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BUSINESS and AMIGA USER

OCTOBER 1986

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Digital Solutions Inc. brings you the light with easy to use software specifically designed to use the power of your Commodore Amiga™.

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Each of these programs give you all the functions you would expect from productivity software plus the following unique features:

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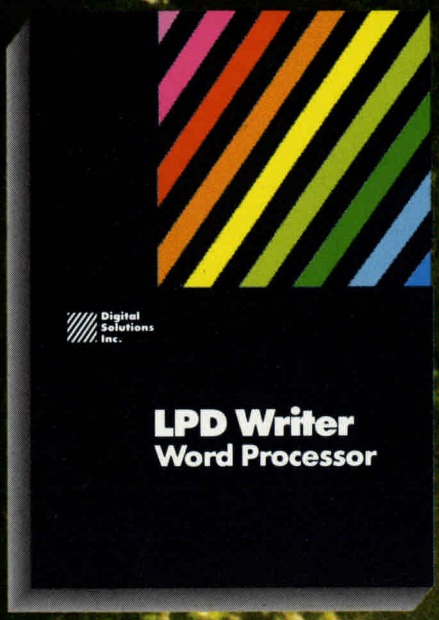
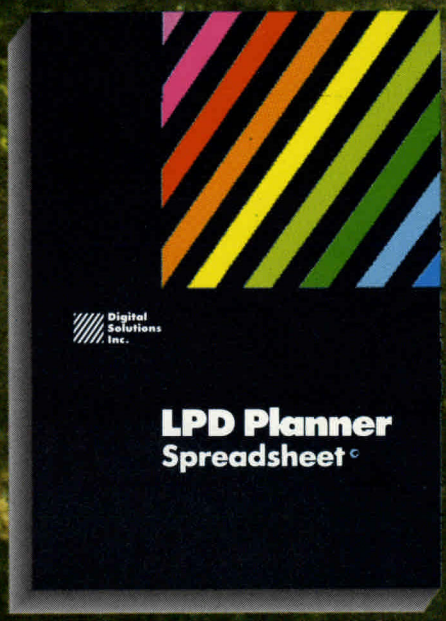
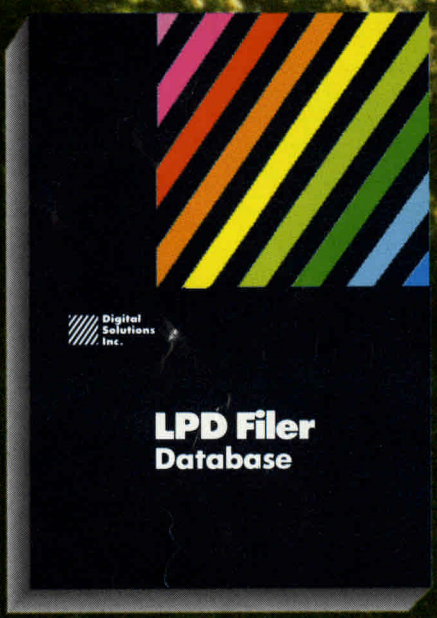
In addition, LPD™ Writer, LPD™ Planner and LPD™ Filer each have their own very special characteristics.



LPD™ WRITER/Word Processor*
multiple documents can be edited at the same time
more than one window can be opened on a document
on screen representation of documents as they will be printed (including line spacing, superscripts and subscripts)
on screen headers and footers
underlining, boldface and italic enhancement of text



LPD™ PLANNER/Spreadsheet*
multiple spreadsheets can be manipulated at one time
more than one window can be opened on any spread sheet
spreadsheet size: 256 columns by 65,536 rows
sideways printing
cells can be displayed underlined, boldface and italicized
pie charts, line graphs, bar graphs and stacked bar graphs available
variable width columns
horizontal, vertical and "smart" recalculation



LPD™ FILER/Database*
multiple databases can be used at one time
more than one window can be opened on a specific database
multi-page record layouts
six field types: numeric, character, logical, date, time, note
user-definable order of field entries and default field values
calculations during record entry
databases may be sorted on multiple fields simultaneously
use of index files for fast access
report generation including headers, footers and record-by-record calculations.

*Available October, 1986

Powerful software that's simple to use.

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At last...
The light.

Supersoft take Pets

Following the closedown of Commodore's Corby factory, Supersoft have bought from Palan Electronics the bulk of the PET computers, disk drives, and printers that were up for sale.

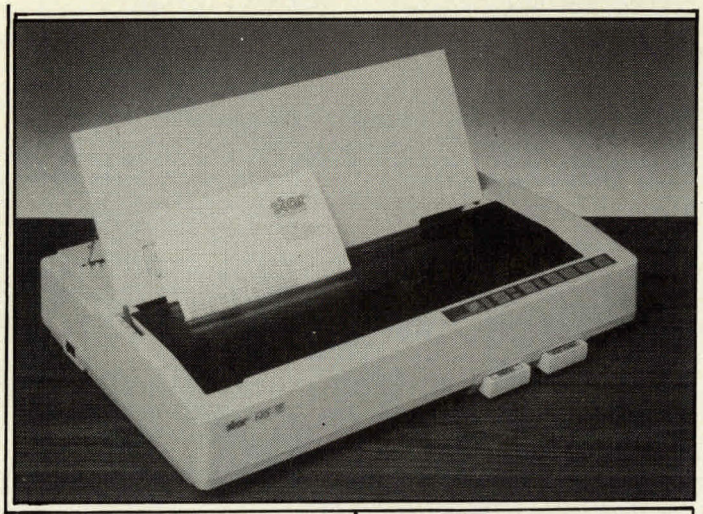
Several hundred new and used machines were involved, including a large batch of brand new 1361 dot matrix printers, and Supersoft have taken on a new warehouse in the Corby area to hold the stock.

One of the few companies still to support the PET, Supersoft still offer over two hundred different programs, add-on boards and other accessories for the PET range. Over the past 18 months Supersoft have been buying and selling reconditioned equipment on a small scale, mainly as a service to regular customers, since many Commodore business systems dealers have gone over to IBM or Apricot. However, following this purchase the supply of hardware will become a significant part of Supersoft's business.

Supersoft director Peter Calver, said "The Commodore PET still represents a large slice of our software turnover — I think we're the only software house that still regards it as a serious machine. We intend to make sure that PET users have a source of machines, spares, software, and service well into the 1990's."

Supersoft will be offering the equipment to both end-users and dealers, and as an initial step are writing to the thousands of PET owners who have bought from Supersoft since the company was founded in 1978.

Contact Supersoft 01-861 1166



New Star

STAR have introduced the NB-15. It is 300 cps draft and 100 cps letter quality. It has a friction and tractor feed, and semi-automatic paper loading. It also features down load characters — space for 128 individually created characters in draft or letter quality. The font cartridge system allows three different fonts to reside in the printer. And it has a 16K text buffer — the equivalent of around 8 pages of text. Another feature useful for programmes and trouble-shooting is a hex dump. It is PC compatible. £949.00 (+ VAT)

Showstopper

The Amiga was shown for the first time in Australia at PC 86 at Sydney. Without doubt, Amiga was the hit of the show, with over 22,000 people attending the Commodore stand over four days. In this period demonstrations were given every hour showing off the Amiga's capabilities to large crowds. One interesting aspect was that 80% of potential buyers were either current, or intending, PCXT owners. The reason for this was due to the Amiga's extended capabilities over the XT and the fact that Amiga can run ST applications. The net effect has been that Commodore Australia sold out of Amigas within the first week of releasing the computer and shortly thereafter had back orders exceeding 2,000 units. As supply has continued demand has strengthened. The company has secured distribution rights to many software packages from the USA to ensure that they can give customers Amiga solutions to problems.

Elephant News

Floppy disk manufacturer, Dennison, has announced two new additions to its Elephant Memory Systems brand of micro floppies. They are the EMS-MF-2 double sided 3.5 inch disk suitable for all disk drives with this specification and the EMS-12 high density double sided 5.25 inch, 96 tracks per inch, disk for use in the new generation IBM AT type machines and compatibles. The EMS-12 belongs to the category of disks often referred to, because of large storage capacity, as the 1.6 megabyte disk.

Both disks provide superior data protection made to above industry standards with every disk certified 100% error ad problem free with quality maintained for over 12 million passes. In addition, all disks are backed by the Dennison Lifetime Warranty.

The 5.25 inch floppies are supplied in 10's while the 3.5 inch disks come in boxes of 5. The unusual facility of being able to buy in smaller quantities has positive consumer appeal.

These two new additions complete the Elephant range of micro floppies which now comprises 8, 5.25 and 3.5 inch disks single and double sided and in single (48 tpi), double and quad density versions.

John Wise, Dennison's sales and marketing manager computer supplies and stationery, is confident that the timing of the ds 3.5 inch disk launch, in particular, is spot on. The disk is beginning to come into its own as the AMIGA gains popularity and when IBM begins to ship equipment using this system. At present, the 3.5 inch disk represents about 10% of the UK market.

Memory

Megastore has producted a 5¼ inch optical disk drive which has significant advantages over other optical products. As a complete subsystem, it comes with utility software and a library of routines written on Lattice C.

The system can direct read during write. It does this by having a series of lenses within the head of the drive which monitor the write process. Conventional Winchesters do a latency check. It also has a fast average access time of 130 milliseconds. In addition, the drive has the ability to select over 300 KB without stepping the optical head.

At £500, there is 400 MB of user data available on a doublesided cartridge. The system has the ability to update records at sector level.
Contact: Megastore, Erith (0322) 339922

Office Workstations has launched a new service called CD-Now. CD-Now supplies customers with everything for a 50MB Compact Disk Read Only Memory (CD Rom) system.

The company estimate that, for about £9,750, yu can build your own CD-Rom development system on a PC. It provides the software, the premastering services disk mastering and disk manufacturing in a single package. It is aimed at organisations who are considering CD-rom publishing, but have been alarmed by the cost.

Contact: Office Workstations (031) 652 2235

Wordcraft

Wordcraft International has produced a new version of its wordprocessing package, Wordcraft. Wordcraft Nova is aimed at the first time user and costs £150. All the commands and controls are the same as its predecessor and it can be upgraded to Wordcraft.
Contact: Wordcraft International (0206) 561608

Print Out

ELECTRONIC Printing Systems claims that its new laser printer can handle 10 pages per minute. The **EPS 1000** has been designed to tackle a paper load between 5,000 and 20,000 sheets per month.

The company also claims a number of firsts. These include a photocopying facility, also a larger paper handling capacity, to maintain work flow without interruptions. An optional sequencer is also available, to provide output that is collated ready for distribution.

Standard fonts in both landscape and portrait can be added and there's an electronic font switching and font downloading. This enables printing of 22 fonts in sizes ranging from six to 24.

Interface options are RS232C serial asynchronous, centronics or Dataproducts parallel, IBM 34/36/38 plus others.

Contact Electronic Printing Systems Fareham (03290) 221121.

PRINTER company **Epson** has added the **EX800**, a near letter quality and draft dot matrix printer to its range.

Selling at £505, the EX800 is an 80 column, nine pin printer which can print out up to 300 characters per second and 12 characters per inch. In near letter quality mode, the EX800 uses a 18 × 18 character print matrix. Epson says the EX800 is the first to allow NLQ printing in sub/superscript. Other print modes are normal, enlarged, condensed, emphasized, double strike, underlined and italic.

