tasks that other languages handle much better than BASIC ever can. If you want to write an operating system, or a "commercial" business application you will want to use "C"; and you can't really write an arcade game in anything but machine code. Once upon a time COBOL was the best language to learn as far as getting a job was concerned (fortunately that is starting to change as this obsolete brontosaurus slowly dies); otherwise the effort of learning another language is likely to be a disappointing waste of time. As always that is my opinion but it is not an uninformed one.

This is the last article in this series. Next month (ed. willing) we will start to have a look at an "expert system". This will use, in addition to our menu and yes/no input routines, commands and parsing of "free text" input. We will have less theory/general advice, and more explanation of what each new routine actually does. See you then.

Ed is willing! Ed also appreciates what a tremendous amount of time and effort Paul has put into this series which is in fact the longest TAU has ever had the pleasure of publishing. So next month we're going straight into a new, even more exciting series on Artificial Intelligence - looking forward to it too! -Ed.

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KEEPING THE (ALGO)RYTHM

With the last part of this introductory series on writing Algorithms and pseudocode, here's Gary Koh. There's even some useful type-ins as well!

This month is the last part in our introductory series on algorithms, but that does not mean you are not going to see more on algorithms in the future. This month we will be looking at several small algorithms.

The first thing we will look at is an algorithm for finding prime numbers. The first 30 or so prime numbers are easy to find yourself, but things get a bit difficult after that. The obvious solution is to use the computer. As there is no formula to find prime numbers, we will have to resort to "brute force" calculation intensive methods. The upshot of this is that the time to find a longer series of prime numbers does not grow proportionally.

For instance, to find 50 prime numbers instead of 25 takes about 3.6 times as long. To find 100 numbers instead of 50 takes another 3.6 times as long, so to find 100 instead of 25 prime numbers actually takes around 13 times as long, not 4 times as long. To find 200 numbers instead will take around 46.6 times as long. The more numbers you want to find the longer you will have to wait. Here is the pseudocode listing for the algorithm.

```
Prime numbers

prime(7200) - array to hold numbers
prime(1)=1
prime(2)=2
prime(3)=3
prime(4)=5
prime(5)=7
ask for how many prime numbers to produce
total=amount of prime numbers to be produced
number=7
for position=6 to total Do
    Begin
        num=1
        while num<>0 Do
            Begin
                number=number+2
                chk=1
                If chk=1 then Do ScanNumber
                End
            prime(position)=num
            print num to the screen
    End

Subroutine: ScanNumber

scan=2
finish=1
While finish=1 Do
    Begin
        If prime(scan)*2>number then finish=0
        If number/prime (scan)<>round(number/prime(scan,0))
        Then
            Begin
                num=1
                finish=0
            End
            Else num=0
        scan=scan+1
    End

End of subroutine
```

The first it does is to set up the store for the prime numbers, and also to put in the values of the first few prime numbers. The main search loop begins with the While. This loop does the actual searching for the prime numbers. The variable number holds the number that it is checking to see if it is a prime number. Number is incremented by 2 each time through the loop because all even numbers after 2 are not prime numbers, so you can avoid them. The first If checks if Number is divisible by 3 or 5 and sets chk if that is the case, since that number cannot be a prime number.

The next If then calls the subroutine that does the actual searching, as long as chk is 1, which means that so far the number is not divisible by 2,3 or 5. What the search subroutine does is to go through all the previous prime numbers that have been stored up, and divides the number being tested by it. If that number ends up having a fraction part, then it is not divisible by that number and the search continues.

The search only ends when a number that is divided by another prime numbers ends up as a number with no fraction, which means that it is divisible by at least that number and therefore cannot be a prime number, or when it has finished searching through the numbers below half the value of number, which means that the number must be a prime number. There is no point in searching through the prime numbers higher than half the value of, say, 500, because all those numbers will end up as fractions, and it is a waste of time searching through them.

Listing 1 gives a Basic listing of the algorithm. This routine is slightly different since when the search is finished it beeps away annoyingly, so you can go away and do something while it is searching. Then it re-displays the prime numbers again. To pause this, press

Escape once (don't do it twice or the program will break) and press any key (other than Escape) to start it up again. The maximum amount of prime numbers it can search for is 7200, which is the dimensioned value of the storage array. Be warned though, if you want to go for 7200 prime numbers you are going to have to wait a long, long time.

There have been other programs in the past to find prime numbers. Note that I use the word program, not algorithm. There are always different ways to do things, some better, some worse and some having some advantages. I am not saying that this particular program is the best, but it has the advantage over the sieve method in that it does not require a load of memory.

Whereas using the sieve method you are limited on the CPC to a prime number with a maximum value of around 4000, which gives around 400 to 500 individual numbers, this method I give, although slow, allows you to find up to 7200 individual numbers. This is a good example of compromise: less numbers, more speed; more numbers, less speed.

The second algorithm presented here will help keep your text files from prying eyes. In other words, it encrypts your file into a lot of rubbish that will hopefully be unbreakable to anyone but you. With most normal encrypting systems the key, or the actual code that is used to encode the file is a number, or some series of unrelated characters. The longer the code the better the protection, but the more difficult it is to remember. The best thing to use would be a word, or a sentence, which is much easier to remember.

The next algorithm encodes an ASCII file with a string of your choice of up to 255 characters long. The string can have any ASCII characters of your choosing. Assuming you stick to just the letters of the alphabet a string of 40 characters would have 26 to the power of 40 different combinations or 397 followed by 54 zeroes. That ought to keep anyone occupied for a long time!

What's more, the code string would be much easier to remember. This is the pseudocode listing of the algorithm.

```
Encryption, Decryption algorithm

code$=code string
codepos=1
option=1 to encrypt, 2 to decrypt
For count=first character of file to the last character of file. Do
    Begin
        If option=1 Then
            code=asc(chr$(character <count> of file))+asc
            (mid$(code$,codepos,1))
            Else code=asc(chr$(character <count> of file))-asc
            (mid$(code$,codepos,1))
            character <count> of file=chr$(code)

        codepos=codepos+1
        If codepos>len(code$) then codepos=1
    End
```

This is a pretty basic, no frills algorithm that does exactly what it is supposed to do - nothing more, nothing less. Please remember that in ASCII, lower case letters are different from upper case letters, so when you type in your code make sure you get the cases right, since this routine does not go out of its way to distinguish between the two.

All the algorithm basically does is to loop through the entire file and the code string. It adds each ASCII value to the characters in the code string, one by one, to the ASCII value of a character in the file. For instance, if a character in the file was A, which has ASCII value 65, and the character it was up to in the code string was c, which has an ASCII value of 99 then the resulting value would be character number 164.

To decrypt it the process is simply done in reverse. Listing 2 gives you the Basic PROGRAM listing of this algorithm. There is a big difference between a program, an algorithm and a routine. Well, that is what I think. I classify a program as a collection of instructions that are grouped into certain distinct areas, which may or may not be sub-routines. I prefer to think of an algorithm as itself in a pseudocode format, and a routine as either one part of a program that does just one single function, or as an algorithm that has been translated into the target language.

The algorithm itself just encrypts/decrypts a bunch of data. This program goes further by providing a supporting framework of instructions that do the other things like loading the actual file to be encrypted or decrypted and asking the user for pieces of information. Other people may think things differently but this is how I see things.

If you want to write a program to test someone in a foreign language or as a quiz type program there are two ways you can ask for an answer. You can either print out the question or foreign word first, and then get the user to type in the answer, or you can have a multiple choice kind of thing. Our next algorithm allows you to set up a multiple choice kind of thing. A multiple choice algorithm may look simple, but it is not quite as easy as it looks. The following pseudocode listing shows you an algorithm to do this.

```
Multiple word selection algorithm

itemnumber=20
select(5)=array to store the items to choose
counter(itemnumber)=array to store flags for checking if a item
has been used
wordselect=which word is selected
For count=1 to 5 Do select (count)=99
For count=1 to itemnumber Do counter(count)=0
counter (wordselect)=1
wordnum=int (rnd*5)+1
select  (wordnum)=wordselect
```

```
For count=1 to 5 Do
    Begin
        If select (count)<>99 Then Do
            Begin
                finish =0
                While finish=0 Do
                    Begin
                        number=int(rnd*itemnumber)+1
                        if count (number)=0 Then Do
                            Begin
                                select(count)=number
                                counter (number)=1
                                finish=1
                            End
                    End
            End
    End
```

As an example of how this algorithm works, imagine for instance that you wanted to test someone in a foreign language. You would set one array holding the English words and another array holding the foreign words. You would randomly select which word you wanted and place that in wordselect; then you would call the routine.

The routine returns with the array select containing 5 different item numbers that are referenced against your array that holds the words. Note here that the algorithm does not know anything about what you want to do with the array of words. It has only one array, counter, to keep track of which items there are that have not been put in the select list. This makes sure that two of the same items are not put in the select list. Counter has been pre-set to twenty items, but this can be changed easily by changing the variable item number. One of those items in the select list that it gives back is the one you designate to be correct, and the variable wordnum tells you which one on that list is the correct one.

You would then print the list of items, ask the user which one corresponds to the English meaning which is printed on the screen and you would get an answer of either 1,2,3,4 or 5. You would then use the variable wordnum to check if the user got it right. This has been rather hard to explain but you should get the gist of all of this.

I leave it as an exercise for you to encode this in Basic, I will not be supplying the listing for the routine. I will however leave you with listing 3, which is a "test harness". This is a bit of code that is designed to test the routine. It sets up some words and calls the routine. Press any key to go through the routine each time. The information it gives you includes the execution time, the word that was selected, and the list of 5 words that was returned from the routine. If everything goes right then the selected word should appear in the list and no word should be repeated. If not then it's back to the drawing board. Good luck and have fun programming your multiple choice quiz program.

ENCRYPTION/DECRIPTION PROGRAM FOR ASCII TEXT FILES

```
100 'Encryption/Decryption program for ASCII text files
110 '
120 DIM text$(700)
125 MODE 1
130 INPUT"File to encrypt/decrypt";filename$
140 INPUT"New name for encrypted/decrypted file";newnam
e$
150 dummy=FRE("")
160 lin=1
170 OPENIN filename$
180 WHILE NOT EOF
190 LINE INPUT #9,text$(lin)
200 lin=lin+1
210 WEND
220 lastline=lin-1
230 CLOSEIN
240 INPUT"(1) to encrypt, (2) to decrypt";option
250 INPUT"Code string";code$
260 PRINT
270 IF option=1 THEN PRINT"Encrypting"; ELSE PRINT"Decr
ypting";
280 PRINT" File:";filename$
290
300 codepos=1
310 FOR count=1 TO lastline
320 FOR charcount=1 TO LEN(text$(count))
330 IF option=1 THEN MID$(text$(count),charcount,1)=CHR
$(ASC(MID$(text$(count),charcount,1))+ASC(MID$(code$,co
depos,1))) ELSE MID$(text$(count),charcount,1)=CHR$(ASC
(MID$(text$(count),charcount,1))-ASC(MID$(code$,codepos
,1)))
340 codepos=codepos+1
350 IF codepos>LEN(code$) THEN codepos=1
360 NEXT
370 LOCATE 1,25:PRINT"On line";count;":";lastline-count
;"lines left"
380 NEXT
390
400 dummy=FRE("")
410 OPENOUT newname$
420 FOR count=1 TO lastline
430 PRINT#9,text$(count)
440 NEXT
450 CLOSEOUT
460 IF option=1 THEN PRINT"File encrypted and saved" EL
SE PRINT"File decrypted and saved"
```

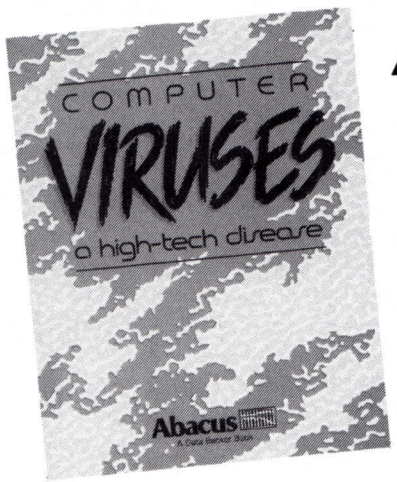
PRIME NUMBER SEARCH ROUTINE

```
100   Search for prime numbers
110
```

```
120 DIM prime(7200)
130 prime(1)=1
140 prime(2)=2
150 prime(3)=3
160 prime(4)=5
170 prime(5)=7
180 MODE 2:ZONE 8
190 INPUT"How many prime numbers to produce";total
200 number=7
210 FOR position=6 TO total
220 num=1:WHILE num<>0
230 number=number+2
240 chk=1
250 IF number/3=ROUND(number/3,0) OR number/5=ROUND(num
ber/5,0) THEN chk=0
260 IF chk=1 THEN GOSUB 360
270 WEND
280 prime(position)=number
290 PRINT number,
300 NEXT
310 PRINT:PRINT"Press any key to see the whole lot"
320 WHILE INKEY$="":SOUND 1,200,5,7:FOR delay=1 TO 200:
NEXT:WEND
330 CLS:FOR a=1 TO total:PRINT prime(a),:NEXT
340 END
350 ' Search for numbers
360 scan=2
370 finish=1
380 WHILE finish=1
390 IF prime(scan)*2>number THEN finish=0
400 IF number/prime(scan)=ROUND(number/prime(scan)) THE
N finish=0:num=1 ELSE num=0
410 scan=scan+1
420 WEND
430 RETURN
```

TEST HARNESS FOR MULTIPLE CHOICE ALGORITHM

```
100 ' Test harness for multiple choice algorithm
110 ' Instructions: Put the routine to be tested at lin
e 300
120 '
130 DIM word$(20),counter(20),select(5)
140 itemnumber=20
150 RANDOMIZE TIME
160 MODE 1
170 FOR a=1 TO 20:READ word$(a):NEXT
180 finish=0:WHILE finish=0
190 wordselect=INT(RND*20)+1
200 first=TIME:GOSUB 300:second=TIME
210 PRINT"Time to select words:";ROUND((second-first)/3
00,2);"seconds"
220 PRINT"Target word:";:PEN 2:PRINT word$(wordselect):
PEN 1
230 PRINT:PRINT"Word Check List:"
240 FOR a=1 TO 5:PRINT a;word$(select(a)):NEXT
250 PRINT
260 PRINT"Press any key to run again:":CALL &BB18:PRINT
270 WEND
280 DATA disk,drive,monitor,computer,CPU,printer,joysti
ck,algorithm,RS232,keyboard,interface,gate array,DIP,RA
M,ROM,PROM,EPROM,EAPROM,DRAM,FET
290 END
```

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- Definition of a *virus*
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ENTREE TO ASSEMBLER

Joseph Elkhorne takes a quick look at assembly language programming for CP/M users and gives us some homework to try out ourselves.

In light of some recent problems that have come to my attention, it appears we need to address some basics. No, not BASICs (of which there are more than enough) but basics, as in fundamentals.

The first thing you need to appreciate is that assembly language programming and CP/M are a whole new ball game. You probably look back on your first programming efforts in BASIC with a shudder. If you haven't had any formal exposure to programming, you probably learned something about BASIC by trial and error, with the Amstrad manual beside you.

Keying in programs from magazines and books - and debugging YOUR mistakes will have taught you something about how programs are written. Finding the gremlins that published typo's create is more of a challenge. It's all part of the learning curve. Getting into CP/M means you're a raw beginner, again. At least, you have some appreciation of a programming language, and can plan or hack your way toward a goal. There's no easy road to that goal, no shortcuts. First of all the information that Amstrad supplies is minimal. Twenty pages on CP/M exist in the Amstrad User Instructions, plus a few other bits of information in Chapter 7.

Therefore, you will have to invest time and money in outside sources. I started learning about CP/M some years ago, using the 2.2 release on a Sony colour computer. That unit came with a wealth of information about the hardware and the BASIC implementation. Little light was shed on CP/M, other than the raw essentials. Half a dozen books later, I could drive it - to a point. An obscure reference to "system calls" made me curious. By now, I understood the idea of an operating system and could manipulate files with PIP and even had taught myself to use ED. Readers newer to the game have it easier, I think.

Roger Williams gave you a good explanation of how and what ED does last month. I learned all these details the hard way - and still come back to ED as required. These days however, I tend to use Tasword for my source (.ASM) file writing. The point I emphasize is that Amstrad gave you a number of tools with the computer package. Though there are better tools and techniques, why not learn to use the ones that cost you nothing?

O.K., so you boot up CP/M. Then what? Well, the operating system is waiting for a command. The first, and most frequently used, is DIR. That's the equivalent of CAT, and tells you what is on the disc. There are only six built-in commands that CP/M will respond to. The others are DIRS, ERASE, RENAME, TYPE and USER. Anything else typed in will either be a program or rubbish. Unlike BASIC, you need not say RUN "sillyone". The operating system, o.s. for short, looks at what you have typed in - once the RETURN is pressed - determines it is not a built-in command, then looks at the disc to see if a name with the .COM extension lives there. If so, it loads and executes it.

Otherwise, it spits out a message at you - like

```
sillyone?
```

Now, even if you wrote a program called "RUBBISH" in BASIC, tested it and proved that it works, it will not run in the CP/M environment. Why is it so? Because CP/M programs are assembled, machine language ones, and never have the .BAS extension. When you saved it, you did not have to tack the .BAS extension onto it; the computer does it for you. But a CAT will show you that it's there. So will the DIR in CP/M.

DIRS shows you the system files - something AMSDOS (the power-up mode) will never do. This might not mean too much to you, if you are a newcomer. But what the system designation means is a way of "hiding" the directory (or CAT) name, so that the screen will be less cluttered.

Let's take an example: Tasword. There are four files associated with that program. They are all essential; there's the .BAS extension, which is a loader, and three .BIN files, which are the nuts-and-bolts of the program. They need to be there, but you do not need to look at them each and every time you do a disc operation during a work session.

You use SET from within CP/M to change the file attribute. Now, SET is a transient command - which means it must be read from the CP/M disc before it can work - and has a .COM extension. Wait, you say. When I do a DIR of the system disc, I see a DIR.COM, and ERASE.COM, and so forth. This is because the built-in commands are "short form" and do the easy things. To get more mileage out of the command, the .COM programs allow you various options. DIR[SIZE will give you the same type display as CAT does, with an alphabetically sorted list and file sizes. DIR shows you the sequence they were written on a disc, and directly reflects the physical information in directory sectors of the disc.

Well now, assuming you want to de-clutter your Tasword working disc, you simply enter

```
SET T*.*[SYS
```

and see what goes wrong...Did the o.s. find SET.COM? If so, did it then find the Tasword files? You'll have to get your head straight - find your own operating system or working procedure to succeed. The o.s. always defaults to the logged-in drive; most of the time it will be A. Even if you only have one disc drive, the sneaky o.s. acts as though there were two on board. The prompt line in the lower right hand corner for a single drive unit reminds you where you are.