Print selection is made by using an eight key, back-lit panel on the front of the printer. It is also possible to select modes using software control or DIP switches on the back of the printer. There is also a self-test routine which prints out the dip switch setting as well as the characteer set.

The EX800 also includes an eight bit parallel interface and a serial RS232C interface, an 8KB input buffer expandable to 40KB and IBM compatibility under software control.
Contact:
Epson 01-902 8892.

DATA Distributors Limited is selling the **Seikosha MP-1300AI**, an 80-column dot matrix printer at £282. The MP-1300AI has a colour option; you add a clip-on, clip-off colour card and colour ribbon.

The machine has a newly-designed nine-pin print head. It can print in near letter quality at 50 characters per second and has a draft speed of 300 cps.

The printer is fully compatible with Epson FX and IBM PC and can handle single sheets or continuous stationery up to a maximum width of 10 inches.

Contact DDL Ascot (0990) 28921.

Amiga Bulletin Board

There is now a UK Bulletin Board for AMIGA users. Run by an organisation called Computer Supplies in Swansea, it is Bulletin AT — a FIDO board. It has already some useful public domain software and is looking towards a MBBC (Multiple Bulletin Board Conference) for the AMIGA, linking up with Norway and the USA.

Besides reviews and distributor information, there are also special offers on software.
Telephone: 0792 - 297845 (voice line outside hours)
Times: 6pm to 9pm weekdays; 24 hours weekends
Protocol: 8 bits 1 stop No parity
Speeds: 300/300; 1200/75; 1200/1200 (V21-22-23)

AMIGA Board

Another Bulletin Board has been announced. It is to be run through on Amiga users Group led by Trevor Seaton on behalf of the Cavendish Commodore Centre in Leicester.

The Board will be split into sections. The early ones will be free and the rest available on subscription to the Users Group. There will be a substantial amount of public domain software and advantages to users.

Times: 6 p.m. to 8 a.m. on 0533 550993.

Expanding memory

A program that lets programs treat hard disk drives and extended memory boards as if they were expanded memory has been announced by Tele-Ware West in California.

Above Disc, the package, allows users who do not have expanded memory boards to create large spreadsheets and databases when using programs that support the Lotus-Intel-Microsoft expanded memory specification (EMS).

CBM launches upgraded PCs

Commodore has launched new versions of its IBM compatible PC 10 and PC 20 micros

The PC 10 II and PC 20 II come complete with either mono or colour monitors and start in the UK at a price of £1,199 (exc VAT) for the 10 and £1,799 (exc VAT) for the 20.

Specification

The new machines' specifications include 512 K RAM as well as an AGA (Advanced Graphics Card). The 20 includes a 20Mbyte Winchester drive, while the 10 has twin double sided, double density 360 floppy drives.

Commodore's business market sales now account for some 50 per cent of the UK's business compared with five per cent in the past.

Game — for the Amiga

Activisions successful and critically acclaimed GAMEMAKER is available for the Amiga from September.

Gamemaker is an easy-to-use creativity tool which allows Amiga owners to create their own computer games — without having to learn complicated assembly languages — or spend frustrating months programming their ideas.

Using a joystick, the "designer" selects from a menu of commands to produce and animate characters and draw backgrounds, create sound effects and compose musical scores. All the components produced are then brought together.

The Gamemaker Computer Game Design Kit consists of: Spritemaker, Scenemaker, Soundmaker, Musicmaker and The Editor.

IBM Loses PC Market

According to Romtec, a leading UK market research organization, while IBM took half the PC market in the UK in the last quarter of 1985, its market share has fallen to 43.5% for the first half of 1986. Olivetti and Compaq, which had 44% and 23% respectively of the compatibles at the end of 1985 were down to 36% and 20% by the end of the second quarter of 1986.

Chinese PC's

China is planning to become self-sufficient in PC manufacturing. Through a campaign set up by the Chinese government, some 80% of the personal computers to be installed in the year 1990 will be manufactured in China. PC installations have more than doubled annually in China during the past five years.

COMMODORE BUSINESS AND AMIGA USER

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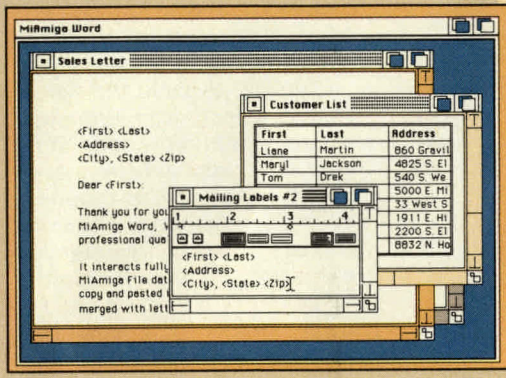
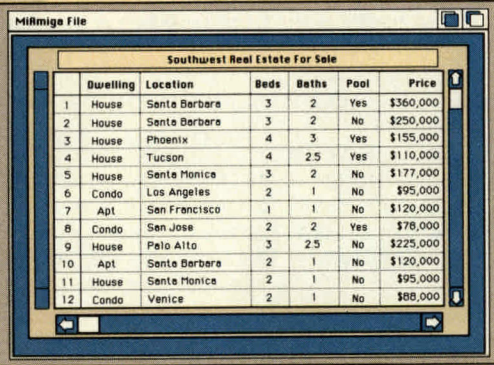
MiAmiga Word



- Multi-Window Editing of separate documents...
- On-line Spelling Checker allows easy insertion of new words...
- Headers and Footers for all, left facing, or right facing pages...
- Search and Replace through entire document...
- User-definable Glossary with easy insertion of new terms...
- Supports large documents...
- Document size limited only by size of disk...
- Cut, copy, paste within and between documents...
- Left and/or right margin justification of text...
- Copy and paste from MiAmiga File database...
- Mail Merge with MiAmiga File database or ASCII file.

MiAmiga File

- Easily define column widths, placement and justification...
- Format numeric fields with commas, dollar signs, and/or decimals...
- Transfer quickly between full database and selected records...
- Transfer conveniently from selected record to data entry form...
- Print columnar reports from list including automatic page headings and cumulative totals...

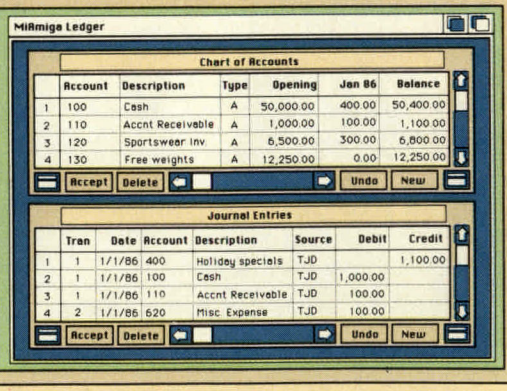


	Dwelling	Location	Beds	Baths	Pool	Price
1	House	Santa Barbara	3	2	Yes	$360,000
2	House	Santa Barbara	3	2	No	$250,000
3	House	Phoenix	4	3	Yes	$155,000
4	House	Tucson	4	2.5	Yes	$110,000
5	House	Santa Monica	3	2	No	$177,000
6	Condo	Los Angeles	2	1	No	$95,000
7	Apt	San Francisco	1	1	No	$120,000
8	Condo	San Jose	2	2	Yes	$78,000
9	House	Palo Alto	3	2.5	No	$225,000
10	Apt	Santa Barbara	2	1	No	$120,000
11	House	Santa Monica	2	1	No	$95,000
12	Condo	Venice	2	1	No	$88,000

- Format mailing labels by positioning fields on form...
- Automatic scrolling of data within a field during data entry...
- Optionally capitalize the first letter of each word automatically...
- Modify form as needed for convenient placement of data...
- Data entry form automatically created by system during database definition.

MiAmiga Ledger

- Easily define column widths, placement, and justification...
- Multi-window screen allows convenient access to both Chart of Accounts and Journal Entries...
- Edit/Post of Journal Entries to Chart of Accounts...
- User-definable Chart of Accounts...
- Transfer quickly between full GL database and selected records...
- Zoom feature automatically expands windows to full screen size.
- Print columnar reports from list including automatic page headings and cumulative totals...
- Format numeric fields with commas, dollar signs, and/or decimals...
- 12 months of prior balance info maintained for each account...
- Both current period and fiscal year-end close... Follows standard accounting practices...
- User-definable custom reports and a full set of standard GL reports.



MiAmiga...The Best Friends Your Amiga Will Ever Have!

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MI-AMIGA

MI-AMIGA FILE is a database management system (DMS) for the AMIGA using the INTUITION user-interface. INTUITION, for the benefit of those who have not seen it, is in very simple terms the graphic system overlaying the main operating system of the machine. The WORKBENCH provides the primary environment of INTUITION and uses many of INTUITION's elements such as disk icons, gadgets and windows. INTUITION is very highly rated by users and programmers alike for providing a stable, robust and creative vehicle and does not suffer from the limitations endemic in Digital Research's GEM, which amongst other things is extremely limited in the number of windows it can support. Microsoft's much vaunted WINDOWS is also rapidly accumulating a reputation for being difficult to use and program — a complete contrast to INTUITION.

Database management provides for the collection, storage and collation of user data whether in numeric, character or alphanumeric form. The collation process extends to manipulation of the data by indexing and comparison together with the user defining the form of output to printer or screen. The basic elements of operation in a DMS are the *field, record* and *file*. Using the ubiquitous card index as an example, a card in a book library would have the book's title, author's name and classification code entered into *fields*. The *fields* would be entered on the card which in turn would be called a *record* and the collection of cards would be named a *file*. The structure of the *fields* do not have to be identical, for example the library card would have the book title and author in character form whilst the classification code would be in numeric form.

The MI-AMIGA FILE is supplied on a single disk which can be readily transferred to hard disk. A 60 page manual covering vitually all of the points of using the product completes the package. The manual is both very easy to read and follow — perhaps lacking a little in substance, or maybe this is a personal thing having been used to the solidity and weight of MS-DOS and UNIX DMS manuals! A plus point of MI-AMIGA FILE is it's ability to support additional RAM — this has the benefit of much faster file manipulations since most, if not all, of the file can be held in memory rather than on disk. MI-AMIGA FILE provides for no less than 8 different types of field together with a maximum of 32 fields per record which allows the system designer excellent flexibility in constructing a database. The field types are **alpha, amount, date, text, time, yes/no, phone** and **alphanumeric** with a maximum of 64 characters per field where appropriate. Thus an average application containing 32 fields would hold just under 2000 characters per record.

An **alpha** field is either text or space characters whilst **amount** is obviously meant for financial data as it supports dollar signs, commas and 2 decimal places. The AMIGA keyboard supports the English pound sign but not other currencies. The **date** field is fixed to the USA-only format of the U.S dollar and MM/DD/YY and the **text** field is any keyboard character, text or numeric and hence is the most commonly used field. The **time** field allows entry in either 24 hour clock snytax, i.e. HH:MM or in 12 hour format AM or PM. The **phone** field is a variation on the **alpha** field in that it will accept numbers only together with certain other characters such as brackets, hyphens and fullstops whilst the remaining fields, **alphanumeric** and **yes/no** are self-explanatory.

A field can be added or deleted any where within a record without concern about the fate of the contents if the field exists — the contents are simply dumped. The appearance of a record may be in a row and column format:-
The design of the form is left to the user and fields can be placed anywhere on the screen, there are no restrictions on where the field types are to be placed within a record. Using the form option is very useful for dealing with data input from an unskilled user. In addition to removal and deletion of a field, the field width may altered or contents justified to the left, right or centre — very useful in crowded screen layouts. Although it is **not** necessary to place all the fields of a record within the confines of an individual screen, a horizontal scroll will reveal further portions if desired.

Printer Output

User input is very well handled with the scroll bars of INTUITION being put to very effective use and also the TAB key serving to retrieve the last record for editing of errors. Another useful feature is the *Auto Capitalise* which will make the first text character of a field entry a capital.

Information about the file status is very comprehensive and will display the name of the file, number of records, file space unused, average record size in characters and approximate record capacity within the file. Printer output is also handled in the same easy manner. The printer to be used is that defined in the user's PREFERENCES file within the WORKBENCH. Once more the user can design the layout of the printed output by moving the fields around in any order to arrive at their requirements.

Since it is very easy to add further fields and temporarily or permanently delete fields, the customising of mailing lists can be very fast indeed. The printed output can be sent to an 80 column or 132 column printer. Output can also be sent to an ASCII disk file for operation with other applications such as **SCRIBBLE!** word processor, **ANALYZE!** spreadsheet or an electronic mail link via modem. Although the manual makes no mention of reading ASCII files back into MI-AMIGA FILE. It also took me some time to get into the habit of appending a .FLR suffix on saving a new file to disk. This suffix is used by the application to recognise a database file. Unfortunately if the user misses it out the first time aorund, the file fails to appear on the database directory. This can cause some consternation until it is realised that the file is actually present on the disk and the user must descend into AmigaDOS to rename the file with the suffix.

Sorting data is very much a strong feature of MI-AMIGA FILE. This can be accomplished through logical operators and ascending and descending columns as well as sorts of fields within a field. The records obtained in this manner can then be saved to disk or output to the printer although once more the manual makes no reference to this. The sorts themselves are commendably quick, I was never waiting more than a minute, even on very large sorting. Indeed most of the time the sorts were finished before I had realised it — just how much this has to do with the replacment of the 68000 cpu with a 68010 in my system is unknown.

MI-AMIGA FILE is not a relational DMS, it is a flat file system with the corresponding limitations these have. **It is fast and easy to operate with minimal time spent searching the manual.** What it lacks in the version I reviewed was insufficient explanation of all of its capabilities and a failure on the programmer's part to realise that the AMIGA is an international product going into markets outside of the USA i.e. the date format and dollar-sign-only currency choice. These are minor points, but should receive attention in the next version released. It is robust (no system crash experienced) and leaves me with the strong impression that it is a good solid product. **As an entry-level database for the AMIGA it is well worth buying.**

Supplier: Haba Systems Ltd.
Pier Road
North Feltham Trading Estate
FELTHAM
Middlesex TW14 0TT.
Tel. 01-751 6451
Price: £99.95

DELUXE VIDEO

Reviewed by Hugh Riley

This is the big one from Electronic Arts — the package that puts together thefull potential of Deluxe Paint, Print and Music. It doesn't generate sound or complex images itself but it will accept any IFF compatible sound and graphics files and combine them as video. Add to that a 3D text generator which can rotate, flip, expand and shrink, a framer utility which enables bit-mapped animation and a scene generator for automatic titles, pie charts and bar charts and you have a very powerful video tool.

There are three disks to the package. The master is the Deluxe Video Maker. The other two are utilities and demos. The master disk presents you with a 'video spreadsheet'. The video is represented on screen as a track, analogous to a sound track or a film track, divided along its length into 22 second sections. On this track are placed icons representing the scenes which make up the video. Movable arrows mark the beginning and end of each scene. Clicking the mouse on the icon brings up a new window which contains the scene script, again shown as a track the length of the scene.

The system is quickly mastered. It makes a highly complex program simple to use and the visual effects are extremely impressive. Full screen pictures can be faded in and out or wiped from one to the other in six different directions, while expanding, shrinking or breaking into the screen. Parts of pictures, saved as brushes under Deluxe Paint, can be moved around the screen, resized or colour-cycled. These 'objects' can be made to leave a trail or fade out. They can be 'stamped' into the picture when they reach their destination and become part of the background.

Animation is made easy with the 'framer' utility. The intermediate stages of a sequence drawn on a graphics package are put together to form one animated object which can then be treated like any other.

Music and sound effects are laid down onto the tracks in the same way as graphics from sound files generated by a music program or digitised sound in IFF format. They can be modified within the video for volume, rate and tempo. The duration of all graphics and sound effects can be altered at any point.

In addition to treating graphics from other sources Deluxe Paint can generate video images within itself. A plain background can be filled in any one of 8 patterns, in any one of 4 colour modes — including reversed bit pattern and inverse video.

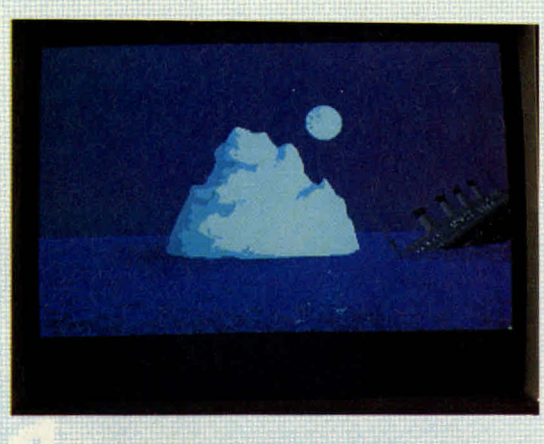
There are two powerful text generators. Text line enables you to use any of the system fonts in normal, shadow, underline, bold and italic. Polygon text is 3 Dimensional. Whatever you type in can be resized throughout the video or rotated through any axis. Letters can be in shadow, outline and italic as well as standard format and can be filled with any of 8 patterns in any colour. In addition to alphanumeric characters, polygon text includes a selection of geometric polygons that can be treated in the same way as text.

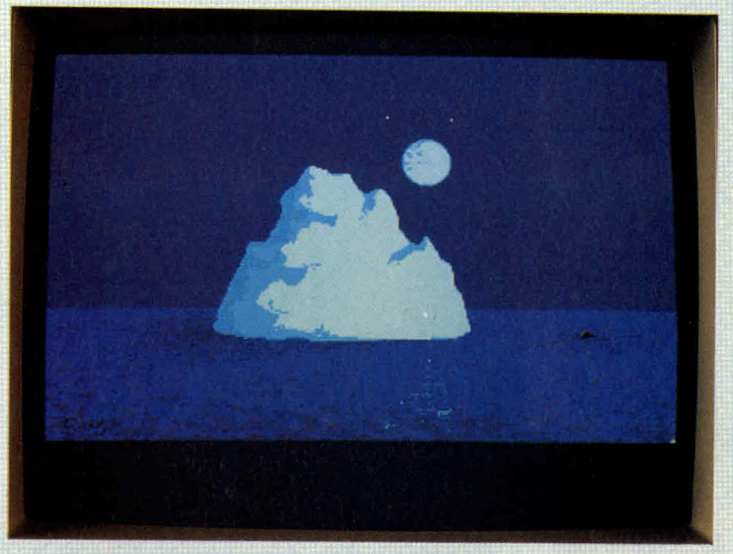
The scene generators provide some automatic graphic displays. Information typed into a requester is displayed in the form of animated pie charts, bar charts, credit and title scenes. These are a little crude, but they do provide a starting point for your own productions.

While assembling a video it can be viewed at any point. On screen is a representation of a video remote control and with this you can play forward, back, fast forward, fast reverse or cycle or watch the video frame by frame in either direction. A timer lets you know where you are on the track to make editing extremely accurate.

Dropping down onto video tape is made easier by having a selection of running speeds. Half and quarter speed enable a video recorder that can run at slow speed to make a smoother recording. 'Superslow' shows each frame at 1/30th second. this is the American standard video rate so by manually advancing computer video and video recorder it is possible to get very good results.

Virtually everything in the program is WIMP driven with extensive use of windowing to request information or to move objects about. When objects need to be placed or moved on screen they can be viewed with x and y coordinates





alongside for greater accuracy. Pictures can be loaded from disk and viewed before they are placed in the video.

There is a limitation here in that Deluxe Video supports a palette of only 8 colours. Obviously you can choose which 8 but it does mean that detail is reduced. In order to make files acceptable to the program you have the choice of 'best colour' or 'current palette' colours. Best colour uses the 8 most common colours in a picture. I found that most of my pictures looked much better than I expected when treated this way. Foreground objects can be in a different palette from a background picture. When an object is 'stamped' into the background, however, the background takes on the colour of that object.

Videos can be chained together to form one long video. The only limit is the size of th disk storage space. It is also possible to insert pauses of up to two & 3/4 hours in a video while the computer awaits a key press to restart. These two options come together in the command 'keychain' which provides the basis of interactive video. With each keychain command up to 10 different videos can be chained together with a particular key assigned to each one. It is possible, therefore, to branch conditionally on a key press to a new set of options. This type of program has obvious uses in education.

One of the utility disks contains two devices to improve your video editing. Unpack allows you to disassemble parts of existing videos — the demo for example — for use in other displays. Vidcheck compresses the video by removing unnecessary parts, so using less disk space. It also provides a print-out of the video file, to screen or printer, summarising the composition of the video. The framer is also on this disk along with several demonstrations.

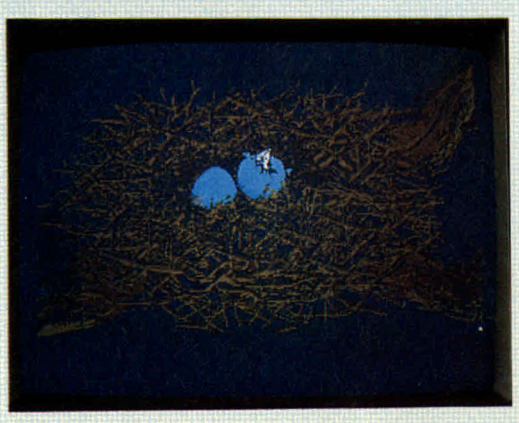
The other disk contains the video player. This utility enables you to run a finished video without loading Deluxe Video. The player is not copy protected so it allows you to distribute your videos without difficulty.

Deluxe Video is full of effects that can be used in combination with each other. It is extremely easy to use once you have ploughed through the manual and its certainly the most useful animator that has arrived so far for the Amiga. It is expensive, as are all the Amiga tools at the moment, especially when, in order to use Deluxe Video to its optimum you also need a music generating program, a sound digitiser, a quality graphics package, a video recorder, genlock and camera, a frame buffer and a frame grabber. All of which is going to be wasted without at least a 2 megabyte expansion because otherwise your videos will always be in short bursts.

Apart fromthat it really is outstanding, a delight to use. The program is clearly laid out for you to see, you can run through it step by step, rewind, and edit with no trouble at all.

The packaging hypes up the product outrageously, especially as a professional/business tool. I don't think any of the moving graphics utilities are adequate for business use in themselves yet. But it's certainly enormous fun to create with and if standards keep rising like this we'll have some really amazing stuff before long. The AMIGA is really going to shake up our ideas of what is possible for graphics.

H.R.