In this case, the correct approach is SET B:T*.*[SYS and swap discs as prompted. Not a lot of CP/M systems exist with a single drive. Even when you have two drives, you still have to concentrate on what you are doing. It's easy to splatter an hour's, or a day's work. This is why working copies of software should always be used, with the masters tucked away safely.

My second drive is a 5-1/4" unit and needs to be told what format we are in at the moment. If I do not use my auto-boot CP/M disc, I get angry messages.

Once you get familiar with working in CP/M, these considerations will be (almost) second nature. Let's suppose you can handle the fundamentals of files and drives and utilities. What you really want to do now is come to grips with using the system, and getting to know assembly language.

The sequence is to create a "source file", assemble it, convert it to an executable file (.COM type) and run it, then lean back to admire your work. ED allows you to write that file, which is a set of mnemonic instructions (the equivalent of BASIC keywords) that tell the Z-80 microprocessor what to do. Additionally, it will have heaps of comments imbedded. Comments remind you in future what the program is doing and why.

Those comments can be lifesavers. They take up NO space in the assembled program, so your executable work is memory efficient, in that respect. Public domain programs which you get from a mate or off a bulletin board may or may not have the source code available. If not, and the program doesn't work, hacking it can take hours. Or forever...

You may not use many REMs in BASIC, nor need them. Start good habits in this new area by making plenty of comments. Those are the bits preceded by a ";" semi-colon character in the source file.

When you complete this file, you pass it to CP/M Plus for processing by MAC. This bloke expects to see a file of the .ASM type. The output of MAC consists of a .HEX file, a .PRN file and a .SYM file. And you've still more work to do! The .HEX file is passed on to HEX-COM. This latter turns it into a .COM file. If nothing has gone wrong in the process, you end up with a machine code program that works.

We're glossing over a lot here. This is only an overview of the process. We'll cover all the topics in more detail in future.

As an example, suppose you take the little screen effects listing that was in the March issue. That's an example of the .ASM source file. The line numbers do NOT need to be entered, of course. They are what you would see in using ED, and are appended to the "bare" text in using PIP to output the source code to a printer.

What you'll be entering is the test, like

```
menu: call clear
```

for example. (This is line 15: of the listing). At this point, you do not even need to know what it all means. As long as you key in the listing without typographical errors you should end up with a program that does something. SCREENS.ASM which you have just done is then passed on with MAC SCREENS.ASM (I'm assuming you have a CP/M working disc made up with the appropriate files on board - and some reserve area for the new files that will be created).

Your final step is to enter HEXCOM SCREENS. These will screen messages along the way, but they probably won't mean much to you. If MAC tells you of L's and the like, you have problems with your typing. The final result should be SCREENS.COM which you run by simply typing SCREENS. Now, sit back and watch the light show. If you don't have the March issue to hand, try the little listing given at the end of this article. It's a simple piece, and only pumps out endless ASCII characters. You can use it to exercise a printer or serial port, rather than just watching the characters fill the screen.

An awful lot of work and files, you say to yourself. Are they all really necessary? When you get deeper into this quagmire, you'll be glad they exist. The .SYM is a symbol table and allows you to cross-reference labels in a program. The .PRN file is a complete text listing of the source code, complete with the hex values which were assembled.

When you run into difficulty, you'll need SID. All these characters are helpers. SID stands for symbolic instruction debugger, and lets you dissect existing machine code or play around with short routines during development.

Those of you who've been exposed to CP/M previously know that I use references to the Plus version in my column. The 2.2 has less bells and whistles, which is why I have upgraded. For comparison's sake, ASM equals MAC, LOAD equals HEXCOM and DDT is the earlier version of SID.

I would recommend "The CP/M Plus Handbook" by Alan J. Miller, Sybex, Inc.1984, as an excellent reference to the o.s. It does not explain the fine points of MAC and so forth. For that you will need a more specialised test, or continue to watch this area.

ON THE PUBLIC DOMAIN FRONT

I have snagged a few files from various bulletin boards over the past fortnight. RDMS231 allows one to read (and maybe write?) MS-DOS text files on a CP/M

machine! DISKEDIT is yet another track and sector utility. Finally, I am examining the doco of a comms program which will give you ANSI capability on your Amstrad, running under CP/M.

Now, last but not least, the minimalist listing I promised you. Presented in unadorned text format. It doesn't do anything more than pump ASCII characters to the screen, but you could exercise a printer or serial port with it, I suppose. The idea is to show you assembly language programs that do something, no matter how simple.

If everything goes smoothly, you SHOULD have a sequence of commands and messages like this:

```
A>B:MAC A:CHARASET

CP/M MACRO ASSEM 2.0
011A
000H USE FACTOR
END OF ASSEMBLY

A>DIR

A: CHARASET ASM  : MACWORK       : CHARASET PRN
A: CHARASET HEX  : CHARASET SYM  : DIR1
SYSTEM FILE(S) EXIST

A>B:HEXCOM CHARASET

HEXCOM VERS: 3.00

FIRST ADDRESS 0100
LAST ADDRESS 0119
BYTES READ 001A
RECORDS WRITTEN 01

A>DIR

A: CHARASET ASM  : MACWORK       : CHARASET PRN
A: CHARASET HEX  : CHARASET SYM  : DIR1
A: HEXWORK       : CHARASET COM  : DIR2
SYSTEM FILE(S) EXIST
```

If anyone took note of the MS-DOS re-direct commands and said, "I wish we could do that in CP/M", well you can.

I used the PUT command to write the steps of the above work session to files. In completing this column, I merged the very short files which were created by PUT. They were MACWORK, HEXWORK, DIR1 and DIR2.

MAC itself created CHARASET.PRN, CHARASET .HEX and CHARASET.SYM from the CHARASET.ASM which you created and saved. HEXCOM took the CHARASET.HEX and made the working program CHARASET.COM. You might find it interesting to use the "CP/M TYPE filename" command to see the difference.

FOR BUSINESS MINDED CP/M USERS

The enormous success of the Amstrad PCW range of computers has lead to the re-emergence of CP/M as a major operating system. This has allowed the huge base of CP/M software, which has been estimated to be in excess of 8,000 packages, to be made available to Amstrad computer users. However, choosing the right package can be difficult and choosing the wrong ones may be disastrous. This book aims to assist the CP/M business user in evaluating the various products available and thus come to the correct decision with the least amount of fuss and bother.

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The two "Mini" styles are designed for use at eight lines per inch, giving more characters to the page. The rest are intended to be used at six characters per inch.

Note that a document can only use a single style.

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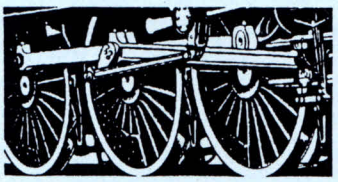
The new edition of LocoScript2 costs $87.00. Buy LocoScript2 together with our spelling checker LocoSpell for $130.00 saving $32 on the combined price. To complete the family, add LocoMail for $105.00.



LOCOMOTIVE SOFTWARE

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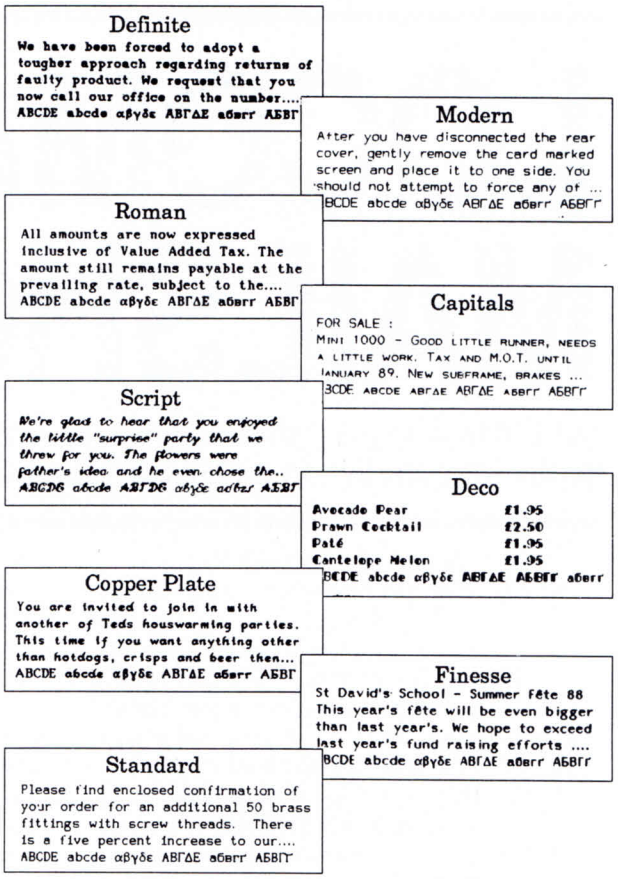
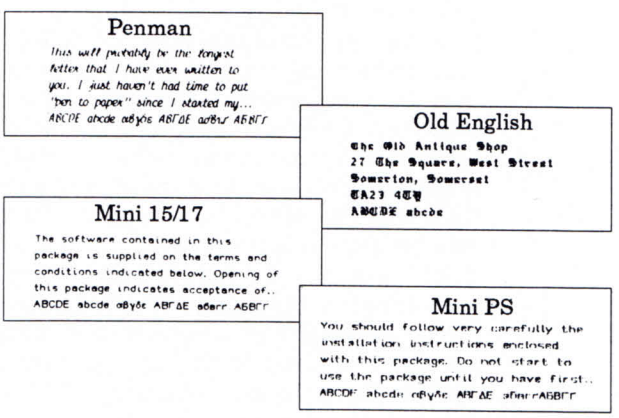
Phone (0306) 740606

LocoFont - Set 1



LocoFont - Set 2



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LOCOMAIL - MAILSHOTS

For those who are wondering what it actually does, here's a gentle introduction to a mailshot using LocoMail on your PCW.

A mailshot is a standard letter given a personal touch for a number of people whose names and addresses are held in a separate list - just like the letters you're always getting from Readers Digest. Those letters tell you that you, Fred Bloggs, have been selected from all the Bloggs families in Victoria to receive a chance to win $100,000. The letters you will want to produce are more likely to be subscription reminders to members of your club or to let your customers know of some exciting new product.

LocoMail works alongside LocoScript to tailor a given letter to each recipient - putting the right name and address at the top and inserting other personal details into the body of the letter as well. All of LocoScript's features are used to reformat the text after the insertion of the information with the result that the letter appears as if you have typed it especially. This means that you don't get unsightly gaps even though you might have to accommodate text of differing lengths; for example, the names Tim Wells and Alexander Westing-Bright. And of course, if the number of lines in a letter changes, LocoScript's 'Widows and Orphans' feature will prevent unwanted single lines from appearing at the top or bottom of the pages.

Each individual mailshot will differ depending on your particular requirements, but the LocoMail instructions you need to get the desired result will be much the same.

You need two documents to produce a mailshot - an address list and a 'master' document. The address list contains information, such as names and addresses, that you want to insert into your standard letter. The 'master' document is similar to the finished letter, but has LocoMail instructions embedded in the test. LocoMail uses these instructions to find the information in the address list and insert it in the 'master' document at the appropriate place. We will show you how to create these.

THE MASTER LETTER

You need to start with a clear idea of the letter you're going to write and where you want to add the personal touches. This will highlight the information you'll need to extract from the list of names and addresses.

First write an example of the actual letters you will be sending. Then, go back and edit the letter, replacing the name, address, salutation etc. by LocoMail instructions. They'll be replaced by text taken from the address list later.

You might write a letter to the Taylors and address it to them formally as 'Mr & Mrs H G Taylor, Robert and David' and then start the letter informally with 'Dear Henry and Liz, Robert and David'. To do this, you will have to keep their names this way in the address list.

To give this level of flexibility, you need six items of information: title, initials, names, children, surnames and address. So the Taylors would be represented as:

Title:	Mr and Mrs
Initials:	H G
Names:	Henry and Liz
Children:	Robert and David
Surname:	Taylor

and their Address.

To convert this sample letter into a LocoMail master letter, you simply replace the name and address in the letter by the LocoMail instructions to take the corresponding items from the address list.

LOCOMAIL INSTRUCTIONS

Inserting details like this form from an address list into a letter uses the simplest form of LocoMail instruction. LocoMail refers to items in your address list by name. When you specify the form of the address list, you specify the names you wish to use.

A LocoMail item name has to be a single word. Here you might well choose names such as 'Title', 'Surname' etc.

The LocoMail instruction to include an item is simply the item's name, enclosed by two special LocoScript codes (+Mail) and (-Mail). Thus the LocoMail instruction (+Mail)Surname(-Mail) means insert the 'Surname' details from the address list.

So 'Mr and Mrs', for example, should be replaced by (+Mail)Title (-Mail). The (+Mail) code is typed by pressing the [+] key followed by M and the (-Mail) code by [-]M, so this is done by using the delete keys to remove 'Mr and Mrs', then typing '[+]MTitle[-]M'. LocoScript responds by showing 'Title' in reverse text to indicate that it is a LocoMail instruction. Similarly we replace the Taylors' name at the top of the letter by:

(+Mail)Title(-Mail) (+Mail)Initials(-Mail) (+Mail)Surname(-Mail), (+Mail)Children (-Mail)

The comma and spaces are still in the letter to be printed out as normal-

in fact all characters which aren't within the (+Mail)...(-Mail) brackets are printed as normal.

For the name in the 'Dear...' part further down we'll use some more LocoMail instructions to insert details from our list of names and addresses:

```
Dear (+Mail)Names(-Mail), (+Mail)
Children(-Mail)
```

Once again,(+Mail) is typed by [+]M and (-Mail) by [-]M.

Addresses can also be handled in different ways. You can if you want, have separate items for the Street, Town etc. and deal with these individually, inserting punctuation and new lines as necessary. Alternatively you can use one item for the whole address and put the punctuation and new lines in your address list. The first approach gives greater flexibility - such as the Readers Digest's "all the Taylors in Victoria", but inserting the right punctuation and coping with strange addresses can be difficult.

Our letter, not being for Readers Digest, doesn't make special use of the separate parts of the address so we'll give the address one item called 'Address', and replace the lines of the address by:

```
(+Mail)Address(-Mail)
```

Having added all the LocoMail instructions to the letter, you have created your master document so the next job is to save it on disc.

CREATING THE ADDRESS LIST

With the letter complete, you can now move on to creating the address list. This can be a LocoScript document or an ASCII file created by a CP/M program. Here we'll concentrate on using a LocoScript document.

The form of a LocoMail address list (or more generally any file of data you're using with LocoMail) is a sequence of 'records'. A record is a collection of the items of the address etc. that you need in the standard letter. You have one record per actual letter you will print out. In our example here the records would consist of the details:

```
Title
Initials
Names
Children
Surname
Address
```

and there would be one record per name and address.

LocoMail has a very powerful way of recognising the records and picking out the items within each record. You start the address list with a special record, called a pattern, which lists the items held in the rest

of the records. You choose characters to separate the items. You then use the same characters to separate the corresponding details in later records and LocoMail picks out the information by spotting these separators.

This sounds complicated, but is not if we look at an example. Really all you have to do is choose separator characters which don't appear in the details. So we could use semi-colons for our separators and finish the record with a new page character (as we know names and addresses contain neither semi-colons nor new pages)!

So in this case our address list would start with the record pattern listing the items by name:

```
Title;Initials;Names;Children;Surname;
Address
```

and the Taylors' record would be:

```
Mr and Mrs;H G; Henry and Liz; Robert
and David; Taylor; 32 Sycamore Drive
Wandilligong
Victoria
```

and so for Mr James Franks, a bachelor (with no children) the record would be:

```
Mr; J; James;  ; Franks;  200 Easter
House
Sydney 2000
```

You must have the same number of semi-colons in your record pattern and each record, or LocoMail will get out of step and pick up the wrong information for each item.

It may be laborious to create the address list, but once done, you'll be able to use it for many different letters or other uses in the future. For example, with LocoMail it is particularly easy to print sets of labels.

READERS DIGEST REVENGE

Now that you have created the address list you need to combine it with the letter. LocoMail takes each record in turn and merges its details with the standard letter by replacing the LocoMail instructions with the details corresponding to each item. This is called merging, and is why 'M=Merge' appears at the right of the second disc manager information line.

Type M and follow the instructions that appear on the screen. LocoScript with merge data from the address list with the master document and print the result. You've just done a mailshot. You can use LocoMail to do rather more than this simple mailshot - for example, sending letters only to some of the people on your address list, but that's for another month.

MORE CP/M+

Mike Turner continues his series of tutorials on CP/M+, this month looking at SUBMIT and PIP.

Greetings again and welcome to this month's tutorial on CP/M Plus. Time is of the essence this month as we have a lot to cover.

Last month we finished with a brief look at automating packages and the use of command files. Well, this month I want to cover this in more detail. It is not hard, but appears a bit involved at first. However, once you have mastered this feature of CP/M Plus life will be so much easier both for you and other infrequent users of your system.

The first thing we will cover this month is the SUBMIT.COM utility and the associated SUB files and their use. We will also look at PIP.COM in some detail and explain some of its very handy uses. But first to SUBMIT.

When CP/M Plus is started, it searches for the file SUBMIT.COM on the disc. If it doesn't find it the A> prompt is displayed and that is that. However, if SUBMIT.COM is present on the disc CP/M Plus also looks for a file called PROFILE.SUB. Again, if this file is not found then the system simply displays the A> prompt. If however, both the SUBMIT.COM and PROFILE.SUB files are present, interesting things start to happen. CP/M Plus gives over control of the Console Command Processor (CCP) to SUBMIT and the computer will automatically carry out any commands that are listed in the PROFILE.SUB file.

How did you go with your homework? If it didn't work for you don't worry. A possible reason for 6128 owners is that you were using a wrongly formatted disc. For loading CP/M Plus on the 6128 you need the C10CPM3.EMS file to be on a system format disc. If you used a data format disc it won't work. A quick way of checking the format is to use the DISCKIT3 utility and ask it to verify the disc. If the disc has no files on it, an even quicker way is to ask for a catalogue of the disc when at the READY prompt on start-up. Type in the command CAT [RETURN] and see what happens. If you get a message saying 169k free instead of 178k free, you know you have a system format disc in the drive. PCW owners are more fortunate. Regardless of model, any disc formatted to run in the A drive will be capable of booting the CP/M Plus operating system.

Another reason for failure could be not knowing how to transfer individual files from one disc to another. Don't worry if you had problems with the PIP program. I will explain this later in this article and you may do well to read the whole article first and then do the practice exercises below. If you are happy with PIP you can get stuck straight into the practice exercises now.