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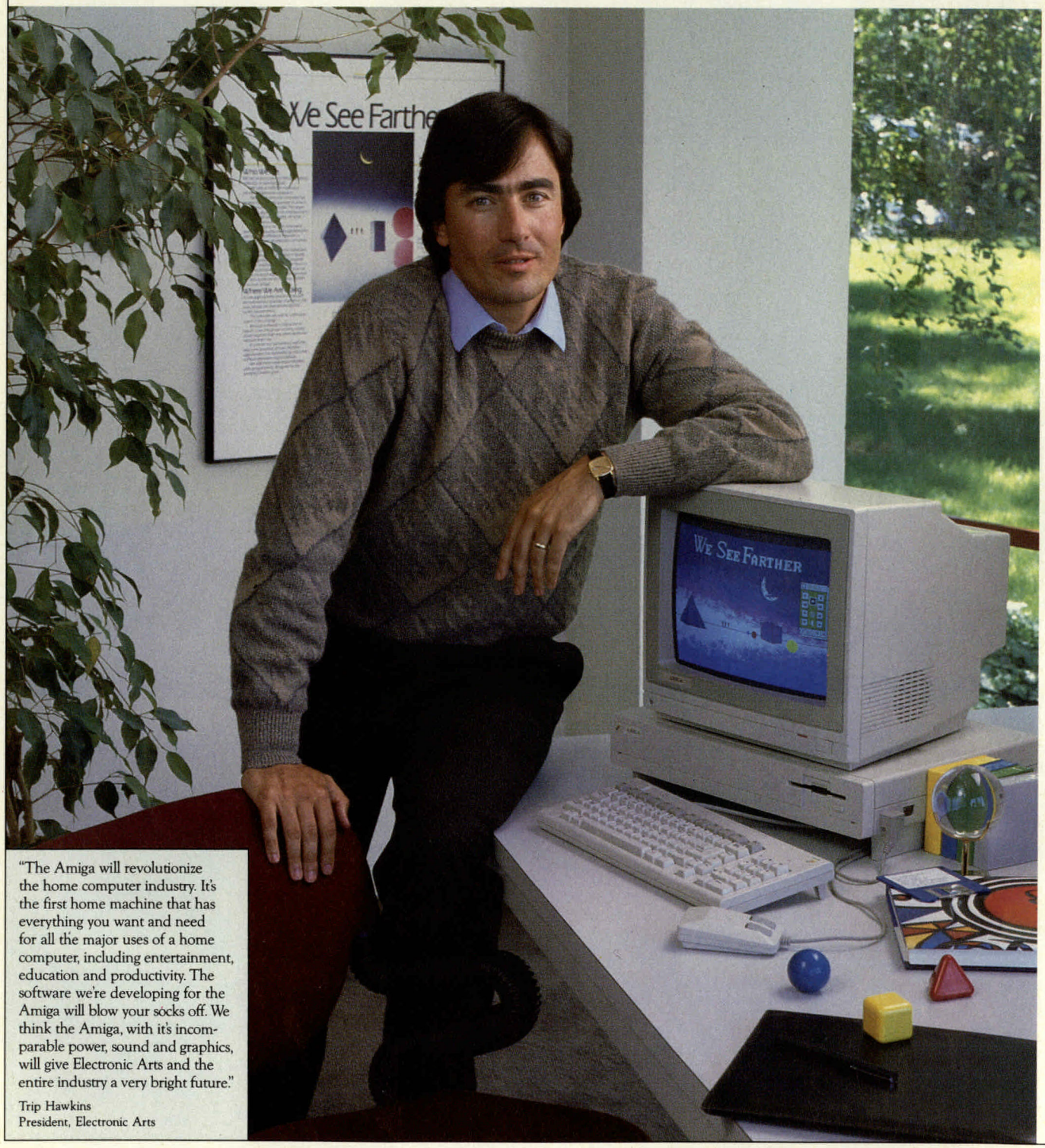
WHY ELECTRONIC ARTS



"The Amiga will revolutionize the home computer industry. It's the first home machine that has everything you want and need for all the major uses of a home computer, including entertainment, education and productivity. The software we're developing for the Amiga will blow your socks off. We think the Amiga, with it's incomparable power, sound and graphics, will give Electronic Arts and the entire industry a very bright future."

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President, Electronic Arts

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But so far, the computer's promise has been hard to see. Software has been severely limited by the abstract, blocky shapes and rinky-dink sound reproduction of most home computers. Only a handful of pioneers have been able to appreciate the possibilities. But then, popular opinion once held that television was only useful for civil defense communications.

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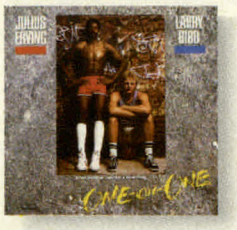

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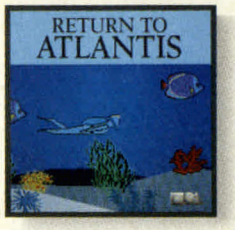

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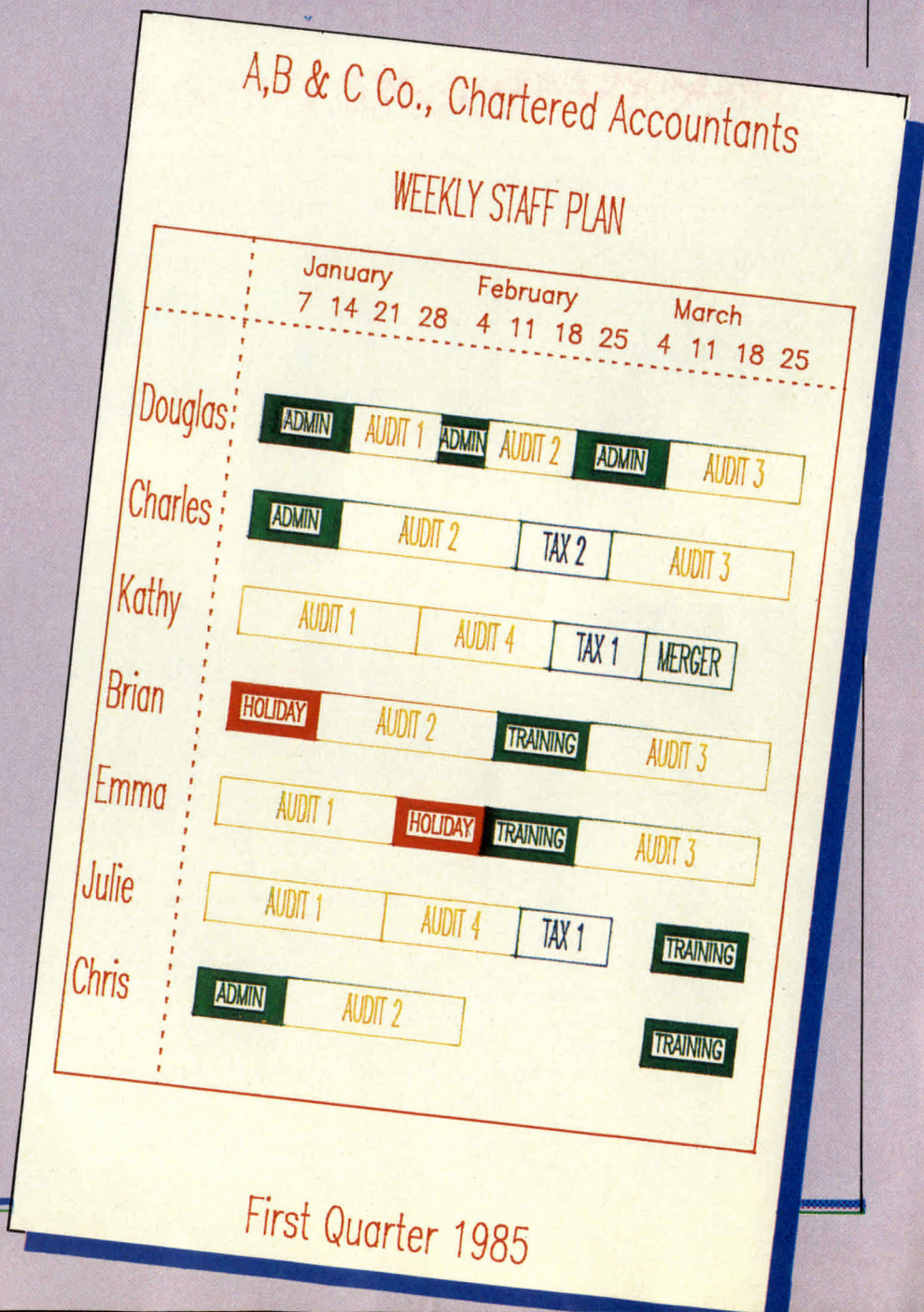
LOGISTIX

LOGISTIX from GRAFOX Ltd. is the first fully integrated business software to appear for the AMIGA in the UK — but what is *'intergrated software'* and what can it do? To understand the concept you have to look back to the bad old days of microcomputers in the late 1970's. The software product that brought micros to the attention of the so-called business users was VISICALC which was first implemented on the APPLE. This was a spreadsheet and removed the need for reams of ruled and lined paper for basic financial analysis and applications. It also allowed financial *'models'* to be created using ther *'what if I change this parameter'* approach which were very time-consuming and prone to user-induced errors. VISICALC spawned a whole generation of spreadsheet products such as SUPERCALC and MULTIPLAN which are still in use today.

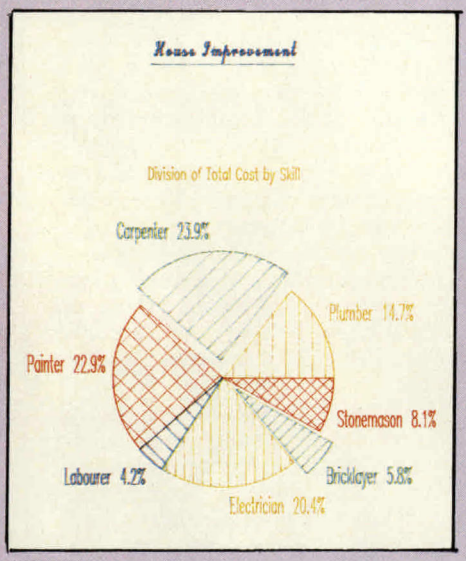
So if you could arrange numeric values in horizontal and vertical columnar form and manipulate these values then why not substitute packets of data for the numbers? The packets of data could be either numeric or characters or a mixture, which is termed alphanumeric — doing this brought about the birth of the database. Of course it should be realised that none of these ideas was totally new to the computer, but they were new to microcomputers since they breathed life into machines that hitherto were confined to the electronics hobbyist. This increase in the bandwidth of *'usefullness'* was further enhanced by the introduction of the wordprocessor. Thus by the start of the eighties three distinct software products were in place and coupled with declining hardware costs, increasing availability of support peripherals such as printers and disk drives, everything was in place for an explosive growth in demand.

Such rates of growth in terms of software product innovation could not be sustained and users and programmers alike began to look at the existing products to increase further the magic ingredient termed *'useability'*. One popular route taken was to increase the number of facilities available to the user beginning with a modicum of customisation followed quickly by programming the application to suit user requirements. Indeed, the programming element developed into a full-blown industry in its own right with the likes of the dBASE II database leading the way. However, programming is a skill that some users do not acquire through either inclination or time constraints and their requirements tend to be more concerned with the facilities available *immediately*. One such facility being graphics, another being the management of time resources.