So let's create some command files and see them in action. On one of your work discs you will need the following files:

1. The CP/M Plus system file with the .EMS suffix.
2. The SUBMIT.COM utility, and
3. A text editor of some sort, such as Tasword, Wordstar, RPED.BAS or ED.COM. You can also use PIP.COM to make text files if you wish. Those using RPED.BAS will also need the file BASIC.COM on the disc as RPED is a basic program and needs Mallard Basic to run.

You may also like to put a few utility programs on the disc, so that you can try out automating commands. I would suggest you need SHOW.COM, DATE.COM, DIR.COM, PIP.COM and PALETTE.COM on your work disc for this purpose.

I do not intend to go into detail on how to use the various text editors to make text files at this stage. For those curious about ED.COM you can consult the excellent articles by Roger Williams in recent issues of TAU concerning the use of this particular editor and we will look at the use of PIP later. What I want to do now is look at what you can put in command files and how these commands work.

Now to work. Use whatever text editor you possess to create a command file on your disc called TEST.SUB. Type it in exactly as follows with each comment or command on a new line:

```
; This is a remarks line which will show
on the screen
date
; This is another remarks line.
```

Now, having saved this file to the disc, let's get out of the text editor and back to the A> prompt. You can now run your command file by typing the command SUBMIT TEST [RETURN]. When you do, the screen should look something like this.

```
A> submit test

A>;This is a remarks line which will show
on the screen.
A>date
Sun 06/10/89 14:02:45
A>;This is another remarks line.
A>
```

Note how the remarks or comments lines were duplicated on the screen. This can be extremely useful if you want to put explanations on the screen of the processes that the computer is carrying out automatically. Let's try another one. Create a file called DATESET.SUB as follows:

```
;The computer will ask you to input
today's date and time
;
;
date set
;
;You will now be returned to the
operating system.
```

Try this out now by typing SUBMIT DATESET at the A> prompt. You will note that the computer displayed the comment lines as before, but also paused for you to provide the keyboard input requested by the DATE.COM program. When the program had finished its operation the submit file carried on from where it had been interrupted.

This is an important point to remember. Say you want to set up a program to use a particular keyboard configuration and then want the keyboard returned to its original configuration after you exit from the program. Submit will allow you to do this automatically, without having to remember all the commands. Look at the following example of a submit file and note the sequence of commands.

If you wish to create the file, call it WPSTART.SUB and remember to type it in with each comments line or command on a new line:

```
;The keyboard is now being configured
as a Word Processor.
;
setkeys keys.wp
;
; The computer will now start up Word-
star.
;
ws
; You have just exited from Wordstar.
; Please wait while the keyboard is re-
configured to its normal state.
setkeys keys.ccp
; You are now being returned to the
operating system.
```

Just as SUBMIT will remember where it is up to and continue from there after executing a program, it will do the same after executing other command files. So you can nest command files within each other. Look at the following example of a PROFILE.SUB file which would be executed on start-up. It combines the two .SUB files that we have already created, as well as showing how much disc space is available at the beginning of a work session.

```
; Please wait while disc space is being
checked
show a:
submit dateset
submit wpstart
```

There is much more to SUBMIT and command files than this brief introduction here. But for now, this will at least start you on the right path. I will go into this again next month when we start to look at system management. We will be using command files to their limit to automate tasks and make the system more user friendly and less prone to operator errors.

In the space remaining this month, I would like to go into the PIP utility. Unfortunately it is not covered very well in the user manual that came with your computer and is much misunderstood by many users.

SOME PIP OPTIONS

V This causes a verification of the copied file against the original. It takes a little longer than the standard copy but guarantees no errors.

C This option causes a configuration to be asked for before each stage of the copying process is completed. It can also be used for selective copying. If not sure of the file names of those files you wish to copy, type in the wildcard specification *.* and use this option. You will then be presented with a list of all the files on the disc, one at a time and asked if you wish to copy each file in a (Y/N) type format.

E This causes the file transfer to be echoed to the screen. Why you would use this in the normal course of events, I don't know, still the facility is there.

Gn This causes PIP to look in a particular user area for the file to be copied, where the 'n' stands for the user area number. This is a handy one to remember if you want to transfer files around between user areas. This can be on different discs or between user areas on the same disc.

R This causes PIP to look for the file to be copied amongst the system files on the disc. Normally PIP only looks for files with a DIR attribute and so will come up with a 'file not found' type message if the file you are after is a system one.

L This causes all upper case letters in the source file to be replaced in lower case in the destination file. This is not much use normally when copying program or binary files but is handy when copying text or ASCII files.

U This is the opposite case of the 'L' option above in that all lower case letters in the source file are converted to upper case in the destination file.

F All form feeds embedded in the source file are removed in the resulting destination file. Again this is handy when copying word processing documents and you anticipate a substantial amount of re-formatting of the text.

Z According to the manual this means that the parity bit of each data byte in the destination file is set to zero. Wow! In plain English what it means is that this option will strip the destination file of any funny high bit flags and other miscellaneous codes. This in effect would convert a WordStar word processing file into straight ASCII text which could be read by Tasword or LocoScript.

GETTING TO THE CORE OF PIP

PIP stands for Peripheral Interchange Program and in its simplest form is a quick way of moving files around between discs. The biggest problem with using this particular program is that it is very sensitive to improper syntax. In other words, unless you type in the commands in exactly the correct order and with the correct punctuation marks, the program simply won't work.

Already the smarter ones amongst you will be starting to see applications for the command files that we have just been talking about. Having worked out the correct syntax and commands for a finicky program like PIP, you could put these into a command file and automate the process forever after, thus saving a lot of heartache and frantic scrabbling through manuals.

So let's look at PIP and what it can do for you. You can issue PIP commands straight from the A> prompt, but for the purposes of this

GLOSSARY OF TERMS

Console Command Processor (CCP)
This is that part of the CP/M Plus monitor that reads commands from the terminal and interprets them.

The Monitor
It's not as you would think the screen on which you view things. In CP/M Plus terminology it refers to part of the operating system that resides in the computer's RAM or working storage and provides services to other programs as well as managing the file system on your discs.

Peripheral Interchange Program or PIP
This is a utility program that transfers files between logical devices. These devices could be things like disc drives, printers, plotters, screens and so on. During the transference it is possible to combine or modify files in some way through the use of options.

Boot Disc or Turnkey Disc
Don't let this quaint jargon throw you. Both these terms refer to a disc containing software that starts up the operating system. In the old days some computers had a key lock on the front panel and required a key to be turned to start the system, hence the term Turnkey. The other term Boot is short for Bootstrap, and has a similarly obscure type of meaning. You could say that the machine pulls itself up by its bootstraps and starts work. I prefer the more vivid mental picture of the sleeping machine being kicked into action by the impatient human at the day's start!

tutorial we will look at issuing the commands from within the program. You start PIP by typing in its name at the A> prompt as for other CP/M Plus programs. Having done so, you will be presented with an * prompt. To get out of the program just press the RETURN key and you will be returned to the A> prompt.

We will take the simplest case first. Let's imagine you want to copy a file MYFILE.DOC from one disc to another. The PIP command B:=A:MYFILE.DOC will do this for you. Translated simply, this command means "onto drive B from drive A copy the file MYFILE.DOC." Before owners of single drive machines start to worry, this command will also work for you. PIP will prompt you to insert the disc for B during the copying process. Wild card file names are recognised by PIP and so the command B:=A:*.* would copy all the files on one disc onto another.

PIP can also be used to make a copy of a particular file and give it a different name at the same time. This can be handy if you wish to make modifications to a file and test them without affecting the original. Say you want to make a copy of one of the command files we produced earlier. From the A> prompt type in the following command:

```
pip newdate.sub=dateset.sub
```

Note that the command takes the form of PIP destination=source.

If you now ask for a directory of the disc with the DIR command you will see that the file has been duplicated. What if the file NEWDATE.SUB already existed on the disc? A point to note here is that PIP will replace the old version of a particular file with the new file of the same name on the disc. So you should exercise care in the choice of file names in this sort of operation.

Remember we talked of setting file attributes last month? What if the existing NEWDATE.SUB file was set to Read Only to prevent its erasure? PIP will still over-write this file with the new version, however it will ask you to confirm that you wish this to happen. In this case the screen display would look something like this:

```
A>pip newdate.sub=dateset.sub
DESTINATION IS R/O, DELETE (Y/N)?
```

You may then choose what you wish to be done. If you wish, PIP can be made to automatically over-write read only files if you input an option with the copying command like so:

```
A>pip newdate.sub=dateset.sub [w]
```

The [w] option is just one of the many options that are available with PIP. A list of some of the other more commonly used options is shown in Figure One in plain English for ready reference. Consult your user manual if you want a full list of the available options.

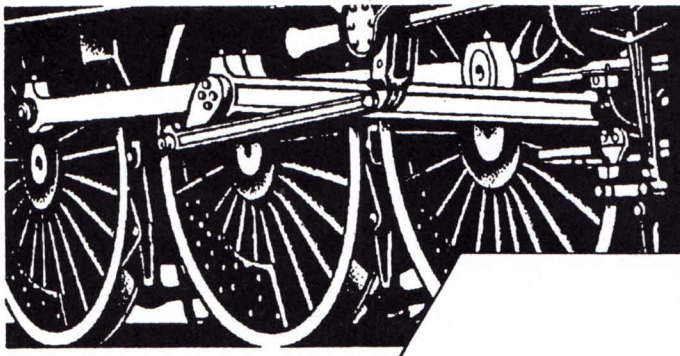
There are other options available during the copying process, but the ones listed above will be more than enough to get you through for now. I will look at some of these other options later in this series especially when we start to talk about back-up copies of files and archiving. One last thing on options is that you can use them in combination if you wish. Unlike other programs that need you to separate multiple options with a comma PIP is quite happy for you to run them all together. For example to read a system source file and verify that the resulting destination file has been copied correctly the command would look like this:

```
a>pip b:=a:myfile.com[rv]
```

Well folks, time and column space is running out for this month. Before I go however let me say that there is more to PIP than what we have covered here. It can also be used to move files between different devices such as screens and printers, as well as between discs. Next month we will conclude our look at PIP, tidying up some of these loose ends along the way. We will also finish up our work with command files and tie this all together. I will show you how you can make one turnkey or boot disc able to start all of your CP/M Plus software. There are slightly different procedures for each type of machine and I will cover both PCWs and CPCs.

In future issues we will start to look at system management and planning to avoid disasters. Also in response to some reader enquiries, we will look at what else there is on the CP/M Plus master discs and explain how to use the various programs in plain English. I will attempt to cut through all the fancy terminology and explain things more clearly than they are in either your manual or the on disc Help program.

Till next time, Happy Computing.



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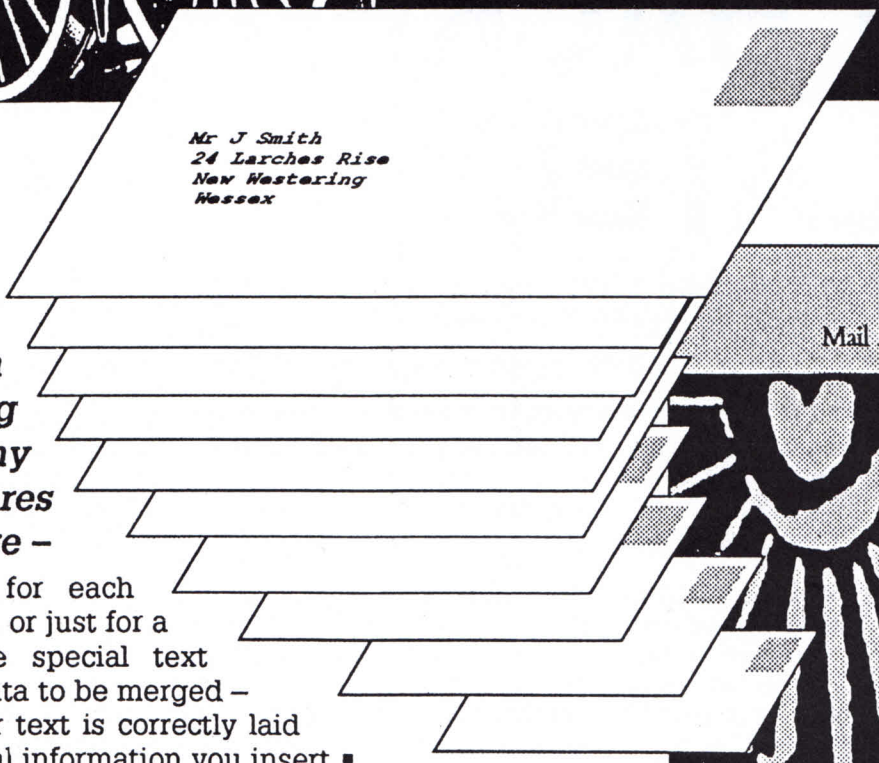

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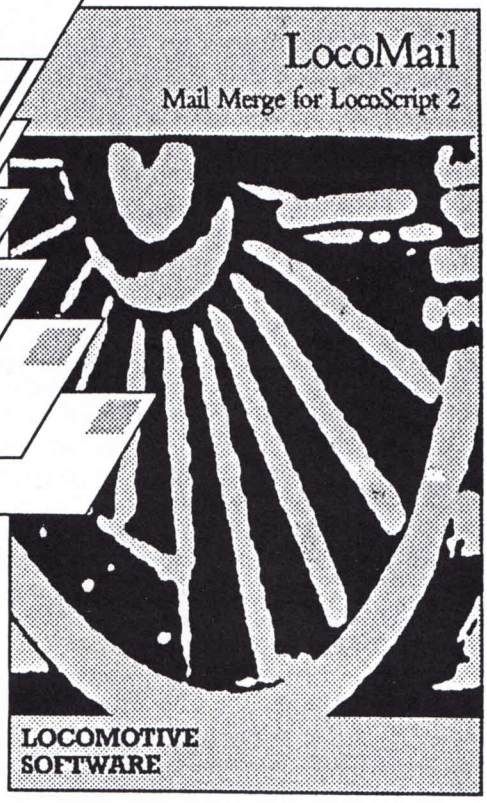

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YOU BACKED UP LATELY?

Take a chance and save yourself a few floppies, hoping nothing will ever go wrong, or read on and find out what to do to protect yourself, as Britain's Dr Alan Solomon gives some good advice...

Everyone knows that backup is a good idea. Anyone who disagrees, kindly stop reading now, and come and see me when you have your data disaster.

So why is it that so many people don't do backups? And why do so many people find that their backups are useless when they actually need them? About 30% of the people who come to me thought they had a backup; another 20% thought they were running some program that made backups unnecessary, and the rest had various excuses and no backup at all.

The commonest form of backup is the pair of crossed fingers. This is really very reliable; it works about 99% of the time (or to put in another way, you'll have problems about once per every one hundred days). It is mostly used by people who know that computers never break down, who never accidentally delete the wrong files and who don't run programs that do nasty things to discs. People who use this method have my greatest admiration; I'm fascinated to watch them, rather like you might watch a trapeze act and admire the nerve of the acrobat without the safety net. On second thoughts it is more like a game of pass-the-parcel with a fizzing stick of dynamite inside - the only question is when and how much damage.

So what can you do? Well, every PC comes with a floppy disc drive (or two) and with a program called BACKUP. This is good - at least it is suggesting the right idea. But it is terribly slow - if you have a 2Mb database that you work with each day, it backs up onto six floppies (two if you have 1.2Mb discs). If you want to do a full backup of a 32Mb drive, you'll need nearly 100 floppies. Worse than slow, it is tedious; you have to sit and nurse it, feeding it with floppies every few minutes, so you can't even go and do something else. Worse yet, it demands quite a lot of concentration; get the discs confused, and you'll probably have to start all over again.

The worst thing about BACKUP is that it isn't totally reliable; I often have to deal with backups made that way that won't restore. I'd say it is 99% reliable, but that isn't as bad as it sounds, as the computer itself (assuming carefully crossed fingers) is 99% reliable, so the combination is about 99.99% reliable (failing about once per 10,000 days, or once per 30 computer-years).

That's quite a lot, actually. In a small company with, say, 100 computers, that means a data disaster three times per year.

So various people have written much better diskette backup utilities. The have names like FASTBACK, COREFAST, HOLD-FAST, DSBACKUP, BAKUP, INTELLIGENT BACKUP, SLIP; they mostly work (one of them is mine, but I won't tell you which one) and they are faster and more reliable than DOS backup. But you still have to sit feeding floppies in, and labelling them correctly, and you still don't get very much on each floppy. Worse than that; some of them don't work very well. I reviewed several of these for one of the U.K. magazines, and two of them wouldn't back up the disc I set up, and three seemed to back it up, but the backup wouldn't restore onto another computer.

Can you imagine the pain and anguish of someone with a backup that won't restore? I don't have to imagine it - I've seen it all too often. I gave the three that wouldn't restore my number one slag-off, and then got into a correspondence with the distributors, which only ended when they admitted there were bugs, but that these had now been fixed.

So you might ask, what about quarter inch tape streamers? In my opinion, the only good thing about tape streamers is that they are so convenient to use, that people actually use them. Some of them are quite cheap, but they are still only about 99.9% reliable. Still, that is getting better, as we are now looking at a data disaster once per 300 computer years. And there is the extra benefit of the convenience; even if BACKUP were 100% reliable (nothing can be 100%) it would still be a bad proposition, once you take into account the fact that people won't actually use it, as it is so inconvenient (and the crossed-fingers method works so well).

But there are some systems that are so critical, that a failure rate as low as once per 300 computer-years is unacceptable, so what can they use? There are various methods. One is to back up across the mainframe link, and rely on the normal mainframe backup systems. But not everyone has a mainframe link, and even if you do, you might not be able to put that size of load onto it. So at this point, let me reveal what I use.

For backing up articles and

program source code, I use 360K diskettes. I don't like 1.2Mb diskettes, as they aren't quite as reliable as the 360's; I suppose it is natural that trying to get more onto the same space must decrease reliability. These 360s are very reliable, and for small files (and not many of them) they are ideal. For backing up moderate amounts of data I use a Bernoulli Box, with 20Mb cartridges. I have never had a read failure on a Bernoulli Box in two year's intensive use, and the technology used is inherently very safe. The cartridges are actually floppy discs, using the Bernoulli principle to fly the discs close to the heads, and if anything goes wrong, the disc falls away from the head, so there is no head crash. The only downside of the Bernoulli Box is that it cost me big moula (they're a bit cheaper now) and the cartridges in the U.K. are about £70 each.