Management of time has become the cornerstone of profitable business operations particularly the manufacturing or service industry environment. Contrl necessary in these industries can involve either equipment resources or manpower resources. Taking a typical UK High Street as an example. the *'hire outlet'* needs control over the items it intends to hire out to the public. The control consists of both database for the range of items in terms of details, costs, etc., and a customer details file. The two are linked by time control in the context of how long the item is on hire for, thus high demand (profitable) items can be quickly identified. Coupled this with



establishing a customer profile and the business is in a very healthy position to actively market itself and it's abilities as opposed to the usual waiting-for-them-to-walk-in approach. The *'hire outlet'* could be a video shop, office equipment, garage (a very under-rated profit opportunity), DIY tools, specialist clothing (bridal/dinner jacket), sports equipment. Time control of resources in a manufacturing environment assumes even more



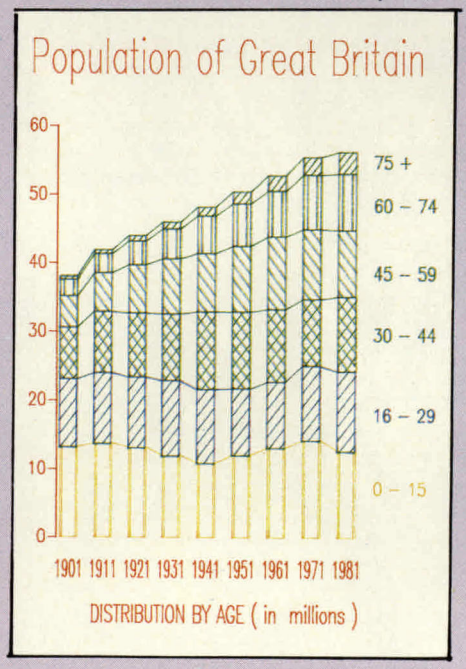
importance since the items concerned represent substantial sums of capital expenditure to the business. For example instant-printers, bakers, dry-cleaners, any type of electrical or mechanical repair facility, any activity involving the use of motor vehicles.

What I have tried to do is to present some ideas of using a product that combines all of these concepts of time control, spreadsheets and databases along with graphics. People being what they are find that a graphical representation of data, numeric or letter-based, can be assimilated more quickly. Therefore if you can absorb the data faster you can react to the implications more effectively and deploy your assets more profitably. LOGISTIX is just such a product to fulfil the requirements. It contains a spreadsheet for numeric projections and analysis, a timesheet for planning of resource assignments, a database for storing and retrieving information lists, together with graphical presentation in several forms of any of this data.

The LOGISTIX spreadsheet allows for 2,048 columns with 1.024 rows, a truly massive size. By using an advanced and intelligent memory management regime *all cells can be referenced* — something a lot of spreadsheets which claim to have large dimensions will not allow. LOGISTIX can operate from the Workbench or CLI and colour is given prominent support with the spreadsheet. A total of 7 colours in addition to the background colour provide the user with choices for the borders, cursor, rows, columns, protected cells and command character strings. The colours can be saved off as a separate file allowing some degree of recognition to the type of sheet in use if required.

I was particularly impressed with the degree of integration built into the product in terms of other software. For instance, files produced by LOTUS 1-2-3 or SUPERCALC could be read directly by LOGISTIX without the user being concerned about formats, references or function. Similarly, dBASE, DIF, CSV and ASCII files could also be read by LOGISTIX, thus removing any obstacle to user data portability. This also has the benefit of allowing the many users who have LOGISTIX implemented on MS-DOS machines to avoid the need for time-consuming and expensive re-training on the product.

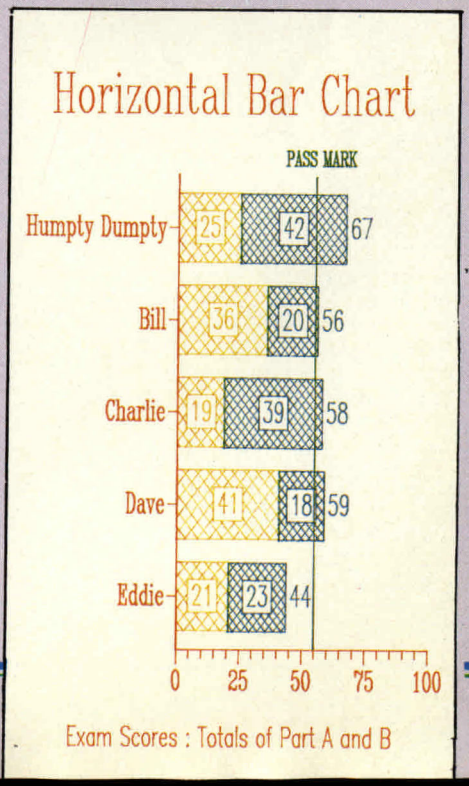
The spreadsheet output to the printer is automatically rotated sideways for sheets that are too wide for the printer



itself. The very wide printer range supported also includes colour printers and this provides the user with novel and effective output since italics, bold and underline modes, provided the printer can produce these. The AMIGA function keys play a large role in output control with no less than four keys devoted to screen control such as *page left* and *page right*. I particularly liked the way that four function keys were left undefined for use by the user although I felt that the use of key 'F1' for the very extensive online HELP was wasteful since the AMIGA has a dedicated 'HELP' key. The depth to which this HELP facility extended was astonishing — not only was it extremely well thought out but it made the use of the manual rather the exception than the rule. The HELP facility provides over 150 (!) screens thus you can appreciate my point.

The manual itself is both well-written and concise and avoids the LOTUS 1-2-3 trap of burying the user under excessive documentation. Besides, on-line help is generally a good deal faster than looking soemthing up. The LOGISTIX manual concentrates on just two things — a reference source and an explanation of the numerous example files. These are provided on one of the two disks supplied with the LOGISTIX package — the other disk forms the program disk. The disks themselves are unprotected although the program will only run with the supplied 'dongle' in one of the joystick ports. Although Grafox Ltd. the suppliers of LOGISTIX have seen fit to exercise their right to copy protect their product, I am happy that they have done it in the manner which I prefer, one which doesn't entail wrecking the user's disk drive. In fact the Grafox dongle is so inoffensive to the running of my AMIGA that it permanently resides in the port until the port is needed.

Replication is used heavily by any spreadsheet and LOGISTIX in addition to the conventional definition of this function also provides orthagonal replication which converts data from a row into a column and vice versa. The *Consolidation* feature allows data to be read in from other worksheets for a 'one-off' or permanent consolidation. One part of LOGISTIX which tends to be over looked by too many software authors was the provision of foreign character sets. For example, how many times have you used a product that failed to provide a currency option other than the dollar — both on the screen and in printed output? LOGISTIX provides support for



LOGISTIX
cont

ALL the major currencies in addition to accented characters. Recalculation routes can be altered and circular reference detection will report the cell involved.

There are a total of 74 built-in functions in LOGISTIX covering mathematical, logical, statistical, financial and calendar requirements. The modelling potential is enhanced through the availability of 2 variable *what-if* table constructions. Since LOGISTIX provides almost another high-level language in its own right through the ability to allow users to define *macros* from the keyboard, the number of potential functions is unlimited. These user-defined macros provide those with the skill unparalleled opportunities to customize this package. *Debugging* or error-removal can be a time-consuming business and LOGISTIX allows the macro designer single-step tracing and a *learn mode* which gives a display of the current macro line under execution conditions. Security of macros can be assured through password protected areas within the worksheet and since these macros can be extended to acceptance and placement of keyboard input coupled with customised help screens, LOGISTIX demonstrates just how powerful a tool it is.

The LOGISTIX Timesheet provides a flexible computerised *wall planner* where the time segments can be varied from half-hour intervals up to yearly intervals. The 10 year calendar can be edited to adjust the daily working hours, weekends and public holidays — ideal for applications involving shiftwork operation or batch production. A total of 2,048 resources can be controlled under a maximum of 1,023 time segments — if this is insufficient then another sheet can be created and linked through a macro. LOGISTIX also has a CRITICAL PATH ANALYSIS facility with automatic recalculation and display of the critical activities together with both *free floats* or *total floats*. This is yet another powerful feature for project management or batch process planning.

LOGISTIX allows the user to create a database using the familiar environment of rows and columns to form fields and records. The data in this area can then be manipulated using the classical database functions of indexing, sorting and searching. A very large database can be constructed using up to 2,048 records together with no less than 64 fields with full insertion or deletion facilities. I mentioned earlier the ability of LOGISTIX to accept files from other formats such as dBASE, this can be extended to extract data from these files selectively according to criteria defined within the worksheet.

Any of the previously described manipulation techniques such as spreadsheets or databases can ultimately be used as vehicles for the display of the data in graphical form. Data display graphics have moved a long way from the single colour multiple lines of years gone by to sophiscated Gantt charts, stacked bars and scattergrams all in glorious technicolour. LOGISTIX provides multiple or single pie charts, floating or stacked, clustered or linked, 3D percentage horizontal or vertical bars, lines, steps, ticks or scatter charts together with Gantt and text slides. The user can define 5 independent titles and 128 free-format annotation lines. With 9 character fonts and 10 different sizes on the screen or on the printout togeter with a multitude of additional output definitions, it is unlikely that with this degree of flexibility ANY user is going to be dissatisfied. The hardcopy output can be dot-matrix, laser printer or professional plotter since a very large range is directly supported.

The two primary markets for LOGISTIX are as a management tool and a decision aid. It is not difficult to learn and given the provision of copious online help, beginners can produce standup work very quickly. I found using LOGISTIX a pleasure, not a chore as with some software. Whenever I become unstick, without fail the manual rescued me. In fact the manual is such that I found I could read it as reference book and learn some new technique each time. Only one caveat at LOGISTIX which hopefully will be resolved on the next product update. This concerns the AMIGA mouse — curiously LOGISTIX does not support the mouse in any way, betraying the PC-DOS origins of the product. A mouse and a spreadsheet can can chug along very quickly, as I found with Analyze! (reviewed in the last issue of AMIGA USA) since the current cell can be selected much faster with the mouse than by using the cursor keys. Another point to consider with LOGISTIX concerns the AMIGA memory. Given the facilities of LOGISTIX it is a large program and consequently put a lot of pressure on the memory of the AMIGA. On a 512k machine this is manifest in the graphics as LOGISTIX will only provide a quarter screen graphics window — quite simply the machine is out of memory. This is not as serious as it sounds nor does it mean a system crash is about to happen, LOGISTIX is too robut for that. The answer lies in increasing the memory, a not uncommon requirement with integrated packages. Expanding the memory with a 2.0MB card to 2.5MB overcomes this problem of small graphic windows and the system disk contains 2 additional programs for those who have an expanded memory AMIGA. The first makes use of all the available memory whilst retaining the same display of 25 lines — the second program allows an extension to the number of horizontal lines to total 44 by introducing an interlaced display. Increasing the memory of an AMIGA is a wise move in any event and LOGISTIX takes full advantage.

LOGISTIX and a 2.5MB AMIGA makes for a *killer* combination in hardware and software terms. Couple this with extensive software support and the cost of the product represents extremely good value for money. This is one of the first of the so-called business *heavyweight* packages, i.e. integrated software for the AMIGA. I have a very strong feeling that it will retain it's position as leader in this field for a long time to come.

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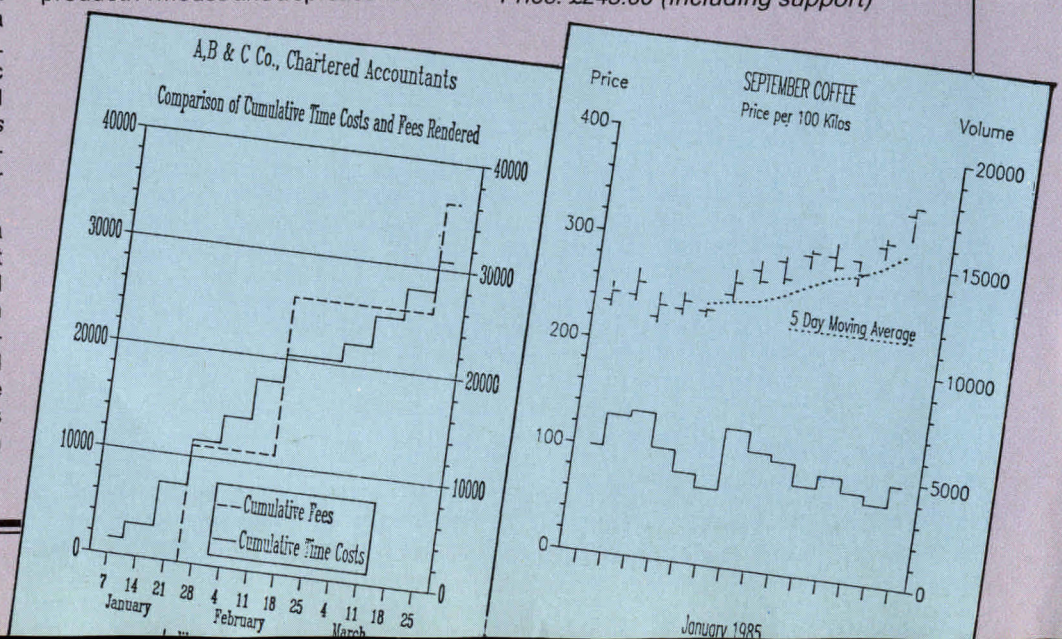

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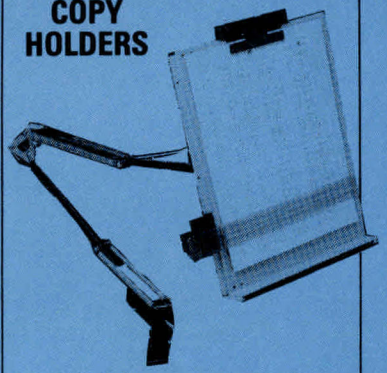

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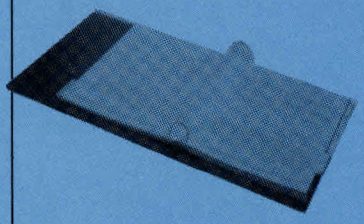

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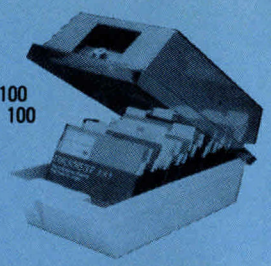
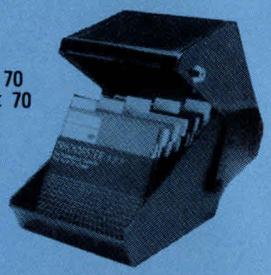


MM 100
5¼ × 100



MM 70
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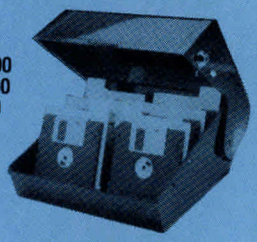
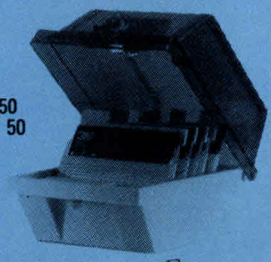
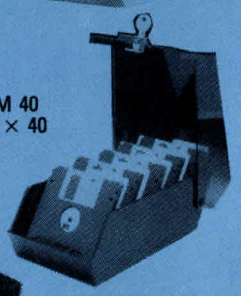


MM 6090
3½ × 90
3 × 60



MM 50
5¼ × 50



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DIGI-VIEW

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DIGI

AMIGA STYLE

Digiview has taken the lead in the AMIGA market for digitizing for three main reasons. First, it is simple to use; second it is very inexpensive; third, it has at present virtually no competition.

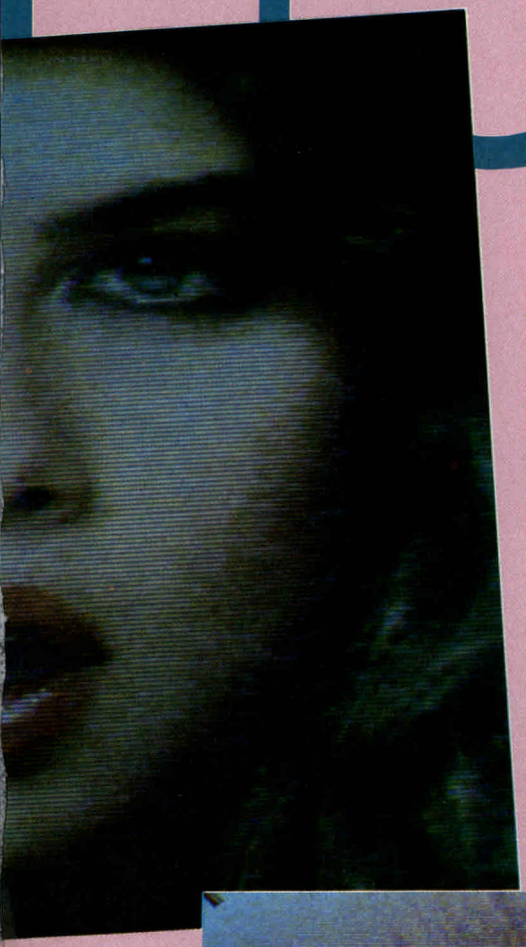
Video engineer Tim Jenison of Topeka, Kansas first created and produced Digiview in early 1986. After selling a few homemade ones, he found the demand built up rapidly and now has a manufacturing facility that is barely coping with the growing demand. Digiview — an unobtrusive white box, 8cm by 11cm, plugs into the parallel port of the AMIGA. There is no need for a separate power supply. You simply plug the video camera into the monitor to focus and that's it. Digiview works on a hi-res mono mode of 16 grey level of 640 x 400. It has image processing built-in and automatically picks up the most suitable but can be manually overidden if you wish. Lo-res colour is either HAM (Hold and Modify) which allows 4096 colours on screen simultaneously or picks 32 colours which it chooses out of 2.2 million colours. (For the interested, that is 2^{22} i.e. seven bits out of each RGB — red, green, blue — 21 bit resolution out of each pixel.) Pretty impressive! It works out the best colours and picture and then smooths out the graininess. You can tell it how much to smooth in brightness contrast etc. with a slider control.

The UK distributor, Argonaut Software, has had such demand that it estimates that in the first month on sale, it supplied 17% of all UK AMIGA users with Digiview. Buyers are mostly in 'presentation' areas like advertising. Some come from outside the UK. An Indian TV company has brought several for titling. Jeremy San, Argonaut's MD, a well-known programmer himself

AMIGA STYLE

DIGIVIE

TISED



presently working on an AMIGA version of 'Starglider' for Rainbird Software, could not let us keep a Digiview for a full test as he had completely sold out his stock of Digiviews — except for the one he was using for titles and other aspects of 'Starglider'. We were, however, impressed by what we saw and on our preliminary viewing found Digiview lived up to all claims made for it.

We hope to return to it when we get our hands on a review copy. It looks a must for everyone involved in AMIGA graphics.

Digiview Distributor — New Tek
701 Jackson Suite B3
Topeka, Kansas 66603

UK Distributor — Argonaut Software
129 The Broadway
Mill Hill
London NW7 4RN
Tel. 01-959 0114
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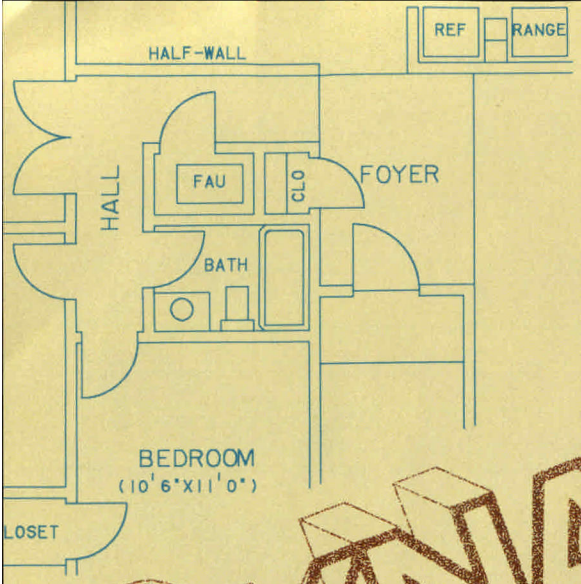

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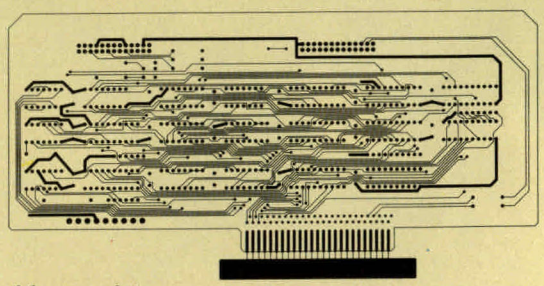

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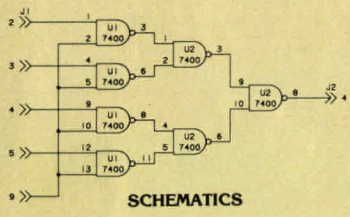
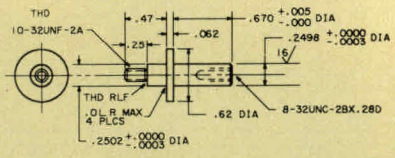


SCHEMATICS

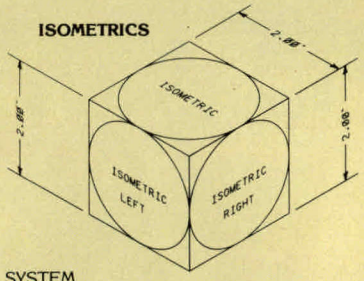


MECHANICAL DRAFTING

SIGNAL NAME	COMP NAME	PIN NUMB	SOURCE	TYPE COMP
S0001	J1	2	*	CON
S0001	U1	1		7400
S0002	J1	3	*	CON
S0002	U1	4		7400
S0003	J1	4	*	CON
S0003	U1	9		7400
S0004	J1	5	*	CON
S0004	U1	12		7400
S0005	J1	9	*	CON
S0005	U1	2		7400
S0005	U1	5		7400
S0005	U1	10		7400
S0005	U1	13		7400
S0006	U1	3	*	7400
S0006	U2	1		7400
S0007	U1	6	*	7400
S0007	U2	2		7400
S0008	U1	8	*	7400
S0008	U2	4		7400
S0009	U1	11	*	7400
S0009	U2	5		7400
S0010	U2	3	*	7400
S0010	U2	9		7400
S0011	U2	6	*	7400
S0011	U2	10		7400
S0012	U2	8	*	7400
S0012	J2	4		CON