But for really major backups (for example, I backup every disc that I do a data recovery on) I use half-inch magnetic tape - the stuff that mainframes use. I can get 84Mb onto one reel of tape, and the tapes cost very little. The technology is very well proven, at least 25 years old, and I trust it. The drive checks the tape as it writes to it, and if it fails it tells me and I throw the tape away. The major downside, of course, is the cost. I got mine so that I could do a particular job that involved reading mainframe tapes, but since I have it anyway, I use it for backups.

So what should you use? I am well aware that although the Bernoulli or the half inch tape might be best in some critical areas, the ordinary user is unlikely to be provided with a backup system that costs more than the computer. So the choice is between diskettes and quarter inch tape. I think that 360k diskettes are more reliable than tape, but the crucial deciding fact is that the tape will actually get used, while the diskettes won't. The tape can be left running over lunch, or while you're doing something else, while diskettes need fiddling about with. So, on the grounds that people will actually buy one because it is affordable, and on the grounds that it will actually get used because it is convenient, I often recommend quarter inch cartridge (QIC) tape, even though I know that the computer/tape combination is only 99.999% reliable, which means a disaster once every 300 computer years. But I see all those people out there, with only a pair of crossed fingers between them and chaos, and I say QIC tape.

Which one should you get? That partly depends on how big your disc is. You really want a device that can back up the whole disc onto one tape, so that you aren't forced to make a series of tapes. You can get 150Mb QIC tape drives, and 10Mb drives and anything in between.

The amount of money that you spend on a backup system should be appropriate to the value of the data you are trying to protect. If a $200 million company depends on a database for survival, spend whatever it takes for extreme reliability and redundancy. If you are creating a few word processing files every now and then, you might not need any backup at all, even onto diskettes, because you have your paper copy. But most people fall somewhere in between these extremes, needing something inexpensive, but which gives a large measure of protection.

I mentioned before that I tested several diskette backup systems, and most of them failed on backup or (worse) on restore. The failures were, of course, software problems. So naturally, we've tested the software that comes with this tape drive very carefully, because there's nothing worse that a backup that won't restore. In the diskette test, and in the tape drive test, we set up a hard disc with a lot of data on. This disc has one 10Mb file, it has a subdirectory with 1200 files, it has a subdirectory nested 16 levels deep, and it has a subdirectory with a 60 character path name; all this is perfectly valid for DOS. Then you back the disc up, using file-by-file, then you restore the backup onto a different disc. Finally, you compare all the files, to make sure that they are the same.

You might take it for granted that any backup system would pass this test. Maybe I'm paranoid, but I don't take it for granted at all, and this is just as well, because we also tested another tape drive, and it failed this simple test. I think the problem is that the programmer didn't think carefully enough about what people actually do, and his buffers or his arrays aren't big enough. There's another programming problem - writing code to control a QIC drive is an absolute pig (I know, I've done it). In order to get a block of data from the drive, the handshaking requires 18 separate steps, and a good knowledge of the DMA controller. Don't try to use any tape drive with an 80186 computer (they are pretty rare).

Our tests were also, to some extent, a test of the hardware. But we haven't given the hardware a really heavy grilling, because to a large extent, that isn't terribly important. The tape transport mechanism is pretty standard, and if it breaks, it can be replaced relatively cheaply. The drive electronics are quite small, and electronic components tend to fail within 24 hours or last forever. The software, though, is the key component; if that doesn't work right, then it never did and never will.

The last part of a backup system is the media and the procedures, and in the excitement and glamour of the hardware, this sometimes gets overlooked. If you do all your backups to the same tape, you'll regret it when one day you find that your database is corrupt, and you didn't find out about it until after you overwrote that corrupt version onto your only good copy. Even the grandfather-father-son system can suffer from this problem; I've seen it. Look at what the mainframe operators do - it's a fairly elaborate system, and includes an element of off-site backup. I normally recommend that people get 24 tapes for a backup system; if you get fewer,

you'll be reusing them too soon.

Each week, you should do a full backup - with a tape drive, that takes very little time, as you can leave it running while you have lunch. You should do the full backup on the same day each week, so that it becomes part of the routine (it doesn't matter which day). Every day, you should do a partial backup; either back up just those files which have changed, or else define a list of files by name for the daily. Most people do this at the end of the day, but there's no good reason for this, and I think it means that it often doesn't get done, as that's when you're most rushed. You should think about doing it first thing in the morning, before the days rush starts and while you have your first infusion of caffeine, or else while you have lunch.

Once per month (perhaps the last full backup of the month) you should take your weekly full backup, and take it home, and keep it there. That gives you a fairly recent off-site backup, and it gives you your monthly archive. The reason for offsite backup is not, as is usually cited, the risk of fire or theft. It is the risk of your colleagues borrowing your tapes, plus the panic factor. When you have to restore a backup, you are sometimes in a state of emergency, and I've seen a lot of people ruin their backups at the time when they most need them. If you ever needed to restore a backup, do it slowly and very carefully (and with the tape write protected). Having the vital archives at home means that you can't use them while in a state of panic.

The other tapes are for archiving at particular times - for example, you might take a full backup just before and just after an end of year routine, or when some major project is complete.

So now there really is no excuse for anyone not having a full and complete set of backups, and I'd better not bother about a data recovery service in Australia, because there'll be no-one to help. Will there?!

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INFORMATION MANAGEMENT

With the serious PC user in mind, Shane Kelly will over the next few months be reviewing various popular database packages; but first an introduction to database management systems...

Databases are a fundamental part of business life these days. Working in an office it is impossible not to come into contact with either computers or computer-generated lists. The lists will in all probability be from a database package and the computers will be running some form of database package. This article will try to give you some background into databases and how they may be used for business and at home.

Firstly, lets distinguish between a database and a database management system (DBMS). A database is a collection of raw data, usually structured in some way so as to make data retrieval easy. A database management system (DBMS) is a program or collection of programs that allows you to create, modify and access a database. For instance, dBASE 111+ is a database management system, the files it works on are databases. Raw data goes into a database, but INFORMATION comes out. The information may be either useful or useless, but it is still information. The real power of a DBMS is the easy way it allows us to access and report on the data contained in the database. Depending on how the database is structured, we may be able to elicit information that is not readily apparent without the DBMS' assistance.

If we consider for a moment a card file system. It usually consists of a small box with index cards tabbed with the letters A-Z so that they stand out above the ordinary sized cards, and cardboard cards with your data on them. For the purpose of our example, lets say that you were the secretary of a club and you had all the club members' names and addresses on your cards along with their subscription renewal rate and club usage statistics on their interests within the club. To find any item of information that we require, we must follow these steps:

a) open the box;
b) go to the tabbed card that has the first letter of the members name;
c) search through the cards until we find the one with the information we require;
d) extract the information;
e) use the information.

Two things will become apparent from the example of the card box. The first is that if we don't find the information under the tabbed card that has the first letter of our members' name, then we are reduced to searching each card individually. And the second thing is that this process is a natural for computerisation because it involves sorting, searching and reporting which are three things that a computer can do faster and more accurately than any human.

To find any item that is less than a full card, we must first locate the full card, then read it through to extract the information from it. The question of structure comes up here. If we structure the information on our cards so that the data for each card appears in the same place on each card, it will reduce the time taken to locate that information because we can scan the cards, looking in only one spot on each. This will take far less time than if we had to read all the cards right through. The ideas to come from the above discussion are that the database needs to be structured and it needs to have many ways of finding or referencing the information contained in the database. The way search paths are implemented in most DBMS' is to index the database. An index is analagous to a book index, i.e. a subject is mentioned and all occurrences of that subject are then listed with the relevant page numbers, making it quick and efficient to find the relevant text. The DBMS' index are just the same idea. A subject is listed, then the position of that subject in the database. Because the subject's position is now known, we can access it straight away, without reading all the intermediate cards.

As with all things computer-related, jargon rears it's ugly head. The jargon in this article will be kept to a minimum, but we need to know some of it if we are to talk on a competent level with other computer literate people. If the small pieces of data on each card are the smallest item in our database then they are referred to as 'fields'. So a field is the smallest piece of data to be considered by our DBMS. A collection of fields is known as a 'record' and is the same as our card. That is, it holds all the relevant information in the fields about one club member. A collection of records is called a database. It is also called a file in computer terms, but file is generally used much more loosely than this in computer jargon. File can also mean a program of a document held in electronic form or any of the several other types of computer information. For this reason we will be referring to

databases rather than files.

Now that we have some background into how a DBMS is able to improve on the manual storing of information, let's consider what else the DBMS can do for us. If we were to use the DBMS for storing data and for fast accurate retrieval of that information, then that would be enough to justify its purchase. But the DBMS can do much more than this. If, for instance, you wanted to know from your manual card system, how many people are on a certain subscription rate, you would need to look through all the cards in the box and tally up those that you were interested in. Most DBMS' are endowed with search functions whereby you can ask such a question and get an almost instantaneous response.

If you also needed to know how much these subscription rates totalled, the DBMS could do that at the same time. Some DBMS' have extensive query options that let you ask almost any sort of question and get a rapid response. Some other types of DBMS' make you define a 'report' that extracts the information you want. The 'report' is like a form that the DBMS fills in on your behalf from the data contained in the database. These reports can then be printed out to give you a permanent record of your enquiry.

Some DBMS systems also contain a programming language that can be used to generate applications using the database as an underlying structure and its reporting and querying functions as the output. Typical examples of this are accounting programs, stock control, licensing lists and one not so typical application is a horse racing system that will predict winners based on the history of the runners in the race.

These are all typical business applications of DBMS'. What can we use them for at home? The most used application at home is probably a name and address list, closely followed by an inventory list for insurance purposes. If you are a collector of anything, then a DBMS could easily make your hobby more rewarding by reducing the tedious cataloguing required with any collection. To get use out of a DBMS it is not necessary to have the latest greatest whizz bang system. Most home applications are well catered for by the DBMS systems at the low end of the market. But if your DBMS needs are out of the ordinary for the average home user, then you may well have to consider an upmarket offering.

To guide you further (or confuse you more), I will now talk about types of DBMS systems. Consider once again our cardfile of club members. Suppose that within your organization you had several different types of members, based on what club services they used. You can see that several members may be using more than one set of services, necessitating keeping records of the different charges levied and perhaps level of usage also. Storing this all on one card for each member means having a lot of repeated data on each card.

What if it was decided that some services were no longer to be offered? You would have to go through each card and alter the information on it to reflect the new structure of the club. Not an easy job, and there is a significant margin for error in this procedure. Wouldn't it be better to alter just one piece of information and have that reflected on all the affected members cards? With the manual card file and the computer DBMS that emulates a card file, this is clearly impossible.

But what if you could have a database that lists all the services provided by your club in one database and then somehow link that to your basic information about the club member in another database? With some DBMS' you can do this. This sort of DBMS is called a "relational" DBMS and depending upon the power of the DBMS, it makes this sort of linking easy. So if you deleted a service from your club's list, all member's details would reflect that fact with no further intervention by you.

As you can imagine, this sort of power does not come cheaply. The standard for relational databases in business at the moment is dBASE IV. It is not cheap at around $1000, but if you require this sort of power, that is the price range you will have to be looking at. Most home applications do not require that level of sophistication and so the DBMS that emulates a card system (so-called 'flat-file' DBMS) will usually be good enough. There are numerous examples around, like Mini Office II, Ability and Ability Plus.

In the next couple of issues you will find in-depth reviews of some database packages. Hopefully I have given you enough background to evaluate those reviews to decide if they are applicable to what you want your DBMS to do for you.

GETTING WISE WITH SAGE

Following last month's look at accounting on your PC, here's a closer look at SAGE Financial Controlller.

Basic accounting is only the start of the story and if one considers such top-of-the-line software as the Sage Financial Controller, it will also include modules designed to simplify and ease the whole burden of company management; ensuring solid business success in the most cost-effective manner.

We all know that modern business management relies on the rapid production of business and accounting data in an easily digestible and useful form. The raw data for an effective information and reporting system is available in all computerised accounting systems and some even provide the means of accessing this information bank. But none, I believe, is as powerful a tool as the Sage Report Generator when it comes to retrieving and re-arranging facts and figures.

Every piece of information stored in the system can be accessed, retrieved, re-organised and printed out in precisely the way you want it in order to manage your business more efficiently and profitably.

All Sage programs produce a wide range of essential reports - the standard data expected in a comprehensive accounting package, however. But, because no business is identical and every businessman's requirements differ, with the Report Generator, Sage has made allowances for reports to be defined and designed precisely to match individual demands - virtually bespoke tailoring at an off-the-peg price.

In any business - and especially the distribution area - actual processing of customer orders must be a key activity. Without orders, you just don't exist, and the people who handle this task need to have at their fingertips a bank of information if they are going to do the job efficiently.

There is a need to know whether or not the goods are actually in stock, or whether there are enough components to manufacture the required item; pricing and discount information; and customer details - especially current credit status.

Order processing must ideally link directly with stock control, invoice production, creditors and nominal ledgers. And all of these functions should be fully integrated if they are to provide an effective and efficient sales order processing system. The Sage Financial Controller program provides all of the above.

No business is going to survive unless it charges for its services, and invoice production is one of those activities which benefits greatly from computerisation.

Measurable productivity gains can be obtained and real savings in manpower and time can be demonstrated.

Sage Invoicing includes all the most desirable features of an efficient, computerised invoicing system and, as with all other components of Financial Controller, it interfaces directly with the creditors and nominal ledgers. As each transaction is completed, all ledgers are automatically updated, with the Stock Control system also being 'notified' whether it is being used for true stock control or merely as a stock records file.

One of the many downfalls facing small business, is not keeping tight control over cost details. It is all too easy for a company to send out invoices and believe it has a healthy income when, in fact, outgoings are quietly going through the roof.

Sage Financial Controller attacks this problem with a Job Costing program that helps both analyse and control the costs of individual jobs undertaken by a user company.

Comprehensive routines for recording employee timesheets, not

The Bottom Line

	Single User	Networking Version
Bookkeeper	**$299.00**	-
Accountant	**449.00**	**$900.00**
Accountant Plus	**$599.00**	**$1200.00**
Financial Controller	**$1499.00**	**$2500.00**

only provide efficient monitoring of labour costs attributed to individual jobs, but also provide important statistics to measure both productive and unproductive time.

Material usage can be recorded in the form of stock items or as being purchased for a particular job. And a 'miscellaneous' cost facility ensures that any 'foreign' costs or charges associated with the job are recorded to ensure accurate totals.

Job details include unique job numbers, full customer identification and the facility for entering a comprehensive job description. Budgeted costs and sales figures can be entered and displayed at any stage and, as costs are recorded, comparisons can be quickly made with previous production runs.

A flexible billing routine allows the allocations of costs against the complete job, individual items with that job, specified departments or categories of work carried out before a determined date. The program provides a detailed summary of costs to date which can be transferred to an invoicing system and modified to suit production of the final invoice.

The program produces detailed work in progress, labour analysis and materials usage reports, but it also includes the Report Generator which can access, retrieve, reorganise and print out every piece of information held in the system to meet with individual requirements.

Again, all the above Sage modules are equally at home in a standalone or networked environment using the company's extremely practical and simple-to-install MainLan package.

As well, because the Sage products are integrated, the user can start with any one module and add to that base as needs demand.

For further information contact Jeni Fleming at Objective Computer Consultants on (03)329 2384.

The Link

MainLan is Sage's Local Area Network system. It can connect as many as 63 computers over distances up to 300 metres. MainLan stations can use the network to transfer files between each other, send electronic mail to each other and to their printers.
MainLan consists of a circuit board which plugs into an expansion slot in each of the PCs to be included in the network, and the operating software.

The Sage Accounting Software Range

Features and Capacities	Bookkeeper	Accountant	Accountant Plus	Financial Controller
Debtor's Ledger	✓	✓	✓	✓
No. of accounts	1000	5000	5000	No limit*
Creditor's Ledger	✓	✓	✓	✓
No. of accounts	1000	5000	5000	No limit*
General Ledger	✓	✓	✓	✓
No. of accounts	1000	1000	1000	No limit*
Profit and Loss Account	✓	✓	✓	✓
Day Books	✓	✓	✓	✓
'Quick Ratio' Report	✓	✓	✓	✓
Open Item Accounting	✓	✓	✓	✓
Automatic Integration with General Ledger	✓	✓	✓	✓
Aged Debtors/Creditors	✓	✓	✓	✓
Cash Sales/Purchases	✓	✓	✓	✓
Journal Entries	✓	✓	✓	✓
Trial Balance	✓	✓	✓	✓
Automatic debit/credit postings	✓	✓	✓	✓
Bank Transaction Record	✓	✓	✓	✓
Multiple Bank Accounts	✓	✓	✓	✓
Tax code user changed	✓	✓	✓	✓
Tax Return Analysis	✓	✓	✓	✓
Automatic Discount Handling	✓	✓	✓	✓
Print Spooling	✓	✓	✓	✓
Mailing Labels	✓	✓	✓	✓
Password Control	✓	✓	✓	✓
Full Audit Trail	✓	✓	✓	✓
Balance Sheet		✓	✓	✓
Monthly Budgets		✓	✓	✓
Budget v. Actual Report		✓	✓	✓

Features and Capacities	Bookkeeper	Accountant	Accountant Plus	Financial Controller
Credit Limits		✓	✓	✓
Credit Control Letters		✓	✓	✓
Statement Printing		✓	✓	✓
Messages on Statements		✓	✓	✓
Full Customer/Supplier Details		✓	✓	✓
Sales/Purchases Analyses		✓	✓	✓
YTD Turnover		✓	✓	✓
Departmental Analysis		✓	✓	✓
Direct Mail Letters		✓	✓	✓
Last Activity		✓	✓	✓
Report Generator		✓	✓	✓
Invoice Generation			✓	✓
Sale from Stock			✓	✓
Stock Recording			✓	✓
Auto Invoice Numbering			✓	✓
Credit Note Generation			✓	✓
Price List Generation			✓	✓
Free format document design			✓	✓
Interactive Credit Limit Alert			✓	✓
Stock Valuation			✓	✓
Interactive stock level alert				✓
Multi Company use				✓
Sales order processing				✓
Purchase order processing				✓
Stock Allocation				✓
Stock Control			✓	✓
Stock Explosion				✓
Re-order Level Report				✓
**Disc size is the only limitation.*				

TASTY PC PD TEMPTATIONS

Here's news of the latest releases in shareware and public domain for the Amstrad PC and PC compatibles plus KEYBxx explained and more from our candid columnist Chris Collins.

Welcome, one and all to this month's edition of CC. I hope that you are all well, and looking forward to some more assistance, and some more excellent shareware and public domain programs for your PC compatible Amstrads. For those of you not so technically inclined, that means all you PC20, PC1512/1640, PPC512/640, PC2086/2286 and 2386 owners. Only kidding, I think that you all know what I mean.