NET LIST FROM SCHEMATIC

ISOMETRICS



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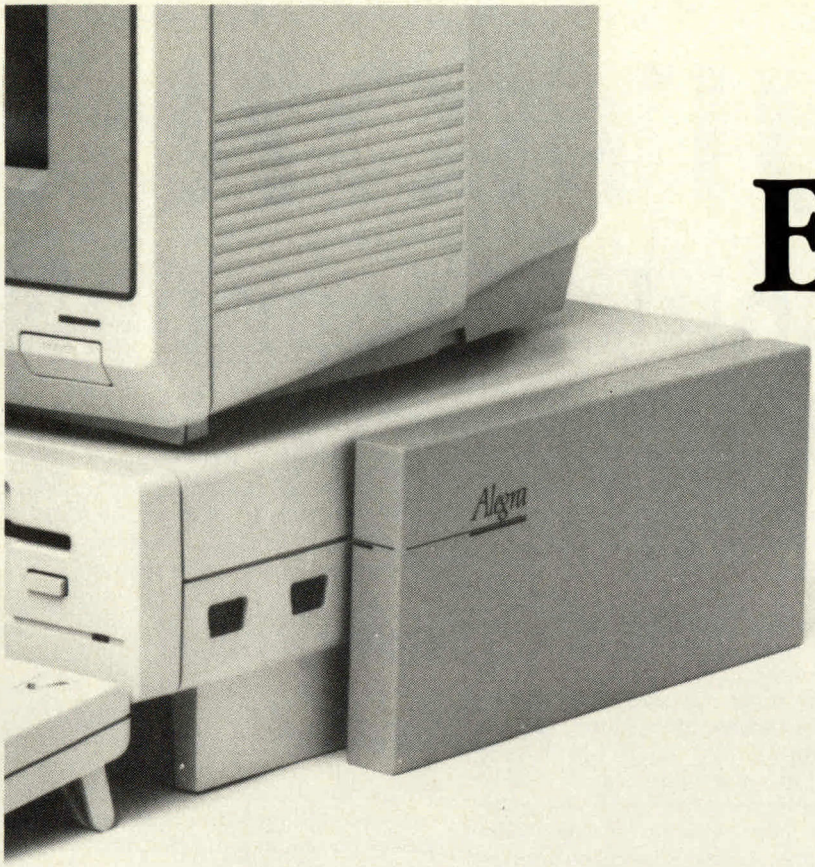

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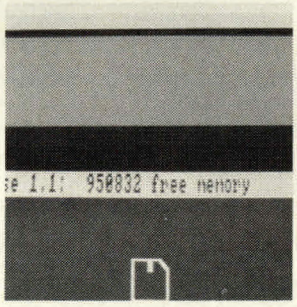

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INTUITION

AMIGA Technical Manuals

When the AMIGA software development machines first arrived in the UK in late 1985 a large number of manuals accompanied them. I think there were six covering various programming aspects of the machine. My initial impression of these manuals was one of horror when it was realised that the native language was C, which until then could hardly have been described as the most popular language in common use in this country. Software developers faced a double-edged problem in that they had to learn about the machine and simultaneously learn C in order to get anything justifiable from the AMIGA. Nearly one year on, we can now look back with the benefit of hindsight, but I can still recall that sinking feeling. I'm sure I was not alone in feeling we had bitten off more than we could chew.

Since the date of publication of these manuals there have been very many changes and consequently, the initial issues have been subject to drastic revisions. For example, the original **ROM KERNAL MANUAL** (the primary operating system) has grown from a single weighty 400 + page tome for the now defunct Version 1.0 systems software into two volumes for the current Version 1.1 systems software and these two volumes contain more pages each than the original single volume!

Commodore-Amiga, the company responsible for the development of the AMIGA has very wisely made the software developers manuals available to the public. The exercise is being split between two USA publishers, Addison-Wesley and Bantam Books, each as exclusive publisher for some of the manuals.

The **INTUITION REFERENCE MANUAL**, from Addison-Wesley covers a lot of ground in the course of its 350 pages. The manual is divided into two parts — the first being conventional text dealing with most aspects of INTUITION, the second forming a reference section to the various system *calls* or routines specific to INTUITION. There are no less than 12 chapters with the first two being concerned with introducing the programmer to the implementation and objectives of INTUITION. Some specimen C programs are included to create a simple window and demonstrate the use of *gadgets*, the graphical devices for manipulating windows. I hope that these programs have been checked to see if they work properly — an awful lot of the programs in the software developer editions of the AMIGA manuals did not! Another point worth bearing in mind with these manuals is the necessity to have access to the Lattice C compiler, your learning curve will be protracted if this is not the case.

By chapter eight the reader should be getting a much better feel for input/output and this chapter covers the various techniques and principles used by the system software of the AMIGA. This chapter deals with message ports and the console device. Chapter nine serves as an introduction to the general graphics facilities of the AMIGA and reveals text, line drawing and images. The display of the AMIGA is entirely bit-mapped and this has important implications for text characters and their manipulation. In chapter ten the input/output facilities of the control ports, mouse and keyboard receive detailed attention whilst chapter eleven is concerned with other features of INTUITION such as the Preferences file. This chapter also includes some useful notes for writing 68000 code in the context of INTUITION. The final chapter is a miscellany and is more a synopsis on the philosophy of INTUITION in terms of programming guidelines and consistency of appearance.

The remaining half of the manual provides full details of both the function calls and the necessary C program structures, as a complete listing of Version 1.1 INTUITION include files are provided. A detailed glossary and index finish off what is by any standards a comprehensive view of INTUITION. Potential purchasers should note that this is a *technical manual* and as such makes very little if any concessions to the beginner. Amongst the numerous assumptions made by the authors of this work are a working knowledge of the C language, some familiarity with the overall concept of the systems software, exposure to operating the AMIGA and not least, the Lattice C compiler. As they say in racing circles *'the going is rough'* but the process of learning the AMIGA and its facilities is well worthwhile. An essential purchase if you intend to program professionally on the AMIGA.

Getting a Guru

Chapter's three and four cover the screens and windows respectively. An AMIGA screen can be customised in many ways and chapter three deals with the design and use of these screens as well as *standard* screens. Windows are the principle means of gaining user input/output and chapter four is concerned with how to define and open windows according to the needs of the application. In chapter's five and six the reader is introduced to the first of the peripheral elements of INTUITION, the gadgets and menus. Gadgets forms the multi-purpose input/output devices which can be designed by the user before attachment to the windows and requesters. Similarly, menus are entirely at the disposal of the user in terms of design and chapter six looks at these and how the user's choice of options and commands are transmitted to the application. Requesters and alerts are dealt with in chapter seven. A requester is an extension of the gadget concept in terms of user input except that a requester **must** be responded to. The alert is simply a visual mechanism of warning the user that there are serious problems within the system such as running out of memory, program corruption, an address-read error, etc. These conditions can traced by means of the by now famous **guru meditation numbers** which attempt to give the programmer an idea of where to look for the fault condition. It could be argued that such information is useless since it is portrayed essentially after the event. Coversely such information is better than nothing and usually the detractors of the alert system are those programmers who do not understand how the system software operates. As owners and users of the AMIGA will testify, *'getting a guru'* is quite a shaker the first time around!

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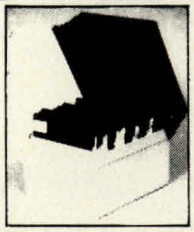

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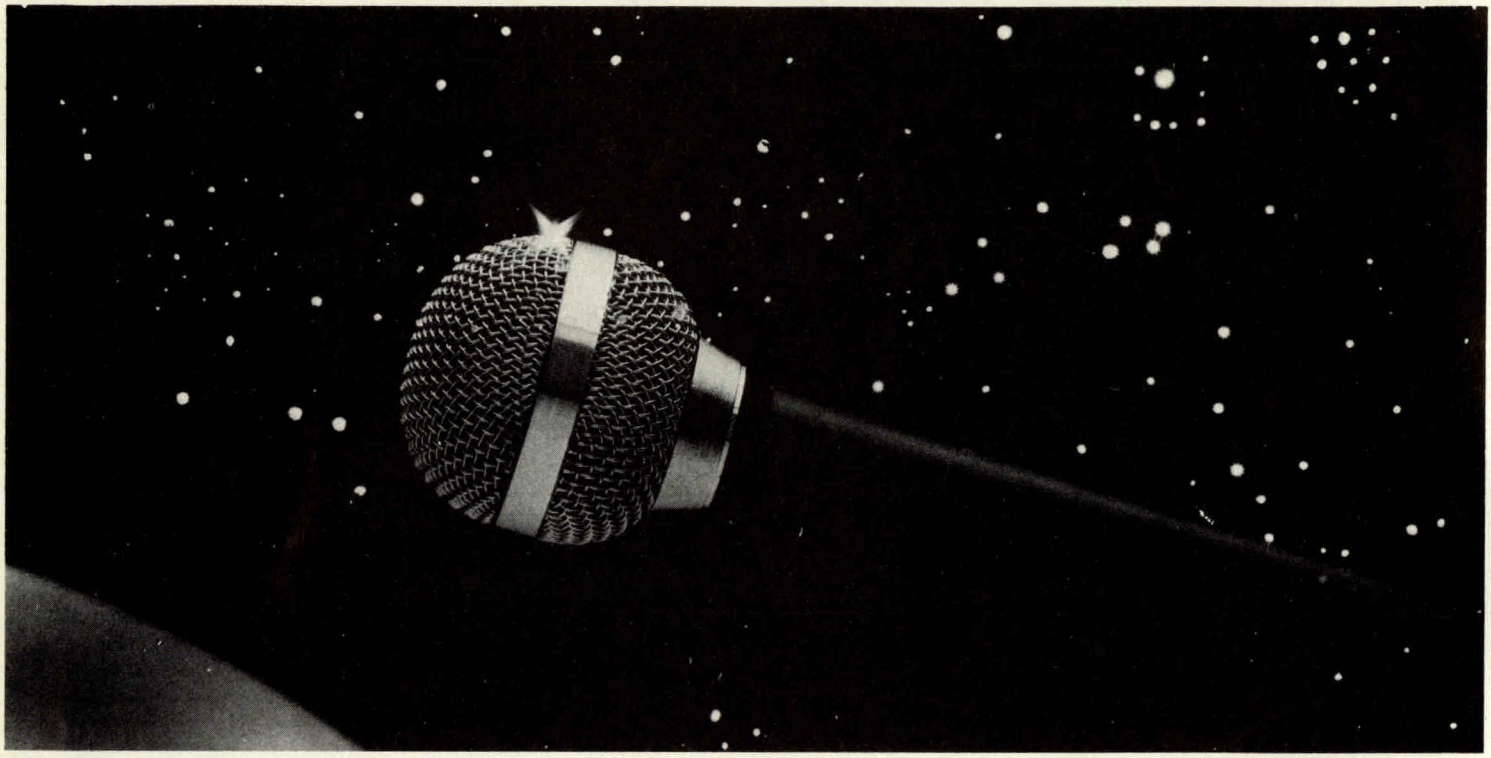

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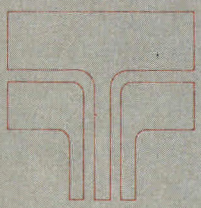