News for this month includes the release of PC Calc+ v2.0. This is the spreadsheet from Buttonware that gives most of the commercial programs a run for their money. As with the update to PC file:dB, this new version requires that you have at least two 720k floppy disc drives or a hard disc and 320k RAM to operate at all. The 320k RAM is okay for most people, but the hard disc drive is not always so easy.

Features in the new version include the following: compact data storage for smaller spreadsheet files, character string functions, absolute cell references, PC File:dB data importation, calculator "hot key", much more control over the printing functions and many others too numerous to mention. My cheque for the upgrade is on its way to the States. Yours should be too!!

LHARC has been upgraded since last month. The current version on the diskette is now LH113C.EXE. This fixes a couple of bugs in the earlier release and has been supplied to everyone who has ordered Archive Tools 4.

KEYBxx EXPLAINED

And the command for this month is KEYBxx! KEYBxx is an external set of files that you load to replace the keyboard program resident in the ROM BIOS. This allows support for non US-English keyboards such as British (UK), German (GR), French (FR), Italian (IT) and Spanish (SP).

The 'xx' in the above KEYBxx should be replaced by one of the two letter codes given above. So to use the British keyboard, one would type KEYBUK at the DOS prompt.

Each of these types of keyboards can be used with your Amstrad, although you should only ever load one at a time. It will remain in memory until you reset your machine, and each one occupies a different amount of memory so DOS will occupy more of your memory space. If you load a second keyboard template on top of a first, the second will gain control and will function normally. However, the first will still be occupying memory space and cannot be removed without a reset or reboot of the computer. I hope that this has been useful to those of you who wondered what those funny KEYBxx files were for!

And now onto our diskettes for this month. This month we have three diskettes to look at that will help you to get organised. First off we will be looking at SCOUT v3.4, a memory resident disc and file manager.

BE PREPARED WITH SCOUT

Scout is a memory resident disc, directory and file manager as well as being a DOS shell. Scout can be invoked from within an active application program, or alternately, from the DOS prompt. If it is invoked in memory resident mode, Scout will put up a shareware screen that stays for approximately 30 seconds and then disappears. At this point, it will have occupied 67k of your memory. The remaining information needed for Scout is in an overlay file called SCOUT.000 which is loaded when required. Pressing ALT-F10 will bring up the main Scout screen, and CTRL-H will bring up a simple help screen.

The list below is a summary of Scout's major features;

- Move, Copy and Delete individual files
- Move, Copy and Delete tagged files
- Rename files, directories and disc labels
- Remove and Create directories and disc labels
- Sort files in any of five different ways
- User defined Pop-up key
- Format 3.5" and 5.25" floppy diskettes
- Send codes to a printer
- Print or View text files
- Change current drive or directory
- and many others.

According to the documentation, Scout has been designed with three main goals. The first of these was that the program must be accessible from within any applications program. This is why Scout has to be a memory resident utility.

The second goal was to limit the number of keystrokes that an operator would have to use to perform a housekeeping chore. This was required so that a user can be in the middle of an application, call up Scout, do some housekeeping and

then return to their application with the minimum of fuss.

A third goal was to make Scout as compatible as possible with all of the applications that are available for the range of PC clones, as well as being compatible with those other memory resident utilities that people are apt to use. It appears that Scout works with the vast majority of applications and memory resident utilities that are available today. This does not guarantee that it will work in every set-up, as it may take a few tries to get all your utilities and programs set up correctly.

As far as I can tell, Scout does all it sets out to achieve. None of the commands are at all mnemonic, but as with anything, the commands will come to people with use. Scout occupies one diskette, and the documentation supplied with the program runs to 93,000 bytes. Registration cost for the standard version is either US$30 or US$35 depending on whether you want a printed manual or not. Also available on registration payment of US$40, the author offers a version of Scout called Scout-EM that runs in expanded memory and only takes up 5k of your normal RAM in use. And that is Scout!

Next on our list of diskettes this month is TO_DO v3.5. TO_DO is a full featured system for managing daily reminder notes. It gives ready access to today's notes, a look at notes due to become current in the next few weeks, and also a global note that allows you to post long term reminders.

All of the features available in TO_DO are available from the main pull down menu screen. You can simply type the first letter of the option that you wish to use, or use the cursor keys to put the highlight bar on your option and then press ENTER to select it.

This set of menu screens allows you to create, delete and edit notes in the system, as well as the major utilities that are available with TO_DO.

The easiest way to operate TO_DO is to load it in your AUTOEXEC.BAT file, and it will pop-up every time you reboot your computer. This will also give you full access to the program. If you only wish to see any notes that fall current on today's date, all you need to run is the ancillary program TDY. If you have no notes that fall current on today, TDY will simply exit and allow your AUTOEXEC.BAT file to finish, whereas TO_DO will force you to press some keys to get your AUTOEXEC.BAT file to finish.

The program allows you to configure it for colour or monochrome, whether to delete old notes or not, and whether you want to be asked whether to exit. If you set TO_DO in a directory called TO_DO, and also put the command line SET TO_DO=C:\TO_DO, then all of your note files and parameter files will be put into that directory. If you don't use the SET TO_DO line, the end result is a lot of extra files in your root directory.

TO_DO is another shareware product and occupies only one diskette. Registration fee requested by the author is a measly US$10. If you find TO_DO useful, please register your copy of the program.

WHAT ON EARTH IS WWWW?

Another program diskette to look at this month is WWWW. This is a weird program whose full title is WHO, WHAT, WHERE and WHEN. It is an appointment planner that can also be used as a simple project management tool.

On calling up WWWW at the DOS prompt, you are presented with 6 windows on the screen. Top left is the first window and this contains WHO, WHAT and WHERE. Underneath this is a calendar for the current month, which can be changed. This supplies the WHEN. Next to these two windows is the biggest window on the screen called WHY. Underneath this main window are two small one line windows supplying INDEX and FILTER. Along the right hand side is the MENU window. Your menu options include: NEXT, PREVIOUS, EDIT, ADD, DELETE, INDEX, UTILITY, FILTER, TOP OF FILE, BOTTOM OF FILE, PACK, READ and QUIT.

One can go up and down the menu list with the cursor keys, and after pressing ENTER on your option choice, you will be allowed to change that option.

It is going to take a while to learn this program fully, as no documentation is supplied with the shareware version. However, help screens are built into the program, as is a small tutorial. This makes it much easier to learn.

Registration fee for WWWW is US$10, and it occupies only one diskette.

As always, if you are interested in any of the diskettes that I have referred to, please send $7.50 per diskette to the address shown in the box below, allowing 14 days for delivery.

Just a bit of news before I go. Many of you are worried that you may be too late for some diskettes that I have reviewed in an earlier edition of the magazine. Please do not worry, as I keep all of the diskettes that I review, and up-date them automatically as soon after a new release as I can.

Lastly, a little something to whet your appetites! I have just received a copy of a replacement for COMMAND.COM called 4DOS. I have read rave reviews for this product from the States, and shall be giving it some heavy testing before next month. A little bit of news for those of you with memory problems; if you enable disc swapping or EMS swapping of 4DOS it will only occupy 5k of normal memory instead of the 60k that it should require.

Until next month, remember that it's nice to be important, but it's also important to be nice!

The software offered for sale in this column can be obtained directly from Chris Collins. Write to:

Chris Collins
1 Woods Street
Newport VIC 3015

POT POURRI FOR THE PC

A bit of this and a bit of that as we find answers to the hairiest of queries for the Amstrad PC range of computers...

BATCH FILES

Is there any way (with a resident utility if all else fails) to make each application exit to a batch file instead of a DOS prompt? I have arranged that on switch-on an application selection menu is displayed and would like to get back to this on quitting any application, via individual batch files if necessary (e.g. when the application runs in its own directory).

Failing this, can I doctor the individual applications to the same effect? They are Wordstar 1512, Supercalc 3.1, PC -File/R, GEM and the Iankey typing course. PC-File/R provides for exit to a specified .COM file but not a .BAT file and I don't know how to write .COM files!

When a program is executed it generally returns to the place from whence it was called and so to have a program exit into a batch file it must be run from a batch file. One way of doing this is to use something like a menu system. This can use various programs, allowing you to chose an option and sending you off to that application. Control is handed back to the batch file when you exit that application.

MS-DOS does not care too much about the size of a program and so the same thing should work with the programs that you mention. If you have to remove the disc with the batch file on, the program remembers this and asks you to replace it. You can though often fool MS-DOS and hence save disc swapping by having identical copies of your batch file on several discs. Alternatively set up a little batch file that copies your main batch file onto the RAMdrive (C on floppy disc machines) and then runs it.

If your batch file runs another batch file however MS-DOS forgets all about the original batch file. This may be what is happening in your case: if so add a command to the end of the secondary batch files which will run your menu again.

Obviously the user can deliberately interrupt the batch file with CONTROL BREAK. The only way around this that I can think of would be to write your own "shell" program using a language like Turbo-Pascal, Zorland C or Microsoft's Quickbasic. This "shell" program would display a menu and then execute other programs. The trouble is that it remains in memory all the time thus reducing the space available for your application programs.

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I use an IBM (sorry!) PC/XT with 10Mb hard disc at the office and to date have found no problems running anything I have at the office on my 1512DDMM. I am the licensed user of the IBM's software. What is the legal position regarding the use of office software at home? I understand that some software is "machine specific" and some is "user specific" Without going blind reading the small print on every agreement and then attempting to make sense of what I've read, is there a straightforward answer please?

No. As you state, each piece of software may only legally be used in accordance with its licence conditions. Some software houses specify that the program may only be used on one particular machine, others (notably Borland) allow you to treat the software like a book and carry it from one machine to another provided it is not used on more than one machine at the same time.

USING THE SERIAL PORT

I have a Brother EP44 printer which as well as being a useful memory typewriter with an excellent letter quality type, also has a serial interface. For some time I have thought of connecting this to the Serial connection of the 1512 and have just obtained a suitable lead.

So far though, after many attempts at varying bit lengths and code settings at both the computer and the printer end, the best result I can achieve is printing with the Quill word processor codes for new line and margins etc. reproduced on paper. I would be most obliged therefore if you could furnish me with details of what needs to be done to obtain a normal printout.

Mr. Cartwright

To install a serial printer you need to use a couple of MODE commands. One to set the serial baud rate the other to divert printer output to the serial port. See page 350 of the 1512 manual.

Once you have done this any package that uses the standard MS-DOS printer function will send to the serial port. The trouble is that WP programs often bypass MS-DOS and output directly to the printer port themselves. In this case you will need to tell the WP program to use the serial port instead. I do not know Quill so can not help you there. If you got the Quill control codes printed out it sounds as if you were copying your document file to the serial port. Obviously you need to use the print option of your WP program to translate its own control codes into the appropriate sequences for your printer. I imagine the EP44 will either emulate an Epson printer or else a Diablo/Qume daisywheel.

ADVENTURER'S ATTIC

Philip "Lucky Phil" Riley is back with the long awaited encode/decode routines. Qs and As later!

Well here it is folks - the final result, the machine code decode. But first of all, another little proggy that I knocked together. Run the Datasort program and your data will be sorted and saved to disc as "DATA2". It will then work out where you must load in your data and where to set himem. The "DATA2" file is the final file you will use in your game.

Now onto the decode program. As you can see it is mainly a series of data statements. The data from these statements is poked into the computer. You may also notice that the program has two separate lots of data. The first is the machine code program. The second is the groups of characters that we looked at earlier on in the encode/decode series.

You must not change the memory position of the routine or character data without making changes to the routine first. This should not be attempted unless you know how to program in machine code.

For those of you who are into machine code I will give a quick rundown on the things that will need changing if you wish to relocate the program. You will notice that there are no JUMPS (JP); only JUMP RELATIVES (JR). These make things much easier in the long run as you don't have to worry about the new memory positions of the JUMP, although one of the JUMPS was too large and had to be done in two stages. The first JUMP moves a little way up the routine, the second taking us to the point in the program that we want. The only major changes that you should have to make are with the INDEX REGISTERS (IX and IY). They are both used in the program with offsets. The offsets are changed by the program using the A register. For IX the LOAD (LD) is the command before it; for IY it is three commands before it. Please note that I am using commands and not bytes to tell you where they are. If the program is loaded in at the normal memory location then the offsets sit at Hex A5EC and Hex A5FA. These are the only real changes within the routine itself, although if you want to move the character data to another location you will have to change the addresses that point to it.

If you are not into machine code programming, the previous information probably made no sense at all. Do not worry about this as it is not important for you to know how the program works - you can still use it.

You will notice in the basic listing that HIMEM has not been set and likewise there is no location for the data to be loaded into. The datasort proggy gives you these two figures; just edit the lines and put in the appropriate figures.

You will also see a poke on its own with no value after it. This is the location poke. You must poke in your location number as it is defined on your map into this memory location. Each time you move into a new location you must poke the new location number into this address. Do not poke a number that is too high for your game or the routine will wander off through memory and print all sorts of weird and wonderful things.

Now I know what your next question is - you have just run this program and nothing happened. That is because we have not CALLed the routine yet. You must think of the routine as a subroutine. Just like basic you can call a subroutine and then return back to the point from where you called it. In basic you use GOSUB and RETURN. With machine code you use CALL and RET. Don't worry about the RET statement as it is in the machine code. When your data is in the computer and you have poked your location number into the proper place you simply call up the routine with CALL 42407.

The routine will then look through its data until it finds the correct location description, print it onto the screen and then return back to basic.

Simple, is it not? But be warned: if the program does not work, you have done something wrong. Check all your data first, as it is easy to make a mistake. Then check to see if you have loaded in your data (DATA2) file. Next check to make sure that you have poked your location number into the computer. If all this fails to find a mistake, start all over again and check everything until you find the mistake.

A couple of problems did crop up with the routine as I was giving it its final test. Firstly it does not like blank locations, as in location 6 on our map. So when typing in your data put in two characters for the location description. The other problem is that for some reason it suddenly stopped printing the last word of a location. I found that by putting a space at the end of each location description I was able to get around this problem. As this fault cropped up too late for me to fix it, it has had to stay in.

The simple way to get around this is to add this line into the INPUT program.

```
45 a$=a$+CHR$(32)
```

Please note that this is for the input program, the first program in this series. The final point that I would like to make is that in the groups of characters that we looked at earlier on in the series I missed out a lower case v. I placed it into the last space in the groups. This was just after the uppercase E. Sorry about that folks.

You will of course have to change the data in the compact routine.

Well that's it for another month, so until next month it's goodbye for now.

Listing ONE - DATASORT

```
10 MEMORY 10099
20 CLS
30 LOAD"data1",10100
40 PRINT"PLEASE WAIT"
50 t=42600
60 IF PEEK(t)=0 AND PEEK(t-1)=0 AND PEEK(t-2)=0 THEN 80
70 t=t-1:GOTO 60
80 t=t-3:td=t
90 IF PEEK(t)=0 AND PEEK(t-1)=0 THEN 110
100 t=t-1:GOTO 90
110 bd=t+1:ed=td-bd+1
120 CLS
130 SAVE"data2",b,bd,ed
140 ld=42404-ed+1:hm=ld-1
150 PRINT"SET HIMEM TO";hm
160 PRINT"LOAD DATA2 IN AT";ld
```

Listing TWO - POKEDATA

```
5 CLS:BORDER 0
10 MEMORY at address specified.
20 LOAD"data2",at address specified
30 POKE 42406,location number.
40 t=42407
50 READ a:IF a=999 THEN 400 ELSE POKE t,a:t=t+1:GOTO 50
60 CALL 42407
70 END
100 DATA &21,&A6,&A5,&46,&2B,&7E,&A7,&20,&FB,&10,&F9,&2
B,&7E,&1E,&0,&4F,&3E,&0,&CB,&9,&30,&2,&C6,&1,&CB,&9,&30
,&2,&C6,&2,&CB,&9,&30,&2,&C6,&4,&CB,&9,&30,&2,&C6,&8
105 DATA &C6,&1,&47,&3E,&0,&18,&2,&C6,&4,&10,&FC,&DD,&2
1,&3B,&A6,&6,&4,&CB,&9,&30,&1A,&57,&32,&EC,&A5,&DD,&7E,
&45,&1C,&F5,&7B,&32,&FA,&A5,&F1,&FD,&21,&C,&AD,&FD,&77,
&0,&FE,&20,&28,&5,&7A
110 DATA &C6,&1,&18,&2E,&E5,&1D,&CD,&78,&BB,&7C,&C6,&1,
&FE,&29,&28,&7,&1D,&20,&F7,&18,&C,&18,&9F,&3E,&D,&CD,&5
A,&BB,&3E,&A,&CD,&5A,&BB,&21,&D,&AD,&7E,&CD,&5A,&BB,&FE
,&20,&28,&3,&23,&18,&F5,&E1,&1E,&0,&10,&AE,&2B,&7E,&A7,
&20,&DC,&C9,999
400 t=42555
410 READ a:IF a=255 THEN 60
420 POKE t,a:t=t+1:GOTO 410
430 DATA 105,110,103,32,115,116,46,32,104,101,114,32,11
3,117,97,32,99,111,119,32,98,108,121,32,106,109,44,32,1
07,120,100,32,83,102,112,32,65,66,122,32,67,68,69,118,7
0,71,72,73,74,75,76,77,78,79,80,81,82,84,85,86,87,88,89
,90,255
```


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Chris Maloney
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Prospect. Tasmania. 7250.

The Hobbit, Zork 1, Enchanter, Tau Ceti, Sorceror, Planetfall, The Wild Bunch, Mordons Quest, Knight Tyme, Jewels of Babylon, Seabase Delta, Forest At Woods End, Neverending Story, Swords and Sorcery, Bugsy, Jack The Nipper, Academy, Message From Andromeda, Leather Goddesses of Phobos, Everyone's a Wally, Pyjamarama, The Boggit, Robin of Sherwood, Sorcery+, Shogun.

Watch this space - it's for you!

Hint Sheet

LEISURE SUIT LARRY

Goes Looking for Love (in all the wrong places)

by Andrew Fort

OBJECTIVE:
- to find true love.

BASIC HINTS AND TIPS:
-look at everything that stands out, and each new screen;

-get everything that isn't nailed down;

-make a map;

-if something you type doesn't work, try typing it in a different way.

LOCATIONS:
Los Angeles
The Music Store:
- one time when you pass it, it will be open;
- go inside and have a look.

T.V. Studio:
- in the lobby, the short-sighted assistant can help.

The Quicki Mart:
- two important machines linger here, but one must be used before the other.

The Drug Store:
- you will need to buy an object from here.

The Boat
- on the boat, there will be something you need to get in every section.

Mama's Cabin:
- Mama sews very well.

Your Cabin:
- notice the object near the back of the room.

The Pool:
- what lies beneath the water's surface? Oh, and don't forget the SPF-90.

The Revolving Nightclub:
- look out for the KGB agents, they're everywhere;
- also, the dip looks tasty.

Captain's Cabin:
- make sure he doesn't see you.

The Escape Vessel
- you need protection and food.

On The Island
- try changing your looks.

The Airport:
- try looking at other people's stuff;
- have a good look around the place.

THE PLANE
- you need something to distract the guy next to you;
- ever tried getting locks?

ON NOONOOKEE'S ISLAND
- try arcade type ideas;
- you need five objects to get to Noonookee.

DO THESE FOR FUN AFTER SAVING:
- wait till the girl comes into the guest room and then do whatever...
- don't open your parachute;
- accept the drink in Los Angeles.

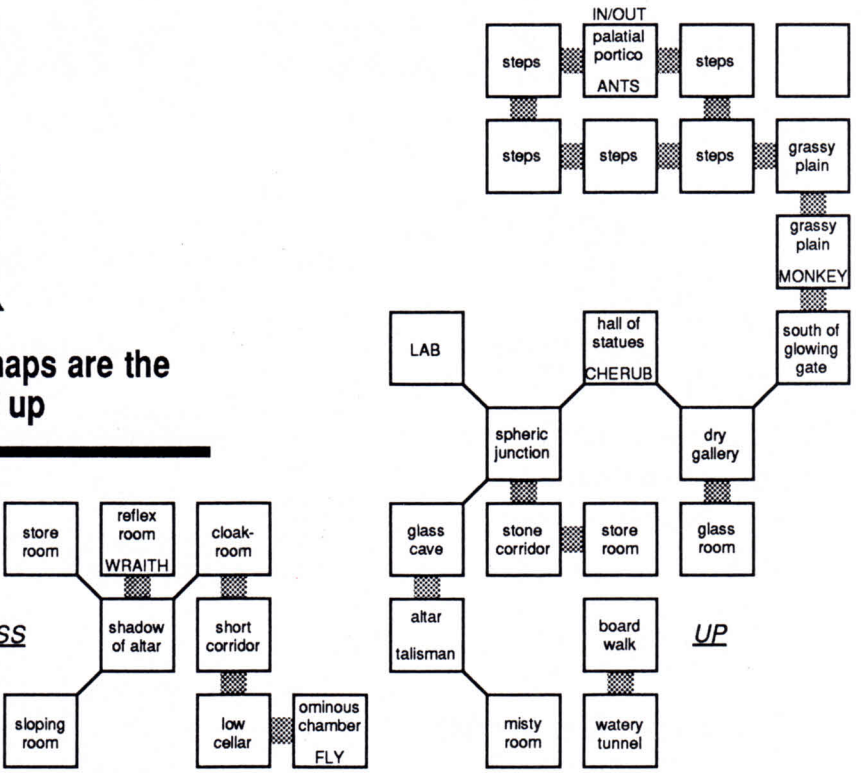
This is our twelfth Hint Sheet and earns Andrew Fort a cheque for $25. Now that you have the format the sheet should take, why not cash in your experience and send your solutions (don't give the whole game away) to:

The Editor (Hint Sheets),
The Amstrad User,
641 High Street Road,
Mount Waverley, Victoria. 3149.

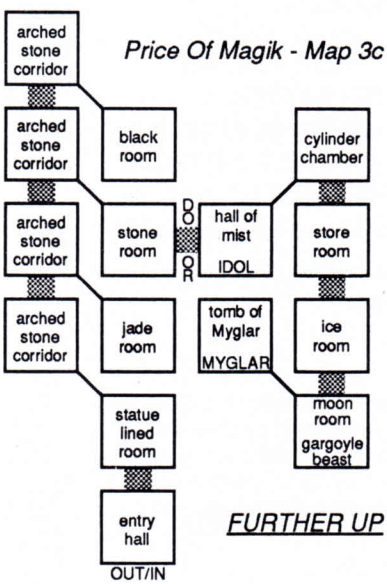
MORE MAGIK

Proving extremely popular, these maps are the creations of James Green, touched up

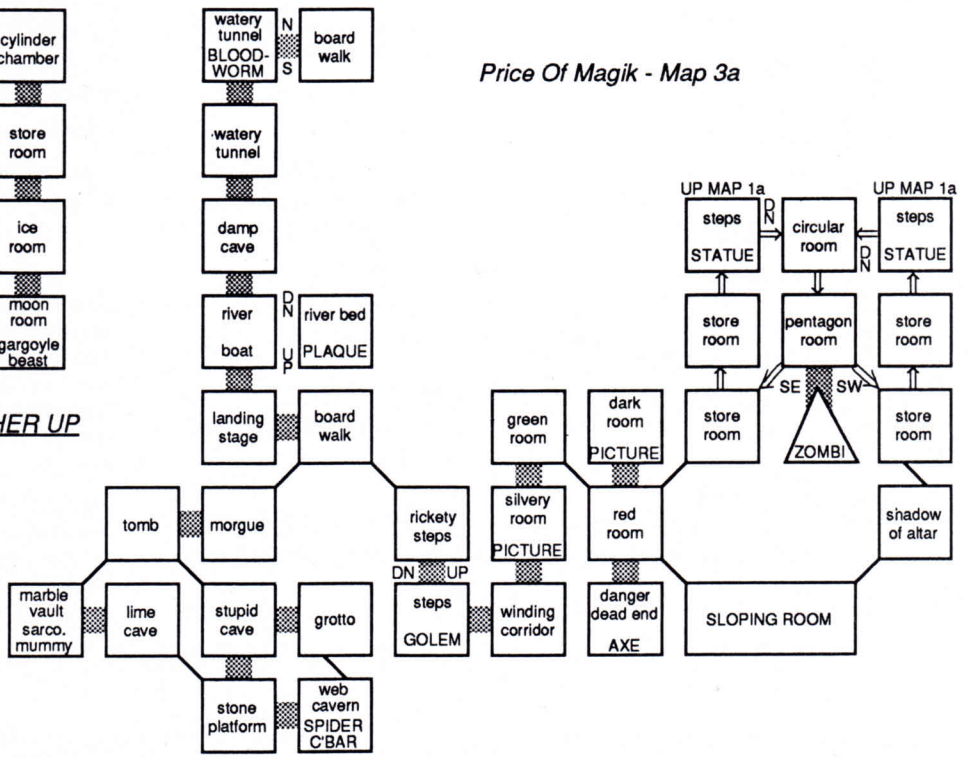
Price Of Magik - Map 3b

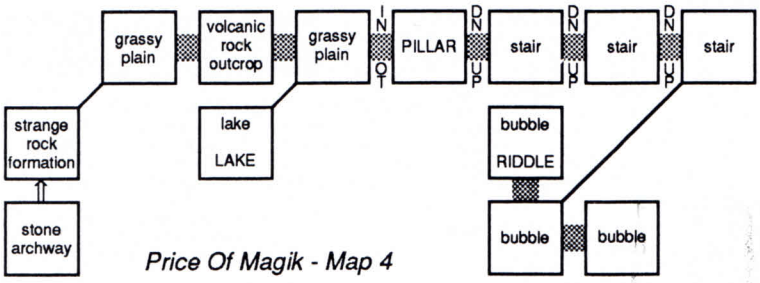


Price Of Magik - Map 3c

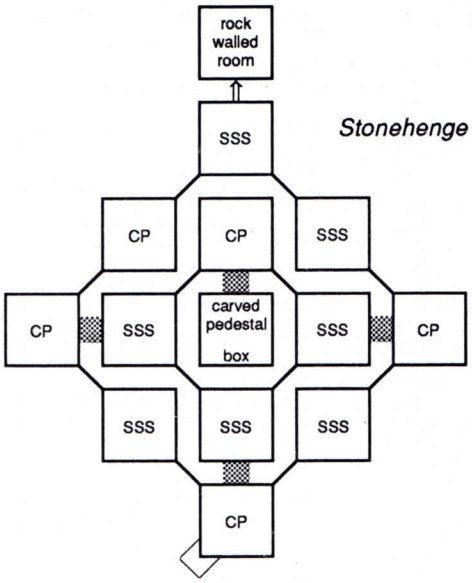


Price Of Magik - Map 3a

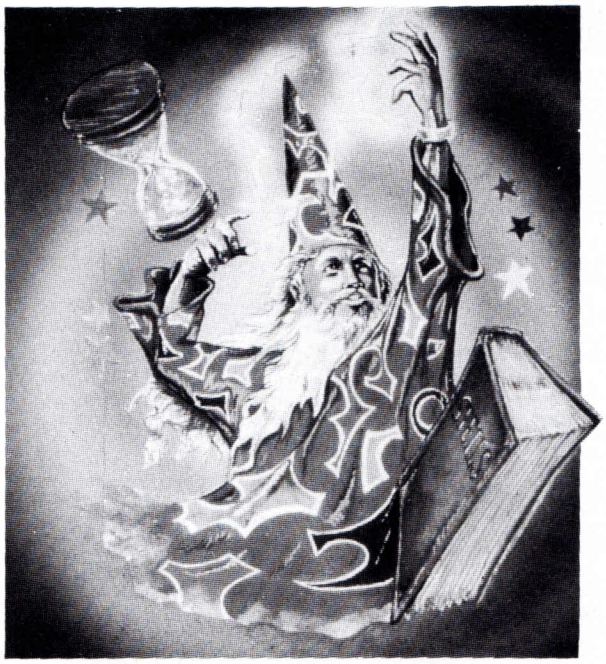




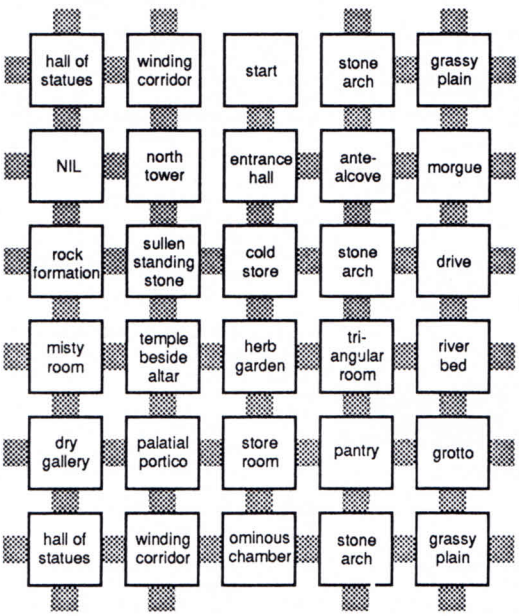
Price Of Magik - Map 4



Stonehenge



Mists Of Time



LEGEND

⇐ ⇑ ⇒ ⇓ ..... *Move in indicated direction only.*

SSS ..... *Sullen Standing Stone.*

CP ..... *Cold Pillar.*

N.B. ..... *Mists Of Time operate in 'wrap around'.*

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Norman McEntee (03 743 7104)
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Secretary: Malcolm Stone (047 51 2791)
Jun. Rep: Nathan Stone (047 51 2791)
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Mail: 169 Beryl St, Coffs Harbour, 2450

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Venue: Hamilton North Bowling Club, Boreas Road, Broadmeadows on the third Tuesday of each month.

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Vice Pres: Kel Philip (066 77 1440)
Secretary: Laura Goode (066 72 2499)
Treasurer: Lorraine Montgomery (066 72 1823)
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Mail: c/o Post Office, Burringbar, 2483

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Venue: Contact John Harwood at the address shown below.
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Secretary: Clyde Gittins (02 579 3984)
Venue: Burwood RSL Club, 96 Shaftsbury Road, Burwood every second Tuesday of the month at 8.00 pm.
Mail: PO Box 478, Smithfield, NSW 2164.

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Venue: Camdenville Comm. Ctr., Newtown on the 1st Saturday of every month at 2.00 p.m. For more details contact the Secretary between 6.00 p.m. and 9 p.m.
Mail: PO Box 423, Matraville, 2036

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Contact: Geoff Craine (02 76 6467) A/H (02 412 9213) B/H
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Treasurer: Ivan Dowling (07 269 8795)
Tech. Editor: Franz Hendrickx (07 356 0633)
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Venue 2: REDLAND BAY: Birkdale State Sch., Agnes St, Birkdale 4159 on the 3rd Sat. of each month from 1.00pm.Co-ordinators are Paul Peterson (07 206 7214) and Nev Taylor (07 207 3435).
Venue 3: SUNNYBANK: Sunnybank State Sch., Turton St, Sunnybank 4109 on the 3rd Sun. of each month from 1.30pm. Contact Jim Papadimitriou (07 344 2067).
Venue 4: WESTERN SUBURBS: Jamboree Heights State Sch., 35 Beanland St, Jamboree Heights 4074 on the 1st Sat. of each month from 1.30pm. Contact Gordon Bradford (07 814 4746) or Helda & Jim James (07 376 1137).
Venue 5: REDCLIFFE PENINSULA: Kippa-ring State Sch. (library), Elizabeth St, Kippa-ring 4020 on the 2nd Sun. of each month from 1.30pm. Contact Ivan Dowling (07 269 8795)
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
Pres/Sec: Anthony Trost (079 33 1951)
Treasurer: Dorothy Jasperson
Venue: Block 2, 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: Stephen Greenwood (075 572 442)
Treasurer: Pamela Scott (075 323 334)
Secretary: Ray Maclaren (075 398 743)
Venue: Benowa State High School, Mediteranean Drive, Benowa on the first Saturday of each month at 2.00 pm.
Mail: 7 Coral Gables Key, Broadbeach Waters. QLD 4218.

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)
Geoff Taylor (552 350)
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)
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: John Botwright (07 208 4969)
Treasurer: Ronald Waters (075 317 838)
Librarian: Carol Watts (07 287 2882)
Venue: Loganlea State High School (in the Communications Room) every 3rd Sat. 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: Tony Carlaw (076 91 6161)
Secretary: David Culliford (076 32 7277)
Asst Secs: Chris & Glen Jones (076 91 2643)
Treasurer: Anglea Gschidle (076 34 1692)
Librarian: Shane Gschidle (076 34 1935)
Venue: Toowoomba Education Centre, Baker Street, Toowoomba on the 4th Monday of each month starting at 7.30 pm.
Mail: c/o Secretary, 58 Curzon St, Toowoomba, QLD 4350

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 CLUB
President: David Burt (002 44 3385)
Secretary: Lance Brown (002 28 2018)
Treasurer: Robin Johnson
Venue: Northern Regional Library, Glenorchy on the forth Wednesday of each month from 7.30 pm.
Mail: PO Box 247, North Hobart, 7002

NORTHERN TASMANIA AMSTRAD COMPUTER CLUB
President: Keith Chapple (003 26 4338)
Treasurer: Shane Crack (003 97 3298)
Secretary: David Double (003 44 4243)
Publicity: Bobby Lockett (003 44 8972)
Tech. Off: Richard Wilson (003 93 1437)
Junior Del: Jay Donati (003 31 6597)
Venue: Launceston Community College (opposite Park Street) in Room 27 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: John Westerhof (004 24 3977)
Secretary: John Westerhof (004 24 3977)
Venue: Don College, Watkinson St Devonport the third Sunday of every month at 7.30pm.
Mail: Secretary, 7 Bishton St, Devonport, Tas.

NEW ZEALAND

THE AMSTRAD COMPUTER CLUB OF CANTERBURY
Contact: Ian Orchard 524 064
Venue: Four Avenues School, cnr. Madras Street and Edgeware Road, Christchurch 1 on the fourth Wednesday of each month.
Mail: C/o 50 Rapaki Road, St. Martins, Christchurch. 2 NZ.

AMSTRAD USERS GROUP
Contact: John Court (666 143 A/H)
Venue: Oranga Scout Hall, Ferguson Park, Waitangi Road, Auckland. Between 9.30 am and 4 pm on the third Saturday and the last Sunday of the month. CPC and PCW's catered for.

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

As the most certain means of updating this section, we have left it blank for a month. If you are one of the people normally on this list and you still want to be listed, please give us a ring so we can renew your position. We provide this service for free and only ask that people would inform us if they no longer want to be in this list. We look forward to hearing from you and others as well who are interested in starting new user groups. Please ring

(03) 233 9661

before we next publish the user group listing in the October issue.

CPC & PCW PUBLIC DOMAIN SOFTWARE

The following discs contain compilations of public domain programs put together by the Advantage Computer User Group (in England) and which have been tested under CP/M Plus. Unless otherwise stated, programs will run on the PCW, 6128 and 464/664 with extra memory and CP/M Plus. Programs for the 464/664 are on the CP/M 2.2 Collection. The discs are supplied in Data format and contain documentation files to help the user get started and provide instructions on running the programs plus useful sorted directory and MENU systems.

But remember, as Public Domain programs they are supplied on an as-is basis.

CP/M 2.2 COLLECTION

For 464/664 disc drive users with CP/M 2.2. Contains File Manager, Compare, Find, Disc sector editor, Key definer, Bad sector eliminator, Grep, Full Screen text editor, Easy lister, File transfer utility, Unerase erased files, erased files catalogue and many more.

CPC Ref: #430

FULL SCREEN TEXT EDITOR

This machine code editor offers full screen editing, full block operations, windowing, automatic horizontal scroll (line length up to 255 characters), macro functions, word-wrap and formatting, pagination, find/replace, undelete and many user options.

The editor, which is less than 10k in size, is fast because it edits a file entirely in memory. It produces ASCII text files and has enough features to be used as a word processor. A comprehensive on-disc manual is included together with keyboard configuration files for the CPC and PCW.

CPC Ref: #601 PCW Ref: #801

DATABASE

A small relational database suitable for storing simple data and producing reports and forms letters from the data. Offers free format query language with macros and commands plus on-line help. The disc also contains an Inventory Database. Whilst these databases provide a useful introduction and you can use them to set up a full operational database system they are not meant to replace commercial packages for professional or business use.

CPC Ref: #602 PCW Ref: #802

COMMUNICATIONS

Programs to allow data transfer between computers (local and remote), access databases and bulletin boards. UKModem7, New Kermit, MEX and various communications utilities. The disc also contains software for Prestel (Viatel) emulation (PCW only).

CPC Ref: #603 PCW Ref: #803

VIDEO CLERK

Keep track of your video collection. With four Sort options and Forms Management system for printing out the data in order of title number, video number, global alphabetic or unique. Includes extensive on-disc documentation.

CPC Ref: #604 PCW Ref: #804

FIXED ASSETS LOG

Allows you to keep a record of all your assets and their value. For example, at home, you may wish to keep a record of how much money you are spending on your computer or the value of a stamp collection etc. In business you can use it to keep a record of how much money you have tied up in land, buildings, office equipment, cars etc. It can also be used as a stock-taking program.

CPC Ref: #605 PCW Ref: #805

COMPLETE UTILITIES

• *Newsweep* - one key erase, copy, rename and print, plus many other features. Ideal for sorting out your disc collection quickly and efficiently • *Superzap* - disc sector editor - edit by track/sector or filename. Fully menu-driven with cursor key SETKEYS file • *DisckitA* - multi-choice disc formatter, offers 178k data format for PCW discs and 5.25" second drive formatting • *Unerase* erased files • *Read/write* PCW discs on a CPC • *CP/M v2.2 emulator* • *Make* - allows you to copy files across user areas • *Cleanup* - useful for speedy file deletion • *Lookat* - speedily lists any file in Hex and ASCII • *Screen Dump* (CPC only) • *Password* • *Easy Lister* • *Password Protection* • *File Scrambler* • *File Splitter* • *Directory check*

CPC Ref: #606 PCW Ref: #806

TEXT PROCESSING UTILITIES

• *Sideways* - prints text file sideways on an Epson-compatible printer. Ideal for those wide spreadsheets • *Sort* any ASCII list into alphabetical order • *Word count* - can be used on any ASCII file • *WSClean* - removes higher order bits from a text file and converts it to straight ASCII • *Calendar Generator* - prints out calendar for any year • *Simple Spell Checker* - with starter dictionary and dictionary editor • *Scoring card generator* • *Banner printers* • *Typewriter emulator*

CPC Ref: #607 PCW Ref: #807

DISC ORGANISATION

Catalogue your disc collection and produce a printed index. Useful for speedy location of files and for keeping your discs in order. Library utilities for archiving and saving disc space. File dating system. Squeeze and unsqueeze for saving up to 40% disc space. Menu system - allows menu-driven access to programs on a disc. Completely and easily user-definable.

CPC Ref: #608 PCW Ref: #808

Z80 PROGRAMMER

A complete Z80 Assembler which is capable of converting an ASCII assembler file into a fully executable machine code .COM program. Plus Z80 Disassembler, Z80 Debugger, Z80 Library, 8080 Disassembler, Z80 to 8080 Translator and associated utilities.

CPC Ref: #609 PCW Ref: #809

'C' PROGRAMMER

The Small 'C' Compiler by Mike Bernson. Includes source code and 25k of documentation. Produces executable .COM programs.

CPC Ref: #610 PCW Ref: #810

'C' TOOLBOX

A disc full of 'C' source code examples together with the corresponding executable .COM programs. Useful to those wishing to see some practical examples of 'C'. As a bonus, the programs are quite useful too. The 'C' source was written for a variety of compilers and may need modifying to compile on MIX or Small 'C'.

CPC Ref: #611 PCW Ref: #811

FORTH, STOIC AND 'C' INTERPRETER

For experimenters interested in using these languages. Documentation is included on disc.

CPC Ref: #612 PCW Ref: #812

GAMES COMPENDIUM

A varied selection of the best machine code programs available for CP/M. Includes Pacman, Snake (PCW only), Chess, Othello, Mastermind, Spellit, Awari, Life, Golf, Polish Pong, Maze, Biorhythms, Word Search puzzle maker, TicTacTo.

CPC Ref: #613 PCW Ref: #813

ADVENTURES

• *Colossal Cave Adventure* which originated on main frame computers. With game save and re-load • *Bestiary* (written in Mallard Basic for either PCW or 6128 Mallard users. Standard CPC users see Adventurer's Attic March 1989)- you play the part of a young prince, your greatest love being to read the ancient bestiaries about strange and often legendary animals. Your task is to find a solution to the terrible blight which, one year, destroys both crops and animals in the kingdom. Includes game save and re-load • *Return from Arg* - a short but interesting new adventure written in 'C'.

CPC Ref: #614 PCW Ref: #814

PCW GRAPHICS (PCW only)

Simple user-designed graphics drawing program. Enables you to create, save, edit and print pictures on your PCW. Plot lines, points, boxes, four fill patterns, easy to use and wholly interactive • *PCW Screen Font designer* with several ready-to-run font sets • *Biomorph* - fascinating, graphic demonstration of natural selection - develop your own bugs! • *Readme* - program to display any ASCII text file in 45 character format on the 90 character screen - makes it easier to read.

PCW Ref: #815

HOW TO ORDER YOUR DISCS

You may either order over the phone by credit card or by post. *It is very important that you get the reference number correct. CPC and PCW discs are different.* (Software contained on 3" discs only).

The cost per disc is $17.50. • ***BANKCARD, MASTERCARD & VISA accepted*** •

• Price includes postage in Australia, overseas add A$2.00 •

Send Your Order to:

The Amstrad User,
641 High Street Road
Mount Waverley, Victoria 3149.
Phone: (03) 233 9661

Welcome to our growing list of Mail Order Amstrad products. CPC owners will be particularly pleased to see the arrival of Chuck Yeager's Advanced Flight Trainer and Double Dragon, both on disk.

We remind readers (and visitors to our retail shop in Mount Waverley) that this list is produced at least four weeks before printing. Coupled with the fact that most lines are imported, the availablilty of certain items and some prices may change. Mail Order customers are advised to check first or provide an alternative choice if possible.

This list is updated every month, so be sure to have the latest copy of The Amstrad User when considering a purchase from the largest range you'll likely to find on this side of the globe!

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SHOP: (03) 233 9211 (no Mail Order)

Please Note:
1. For all book orders over $20 please add $5.00 (overseas $7.00). If ordering the TV modulator please add $7.50 (overseas $9.50). All other orders are currently supplied post free (overseas add $5.00).
2.When ordering by mail, if possible, always quote one or two alternatives. Otherwise call us first to check availability.
3. Most orders can be reserved for up to 7 days pending payment after which they will be released for others to buy.
4. Please allow at least 14 - 21 days for receipt of goods.
5. This list is prepared some 4 weeks before publication and reflects the stock holding at that time and anticipated releases advised by producers. The latter are often optimistic.

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Year Disc 5 - Issues 25 to 28	25.00	-
Year Disc 6 - Issues 29 to 32	25.00	-
Year Disc 7 - Issues 33 to 36	25.00	-
Year Disc 8 - Issues 37 to 40	25.00	-
Year Disc 9 - Issues 41 to 44	25.00	-
Year Disc 10 - Issues 45 to 48	25.00	-
Year Disc 11 - Issues 49 to 52	25.00	-

Separate tapes for each issue's type-ins are also available : each 5.00

SERIOUS SOFTWARE

Advanced Art Studio (Rainbird) Graphics package (128k only)	69.95	-
Brainstorm - ideas and reporting system(6128s only)	99.00	-
Cardbox - card index system (6128s only)	129.00	-
Cardbox Plus - enhanced version of Cardbox (6128s only)	199.00	-
Expendiport - cheque management and analysis sytem	39.95	-
Extra Extra - a disc full of ready made graphics, fonts and clip art compatible with AMS Stop Press	89.00	-
Masterfile III - the best relational database system (128k only)	109.00	-
Mastercalc 128 - spreadsheet program for 6128s (or 464 with disc drive and memory expansion)	99.00	-
Matrix - spreadsheet with text editing facilities, database, mail merging etc.	79.95	-
Mini Office II	59.00	49.00
Money Manager - powerful cash book program	59.95	-
OCP Art Studio (Rainbird) Graphics package similar to 'Advanced' but without Mode 0 facility (128s only)	59.95	-
Personal Excellence Package - High quality Mental performance analyser	109.00	-
Plan-It - desktop organiser	39.95	-
Print Master Plus - create your own Banners, Letterheads, Signs, Calendars or Greeting Cards with graphics or borders supplied. ***(Runs under CP/M Plus only)***	**59.95**	-
Protext - high speed w/p	89.95	-
Protext Filer - pop-up database module for Protext. (Requires Promerge & Protext)	69.95	-
Protext Office - pop-up add-ons for Protext including mailmerge and invoice generator. (Needs Promerge & Protext)	99.95	-
Prospell - spell checker	79.95	-
Promerge - mail merger	79.95	-
Stockmarket - monitors shares etc.	49.95	-

STOP PRESS

The ultimate Desktop Publishing package for CPC owners. Combine text and graphics with 'what you see is what you get' facilities. The ideal publishing software solution for home enthusiasts, schools, societies and small businesses. (Stop Press needs 128k)

Stop Press (disc only)	**159.00**
With AMX MkIII Mouse	**289.00**
Extra Extra clip art	**89.00**

Tasword 464	-	48.00
Tasword 464/D	63.00	-
Tasword 6128	63.00	-
Tas-spell	45.00	-
Tasprint	36.00	26.00
Tascopy	36.00	26.00
Tasdiary	36.00	-
Tas-sign	69.00	-
Touch 'n' Go - Typing tutor (6128s only)	69.00	-
Ultrabase - easy database	69.95	49.95

EDUCATIONAL

From SCHOOL SOFTWARE		
Play School (Ages 3-7)	29.95	22.95
Magic Maths (Ages 4-8)	29.95	22.95
Maths Mania (Ages 8-12)	29.95	22.95
Better Maths (Ages 12-16)	29.95	22.95
Maxi Maths (Ages 12-16)	29.95	-
Physics (Ages 12-16)	29.95	22.95
Better Spelling (Ages 9-99)	29.95	22.95
Chemistry (Ages 12-16)	29.95	22.95
Biology (Ages 12-16)	29.95	22.95
Weather/Climate (Ages 12-16)	29.95	22.95
From LCL SOFTWARE		
Micro Maths (Grades 9-11)	59.95	49.95
Mega Maths (Grades 9-11)	59.95	49.95
Micro English (Grades 9-11)	59.95	49.95
Primary Maths (Ages 7-11)	79.95	49.95
From FERNLEAF SOFTWARE		
(Developing Reasoning, Logic, Estimating and Forward Planning skills).		
1. Treasure/Perfume Hunter (7-10)	49.95	39.95
2. Fletcher's Castle/Raider(8-12)	49.95	39.95
3. Thorn Sea/Ferry Captain (9-13)	49.95	-

From FUN SCHOOL: three discs in the series each containing 10 educational programs.

Vol 1 - ages 2 to 5	29.95	-
Vol 2 - ages 5 to 8	29.95	-
Vol 3 - ages 8 to 12	29.95	-

(All reviewed Issue 48 - Jan '89)

From DATABASE EDUCATIONAL SOFTWARE: A Fun School 2 series of three discs or tapes each containing 8 educational programs (Rev'd Jul 89).

Fun School 2 - Under 6	34.95	24.95
Fun School 2 - 6 to 8	34.95	24.95
Fun School 2 - Over 8	34.95	24.95

The Magic Sword - Full colour reading book and complementary child's adventure	39.95	-
Three Bears - graphic adventure to improve logic, deduction and reasoning	34.95	-

PERIPHERALS

AMX MOUSE Mk III - with superior ball technology and high resolution movement this updated mouse from AMS gives total control and flexibility, and compatibility with AMS Stop Press. Comes with an interface for CPC owners 150.00

COMPUTER/TV MODULATOR CONVERTER
This Amstrad unit (MP3) allows a CPC colour monitor (CTM644 only) to be used as a colour television - all you need to connect is a TV aerial to watch your favourite stations 149.00
(Please add $7.50 for certified post & packing)

KEMPSTON MOUSE - comes complete with Blueprint, a comprehensive graphics package 199.00

MOUSE MATS - keeps Mouse clean 19.95

RS232 Serial Interface - for 464/664/6128 229.50

64k Memory Expansion (464/664)
Converts the 464 into a 6128 (except for the ROMs) and gives 128k of memory. Is supplied with bank switching software in the form of RSXs to use the second 64k RAM as storage for screens, windows, arrays and variables. Allows the use of CP/M Plus as supplied on the 6128. 149.00

256k Memory Expansion (464/664)
Converts the 464 into a 6128 (except for ROMs) and gives a total memory of 320k. Is supplied with bank switching software in the form of RSXs. The 256k can store 16 full 16k screens or four extra banks of 64k. Allows the use of CP/M Plus. 289.00

256k Silicon Disc System (464/664)
Provides 256k of RAM disc accessible many times faster than the conventional drive and with a greater disc capacity. It can be logged on as drive B or in a two drive system as drive C. Data can be transferred onto the silicon disc from a normal disc or from RAM, application programs can then work on the data at vastly increased speed. Will accept all normal Amstrad disc commands such as LOAD, SAVE, CAT etc. 329.00

256k Memory Expansion (6128)	289.00
256k Silicon Disc System (6128)	329.00

UTILITIES

Disc Demon - comprehensive menu driven disc utilities	69.95	-
Model Universe - 3D rotating drawing program	54.95	-
Rampak - nearly fifty machine code subroutines	44.95	37.95
Supersprites - sprite designing and control program	29.95	19.95
System X - adds over 40 new Basic extension commands	29.95	19.95

JOYSTICKS

STAR CURSOR - very tough, all Australian design and manufactured joystick with three year guarantee. Fully microswitched, fire buttons on base and handle. Adjustable 4- or 8-way action. 54.95

WINNER 220 - a really robust joystick with built-in precision control. Fully micro-switched with two fire buttons on the base and two on the stem for fast and furious action 34.95

ZIPSTICK SUPERPRO - 90% British made quality moulded high impact plastic with self-centring actuator & eight-way micro switches. 1.4m of cable. Left and right hand fire buttons, steel shaft, non-slip rubber pads 39.95

ZIPSTICK ELITE - a smaller, specially designed hand-held model with similar specifications to the Superpro, but with just one forward centrally located fire button. Also has rubber pads on base for flat surface use 29.95

NEW KONIX NAVIGATOR **- hand-held joystick with microswitch precision control, steel shaft and 12 month guarantee. 34.95**

CPC - continued

MISCELLANEOUS

Screen Filter 29.95

Dust Covers - Australian made vinyl fabric dust covers in light grey colour for:

464 monitor and keyboard	35.00
6128 monitor and keyboard	35.00
DMP3160 Printer	17.00

Ribbons

Black Nylon for DMP 2000/3000/3160	19.95
Black Nylon for DMP4000	19.95
3" drive cleaning kit	19.95
CF-2 3" discs each	7.00

Joystick Splitter Cable - to allow the use of two joysticks through the single joystick port of the CPCs *(not simultaneously)* 19.50

CPC6128 'Seal 'n' Type' Keyboard protector
Stops damaging spills etc. 29.95

Amstrad PCW Range 8256, 8512 and 9512

(unless otherwise stated)

GAMES

Academy (Tau Ceti II) §	65.95
Armageddon Man	57.95
Catch 23	57.95
Classic Invaders (Space Invaders style)	**29.95**
Classic Quest Adventures:	
Goblin Towers (moderate)	49.95
Forestland (hard)	49.95
Witch Hunt (very hard)	49.95
Corruption	59.95
CP Compilation - *with 3-D Clock Chess, Backgammon, 3-D Draughts and Bridge 2000 all on one disc*	59.95
Distractions: *3 graphics games compilation: On the Run, 2112 AD and Nexor* §	59.95
Double T Patience - *compilation of six frustrating games including Kuala Lumpur, Poker Patience and Fourways*	64.95
Giant Killer - maths adventure 10 to adult	54.95
Graham Gooch Cricket *(Limited Overs & Test Match)*	49.95
Guild of Thieves	69.95
Gnome Ranger	59.95
Head over Heels §	57.95
Heathrow ATC/Southern Belle	57.95
Ingrid's back	59.95
Knight Orc	59.95
Lancelot	59.95
Living Daylights	49.95
Match Day II - *animated soccer action*	57.95
Mindfighter §	65.95
Pawn, The	69.95
Return to Doom *(Topologika adventure)*	54.95
Scrabble de luxe	65.95
Steve Davis' Snooker	54.95
Strike Force Harrier	**49.95**
Time and Magik Level 9 trilogy: *Lords of Time, Red Moon and Price of Magik*	54.95
Tomahawk: helicopter simulation	49.95
World of Soccer - international Soccer management simulation	59.95

PCW - continued

PUBLIC DOMAIN DISCS **17.50**

(The games above marked with a § symbol are known to work only on the 8256/8512)

PCW YEAR DISC

Containing all the PCW type-ins published in The Amstrad User for issues shown
Year Disc 1 - Issues 25 to 40 27.50

EDUCATIONAL

Better Maths (12-16 yrs)	39.95
Better Spelling (12-16 yrs)	39.95
Biology (12-16 yrs)	39.95
Chemistry (12-16 yrs)	39.95
Giant Killer - maths adventure 10 to adult	54.95
Magic Maths (4-8 yrs)	39.95
Maths Mania (8-12 yrs)	39.95

PUBLISHING

Desk Top Publisher	99.00
Newsdesk International	125.00

STOP PRESS

The ultimate Desktop Publishing package for PCW owners. Combine text and graphics with 'what you see is what you get' facilities. The ideal publishing software solution for home enthusiasts, schools, societies and small businesses

Stop Press (disc only)	**179.00**
With AMX Mk III Mouse	**299.00**

DATABASES

Cardbox	129.00
Cardbox Plus	199.00
Condor One	149.00
Masterfile 8000	119.00
TAIT Database and Labeller	49.95

MISCELLANEOUS

Brainstorm - tool for structuring raw ideas in a logical manner 99.00

Daatafax Personal Organiser Gift Pack from Kempston - with software, stylish binder, subject tabs, and starter stationery 149.00

Datastore II - ***menu-driven customised report generator, mailing list and label printer. Can be used with type styler Supertype II.***

FLIPPER 2 - ***splits your PCW (8256, 8512 or 9512) memory into two environments and lets you flip between them, eg. between CP/M and Loco2. Not suitable for LocoScript 1.*** **89.95**

Graphics, the Universe and everything... *This latest version (2.0) provides the means to create professional graphics output and more. Source code included (All PCWs)* 75.00

Lightning Basic Plus - ***turbo charge your Mallard Basic (all PCWs)*** **75.00**

Master Paint - deluxe graphics program, for use with either mouse or keys 59.95

Mini Office Professional - the PCW version of the highly successful Mini Office II with Spreadsheet, Wordprocessor, database, graphics and communications 149.00

Money Manager Plus - cashbook/personal accounting 99.00

PCW - continued

NewWord2 - only one available just 150.00

Personal Excellence Package - High quality mental performance analyser 109.00

Plan-it - desktop organiser, plan budgets, sort files etc. 39.95

Print Master Plus - create your own Banners, Letterheads, Signs, Calendars or Greeting Cards with graphics or borders supplied. ***(Runs under CP/M Plus only)*** **59.95**

Protext Filer - pop-up database module for Protext 69.95

Protext Office - as Protext Filer but with mail-merge and invoice generator module 99.95

Protext PCW 179.99

Prospell PCW - spellchecker for most word processors incl. Wd/Star and LocoScript 89.95

Scratchpad Plus spreadsheet 99.00

Stockmarket - watch your investments **79.95**

Supertype II - ***8 new different typestyles for use with all CP/M, LocoScript 1/2, LocoMail and Mini Office Professional*** **39.95**

Tait Accounting System - small business Debtors, Creditors and Invoicing 129.00

Tempdisc - a disc full of instant templates exploiting LocoScript to the full. Provides a wide range of heading styles, agendas, invoices, borders and documents:

Tempdisc 1 (needs Loco1)	59.95
Tempdisc 2 (needs Loco2)	59.95
Tempdisc 8.2 (needs Loco2, Locomail and 8512)	67.95
Tempdisc 9 (for 9512)	67.95

T/Maker - ***Relational database, Spreadsheet, Word Processor, Spell Checker, Graphics, List processor - for 8512s and 9512s*** 149.00

Touch 'n' Go - typing tutor 69.00

PERIPHERALS

8256/512 'Seal 'n' Type' Keyboard protector
Stops damaging spills etc. 29.95

9512 'Seal 'n' Type' Keyboard protector
Stops damaging spills etc. 29.95

CPS8256 - serial interface for PCWs for communications or adding extra printers 145.00

AMX MOUSE plus interface - the most popular and sought after peripherals for your PCW, especially with StopPress 165.00

MM3 Margin Maker - ***Single sheet locator and aligner for PCW 8000 printers*** **34.95**

PCW Joystick Interface from Kempston 59.95

SCANNER - Master Pack - a scanning device which attaches to a PCW printer head to copy photos or other art work, Master Scan software and Master Paint, a powerful graphics package. Compatible with Desktop Publisher, FSE and Newsdesk International 279.00

SCREEN FILTER 29.95

DUST COVERS

Australian made vinyl fabric dust covers complete for the following PCWs:

8256/8512 monitor, keyboard and printer	55.00
9512 monitor, keyboard and printer	60.00

PCW - continued

TASMAN RANGE

Tasword 8000	65.00
Tas-spell 8000	45.00
Tasprint 8000	39.00
Tas-sign 8000	69.00

CONSUMABLES

PCW 8000s Printer Ribbons

Black Carbon or Nylon	19.95
Coloured Nylon - Blue, Red or Green	24.95

PCW 9000s Printer Ribbons

Black Carbon or Multistrike	15.95
Black Nylon	19.95

Daisy Wheels for 9000s

Prestige Pica 10; Prestige Elite 12; Courier 10; Cubic Pica 10; Mini Gothic 15/Micro; Orator 90%/10; Letter Gothic 10/12; Script 12 *each* 19.95

3" disc drive cleaning kit 19.95

CF2 3" discs each 7.00

LOCOMOTIVE PRODUCTS

LocoScript 2 (v. 2.26) complete with manual	87.00
LocoScript2 (v. 2.66) Disk only	49.95
LocoScript 2 + LocoSpell	130.00
LocoMail2	105.00
LocoSpell2	75.00

The following are for PCW 8000s using LocoScript 2.12 and above (Please state 8000s):

24 Pin Printer Driver - suitable for most 24 pin print head printers attached to 8000s 64.95

Printer Character Set Disc for defining new character sets 59.95

Extra Printer Drivers Disc containing a PrinterFile for every LocoScript2 compatible printer 59.95

Keyboards Disc to configure LocoScript2 to use American, Canadian, Danish, English, French, German, Italian, Norwegian, Spanish or Swedish keyboard layouts with any nationality of LocoScript2. 59.95

Locofile/8000 - the resident 'pop-up' database for LocoScript2 110.00

LocoFont SET 1 adds nine extra fonts to your matrix printer 75.00

LocoFont SET 2 adds a further set of five fonts to your matrix printer 65.00

LocoKey to customise your keyboard 59.95

Locomail Sorting Program 39.95

Locomail2 Examples disc 17.50

LocoMail2 New User Guide 54.95

The following are for PCW 9512s (Please state 9512 when ordering):

24 Pin Printer Driver - suitable for most 24 pin print head printers attached to the 9512 64.95

Printwheels Disc allows the correct printing of the characters from any printwheel supplied for the built-in printer. 59.95

Locofile/9000 - the resident 'pop-up' database for LocoScript2 on the 9512 110.00

Keyboards Disc to configure LocoScript2 to use American, Canadian, Danish, English, French,

PCW - continued

German, Italian, Norwegian, Spanish or Swedish keyboard layouts with any nationality of LocoScript2. 59.95

Printer Driver and Character Sets supports a wide range of printers and printwheels used as an alternative to the built-in printer 59.95

Locomail Sorting Program 39.95

Locomail2 Examples disc 17.50

Amstrad PC Range PC1512/1640, PPC512/640 and PC2000 series

(unless otherwise stated)

Items marked with a "†" symbol are also available in 3.5" disc format. Items marked with a "#" symbol are supplied with both 5.25" and 3.5" discs.

GAMES

221b Baker Street	49.95
2000 leagues under the sea	39.95
3-D Helicopter Simulator #	**52.95**
4 x 4 - Off-Road Racing †	49.95
4th and Inches (Grid Iron)	44.95
4th and Inches Construction Set	35.95
Abrams Battle Tank	42.95
ACE 2	33.50
Action Service	54.95
Airborne Ranger †	59.95
After Burner	69.95
Alf	**39.95**
Alter Ego (female version)	47.95
Amazon	32.95
Annals of Rome #	64.95
Apollo 18	59.95
Auto Duel	**59.95**
B-24	69.95
Battle Chess (needs 640k)	69.95
Battle Hawks 1942 #	64.95
Battle Tech #	61.95
Batman	69.95
Beyond Zork	59.95
Billiards	52.95
Bionic Commandos	54.95
Black Jack Academy †	49.95
Blockbuster	48.50
California Challenge (Test Drive 2 add-on)	39.95
California Games †	49.95
Captain Blood (3.5" only)	69.95
Charlie Chaplin	69.95
Chuck Yeager's Adv. Flt. Trainer †	49.95
Circus Games †	59.95
Classic Quest Adventure Series:	
Forestland	39.95
Witch Hunt	39.95
Catacombs	39.95
Cornucopia	39.95
Classic Arcades 2: *with Penngo, Arnold and Grand prix*	59.95
Computer Yahtzee #	**29.95**
Concentration	49.95
Corruption	59.95
Crazy Cars 2 †	**59.95**
Crusade in Europe	59.95

PC - continued

Daley Thompson's Olympic Challenge	61.95
Dark Castle	49.95
Dark Side	54.95
Decision in Desert	59.95
Def Con 5 (American 'Star Wars' defence)	59.95
Demon Stalkers	54.95
Destroyer †	49.95
Double Dragon	61.95
Dragonworld	32.95
Driller	59.95
Echelon	54.95
Elite	69.00
Emmannuelle (AO)	39.95
Empire	47.95
F-15 †	59.95
F-16 Falcon †	62.95
F-16 Combat Pilot †	59.95
F-19 Stealth Fighter	109.95
Fahrenheit 451	32.95
Family Feud	49.95
Fast Break (Basketball)	**59.95**
Fire and Forget †	69.95
Fire Power #	47.95
First Expedition †	49.95
Fish	69.95
Flippit	39.95
Galactic Conqueror †	69.95
Games, The - Summer Edition †	49.95
Gnome Ranger	59.95
Gold Rush †	52.95
Gone Reel Fishin' #	**61.95**
Grand Prix Circuit #	59.95
Gunship †	69.95
Hardball	49.95
Heavy Metal	52.95
Hitch Hiker's Guide to the Galaxy	64.95
Hunt for Red October	49.95
Impossible Mission II †	49.95
Ingrid's back	59.95
Inside Trader	59.95
Into the Eagle's Nest	48.50
Jack Nicklaus Golf	59.95
Jack Nicklaus Courses Vol 1	**39.95**
Jeopardy	49.95
Joan of Arc	52.95
Kampfgruppe	69.95
Kings Quest 1 #	49.95
Kings Quest 2 #	49.95
Kings Quest 3 #	49.95
Kings Quest 4 (9x5.25" and 4x3.5") #	84.95
Knight Force †	69.95
Knight Orc	59.95
LA Crackdown †	39.95
Lancelot	59.95
Laptop Computer Chess 3.5" only	52.95
Leisure Suit Larry (AO) #	59.95
Leisure Suit Larry II (AO) #	59.95
Lombard R.A.C Rally	**59.95**
Man Hunter - New York #	64.95
Mean 18 Famous Courses 3/4	29.95
Mini Putt	49.95
Moto Cross #	**59.95**
Mystery Trilogy (3 Infocom mysteries)	47.95
Nebulus	**49.95**
Night Raider	59.95
Nine Princes in Amber	32.95
Nord & Bert couldn't make head nor tail...	47.95

PC - continued

Pawn, The	69.95
Personal Nightmare †	79.95
Peter Rose Pennant Fever	47.95
PC Gold Hits Compilation (for CGA) *with Infiltrator, Bruce Lee, Ace of Aces and World Class Leaderboard*	49.95
Perry Mason - Mandarin Murders	32.95
Phantasie 1	69.95
Phantasie 3	69.95
PHM Pegasus †	59.95
Pinball Wizard	69.95
Pirates	59.95
Police Quest 1 #	59.95
Police Quest 2 #	59.95
Portal	47.95
Pool of Radiance	42.95
President Elect	69.95
President is Missing	59.95
Project Space Station	49.95
Prophecy	61.95
PT-109	64.95
Quadralien	59.95
Rack'em (Pool, Billiards, Snooker)	54.95
Rambo III	69.95
Reach for the Stars †	49.95
Rendezvous with Rama	32.95
Sapiens	69.95
Sargon III (Chess)	84.95
Scavengers	54.95
Scrabble de luxe	52.95
Scruples	43.95
Serve and Volley	54.95
Sherlock	61.95
Shiloh	69.95
Shogun	52.95
Silent Service	59.95
Silicon Dreams	59.95
Silpheed #	52.95
Solomon's Key	69.95
Sorceror Lord	**59.95**
Space Max	69.95
Space Quest 1 #	59.95
Space Quest 2 #	59.95
Space Quest 3 #	52.95
Speed Ball	64.95
Spitfire Ace	59.95
Star Command	79.95
Star Trek: Promethian	49.95
Star Trek: The Rebel Universe #	49.95
Star Quake (Amstrad j/stick port only)	59.95
Star Ray	59.95
Steel Thunder	**61.95**
Stellar Crusade	69.95
Star Glider	59.95
Station Fall	47.95
Street Sports Baseball †	49.95
Street Sports Basketball †	49.95
Street Sports Soccer †	49.95
Sub Battle Simulator †	49.95
Super Cars (Test Drive 2 add-on)	39.95
Superman	69.95
Teenage Queen (Poker)	**49.95**
Technocop	49.95
Test Drive 1	59.95
Test Drive 2 †	61.95
Tenth Frame	59.00
Tetris	62.95

PC - continued

Thexder #	59.95
Thud Ridge	54.95
Thunderblade	69.95
Thunderchopper †	89.95
Time and Magik	59.95
Titan	**59.95**
Train, The	54.95
Ultima V	59.95
UMS (War game simulator)	69.95
Usurper, The	59.95
War in Middle Earth	**52.95**
Wargame Construction Kit	69.95
WEC Le Mans	69.95
Wheel of Fortune	44.95
Where in Europe is Carmen Sandiego	**64.50**
Where in the world is Carmen Sandiego	**64.50**
Where time stood still	61.95
Who framed Roger Rabbit †	54.95
Winter Games †	49.95
Wizardry 5	**79.95**
Wizard's Crown	69.95
World Class Leaderboard Golf value pack	64.95
Zac McKracken & the alien mindbenders	64.95
Zork Quest II - The Crystal of Doom	37.95

BUDGET GAMES

Arcade 1: *Pitfall, Artillery, Goob and X-Wing*	14.99
Arcade 2: *Munchman, Bowling and Depth charge*	14.99
Arcade Bonanza: *Frog, Pac-em, Tank and Red Alert*	14.99
Board Games	14.99
Master Blaster: *Paratrooper, Round 42 and Rockets*	14.99
Mind Games: *Concentration, Magie, Hide-away and Mindscan*	14.99
Sink the Bismark: *Computer Battleships and Naval Trivia*	14.99
Space Battles: *Space War, Meteor Shower, Moon Lander, Space Zombies*	14.99
Space Games	14.99
Strategy Games: *Ruler, Killer Bees, Engineer, Sabotage and Vampire*	14.99

EDUCATION

Alphabet Zoo	59.95
Better Maths (12-16 yrs)	39.95
Better Spelling (9- Adult)	39.95
Biology (12-16 yrs)	39.95
Chemistry (12-16 yrs)	39.95
Computerease - tutorial on PC	19.95
COMPUTEREASY EDUCATION SERIES:	
Maths Climbers	**18.95**
Mind Games	**18.95**
Mr. DOS	**18.95**
Read Easy	**18.95**
Schultz Treasure	**18.95**
Spell Castle	**18.95**
Type and Learn	**18.95**
Wordsearch 2000	**18.95**
Cryptocube	59.95
Decimal Dungeon	49.95
Delta Drawing	52.95
Fraction Action	49.95
Grammar Examiner	59.95
In search of the most amazing things	59.95
Kids on Keys	59.95

PC - continued

Kidwriter	59.95
Kindercomp	59.95
Lex, Wizard of Words (Ages 10 to 99) #	39.95
Magic Maths (4-12 yr) CGA	39.95
Maths Mania (8-12 yr) CGA	39.95
Maxi Maths (12-16 yrs)	39.95
Micro Maths - advanced for Years 9-11 students	69.95
Mixed up Mother Goose #	59.95
Notable Phantom	59.95
Number Fun 1 (5 to 15 yrs) #	34.95
Physics (12-16 yrs)	39.95
Race Car Arithmetic	49.95
Remember!	89.95
Sesame Street series - covers problem solving, predicting, logic & reasoning	
Ernie's Big Splash (4-6 yrs)	39.95
Astro Grover (3-6 yrs)	39.95
Grover's Animal Ad (4-6 yrs)	39.95
Big Bird's Delivery (3-6 yrs)	39.95
Ernie's Magic Shapes (4-6 yrs)	39.95
Pals around Town (4-6 yrs)	39.95
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PC - continued

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PC - continued

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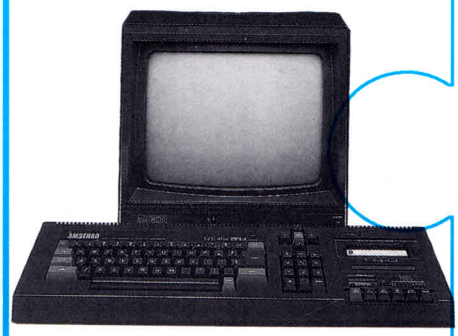

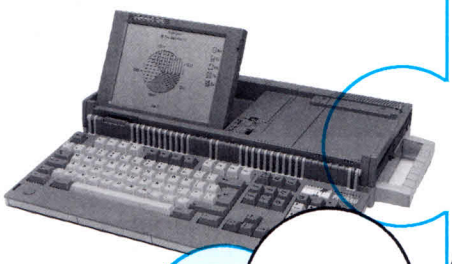

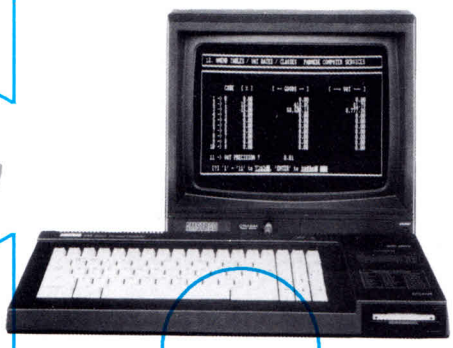

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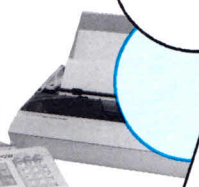

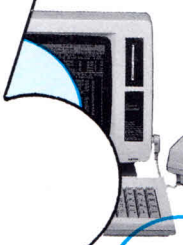

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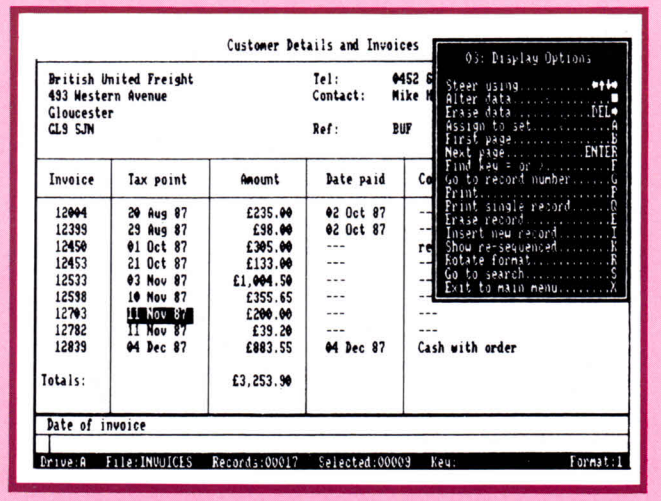

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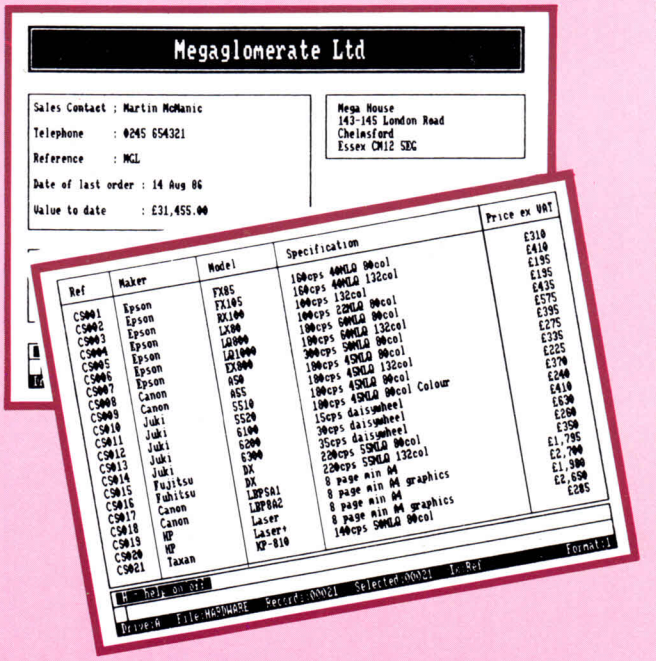

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