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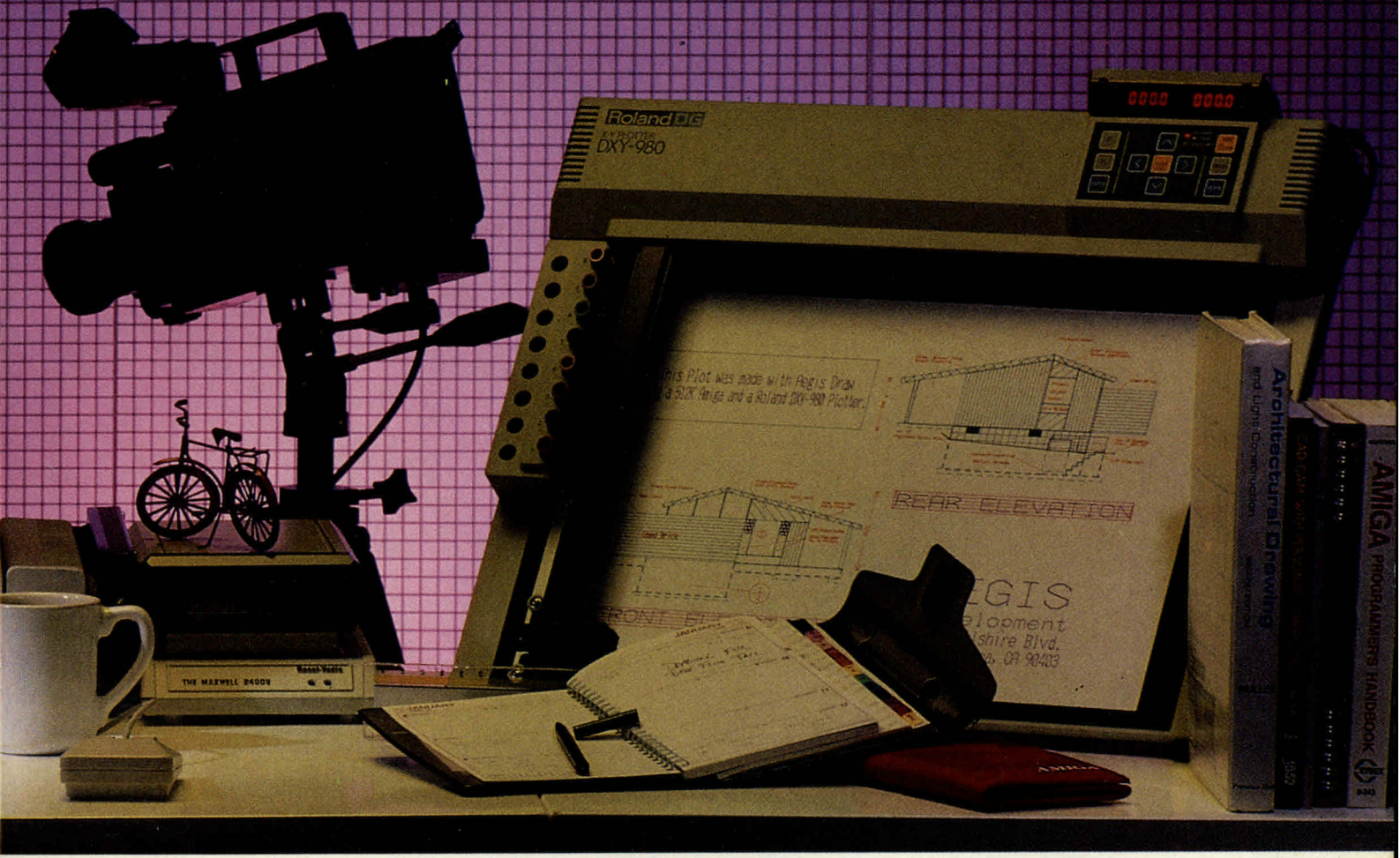

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CAMBRIDGE LISP

-A Complete Development System

LISP is one of those programming languages that are not seen very often in microcomputers. Yet it is one of the oldest languages around. Presumably because the main outlet for LISP was and remains *artificial intelligence, (AI)*, the language was felt to be inappropriate for 8-bit machines with limitations on memory space, clock speeds, etc. But what is this mythical beast *artificial intelligence* of which we read so much about? It is an area of scientific research to provide computers with the ability to think — that is the machine has the ability to reason or deduce after being given certain information about the problem. A conventional machine can only operate within the confines of the variables within a program, an intelligent machine would be able to define its own operating parameters for a given problem.

The name *LISP* is short for *LISt Processing language*, which is a fairly accurate description of its appearance. A LISP program is very distinctive since it looks like no other language. For example, the following is a program fragment:-

```
(TIMES (PLUS 4 5 6) (DIFFERENCE 4 2)
(QUOTIENT 9 3)
```

The equivalent in arithmetic terms is....
(4+5+6) * (4–2) * (9–3)

If the above example was easy, then try this:-

```
(DE UNIFY1 (e1 e2)
   (COND [ (EQ e1 e2)' (T) ]
    [ (VAR e1)
      (COND [ (NOT (OCCURS e1 e2))
        (LIST T (LIST e1 e2)) ]
    [ (VAR e2) (LIST T (LIST e2 e1)) ] ))
```

OK, you get the point but LISP is certainly no more difficult than learning another relatively new language to the Commodore world, namely C. But why bother with learning LISP if you have no interest in AI? Well LISP has the overwhelming advantage of screening the user from the machine itself and provides the programmer with a consistent syntax and format. It is a symbolic language which offers considerable flexibility in program design and control of data flows. You can operate a LISP application within the LISP environment itself, a concept which lends itself readily to simulation. Scientific, mathematics and engineering are the main applications for LISP outside of AI. For example in engineering, LISP is used in control software for robots and for symbolic algebra in astro-mathematical applications. As you can see LISP is not some long-forgotten programming language from the backwaters, rather it is a powerful but specialised language which seems to suffer from a poor public relations image.

As is usual with so many computer languages LISP suffers from the dialect problem, although it must be said that portability is insurmountable and certainly much less than that of the much vaunted portability of C. The Metacomco version of LISP is the *Cambridge* derivative. Cambridge LISP is a development of a LISP implementation on an IBM 370 mainframe at Cambridge University and Metacomco have translated this into a 68000 version. Of the four main groups of LISP dialects, namely *INTERLISP, MACLISP, COMMON LISP* and *STANDARD LISP*, Cambridge LISP follows STANDARD LISP the closest. I must admit from my own observations of LISP the differences tend to revolve around syntax such as *subtract* or *difference*. Studying LISP from a book which is ostensibly for another dialect does not therefore present a serious problem provided the user applies common sense.

The single disk format follows that of Metacomco's PASCAL for the AMIGA and can be transferred easily to hard disk or backed-up without problems. The manual supplied with Cambridge LISP is both very thorough and detailed, running to just under 200 pages. Again, similar to their PASCAL manual, there is little attempt at providing a tutorial although there are some example programs present, the manual concentrates on the huge range of LISP functions, since LISP is essentially about functions. An indication of the depth to which the manual reaches is the index which covers 9 pages! The standard reference work on LISP which I use is **LISP** (2nd Edition) by **P.R. Winston & B.K.P. Hall**, published by Addison-Wesley (**ISBN 0-201-08372-8**). For over 400 pages the cost in the UK is a very reasonable £14.95 — we plan to publish soon a review on several LISP books including this one.

COMPLETE SYSTEM

The implementation by Metacomco includes not only a LISP interpreter but compiler, thus this package could well serve as a complete software development system using LISP. Several parts of this version of Cambridge LISP make it an outstanding bargain for the price. The compiled and interpreted functions

may be used on an interchange basis - this provides the means of a very rapid development cycle since a function may be tested before the commitment to a full-scale compile. The trace mode is operational on both compile or interpreted code, again representing a time saving. Another very useful facility is that of being able to dump the *core image* to disk (note the mainframe terminology) after running the interpreter, thus allowing customised cores to be preserved for future use. To some extent LISP is similar to FORTH in this respect although unlike FORTH, the user does not have to have the same degree of intimacy with the system hardware.

LISP has been often criticised for being poor on mathematical applications and yet this version supports floating point integers of any size! As a test of the strength of the maths capabilities I tried the following using the Cambridge LISP interpreter — calculate 2 raised to the power 5555. The time taken was circa 43 seconds and produced an integer number covering several screens. If you felt that this was not fast enough I substituted the 68000 cpu for an 8Mhz 68010 cpu and the time was reduced to 27 seconds!

One of the key features of any LISP implementation is the ability to *garbage collect*. This phenomena will be familiar to those readers who used the Commodore 64 where discarded strings could literally strangle the machine to a halt until the operating system took it upon itself to go through the memory and delete the unwanted strings. Cambridge LISP caters for full *garbage collection* and avoids tieing down memory unnecessarily. The diagonstic messages from the intepreter are clear and with the aid of the manual mean debugging is mercifully short before compilation. Recursion and function composition means the programmer can design the application on a *top-down* basis — an important point for both a multi-tasking environment and those who are new to the AMIGA as a machine.

There is one drawback to Cambridge LISP, it requires plenty of RAM in which to operate — a minimum of 300k. This is a characteristic on any LISP implementation, in that LISP will attempt to soak up the maximum amount available of memory resource. However, since most AMIGA sold now in W Europe and elsewhere have 512k of RAM as standard then this presents no real problem. Indeed with my own expanded machine of 2.5MB, Cambridge LISP took in the region of 1.75MB which still left me 750k free for other applications.

So why purchase Cambridge LISP? Well the first point is that LISP is not only a language of the future but is likely to be a strong candidate as THE language of the future in one shape or form. Secondly, LISP is undoubtedly a powerful language in skilled hands although it seems to suffer from an identity problem which I feel is both unrealistic and unfair. Finally, the cost of acquiring what is a complete LISP development system at the price currently being offered by Metacomco is a bargain in anyone's language.

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VIRTUAL FACSIMILE —Fax without a Fax

These days, $2,500 will get you a sleek new Group 3 facsimile machine from any of half-a-dozen vendors. Priced at less than one-quarter of what comparable equipment was selling for five years ago, some of the new machines will transmit a page-worth of electronic mail across the world in 15 seconds or less. More than a half-million desks in the U.S. now have fax machines on them, according to a new 202-page report from International Resource Development Inc., a Norwalk, CT-based market research and consulting firm. But more than eight million desks have personal computers on them, and for the secretaries, professionals, managers and technicians with personal computers, fax capability doesn't need to cost $2,500.

Accounting to the IRD report, more than 30 suppliers are now offering scanners or cameras for personal computers, able to scan and digitize an image of any document, and transmit it to a remote destination. These scanners range in price from $200 to $15,000, depending upon resolution, features and capability, and facsimile vendors "sat up and took notice" when IBM entered the PC scanner market in June with an announcement of two Japanese-built PC scanners, according to Jean Buffham of the IRD research staff.

FAX VENDORS "WIPING THEIR EYES"

The IRD product-planning consulting staff has been visited by a "steady procession of Japanese fax product planners, wiping their tears from their eyes on the well-pressed sleeves of their dark blue suit jackets," reports Buffham. The potential competition from low-cost PC scanners first began to worry the fax vendors three years ago, but now it is having the first real market impact and "they don't know what to do about it," comments Buffham. The fax market worldwide has been growing rapidly during the past three years, and most U.S. and European manufacturers "have long been driven out of the business by aggressive Japanese pricing and absolutely super Japanese products," according to the IRD report. "But it's the U.S. vendors who are currently making the running in the PC scanner field," explains Buffham, noting that "even when the scanners are made in Japan, as IBM's and Pitney Bowes' are, most of the remainder of the PC system is, in general, U.S.-built."

WANTED — LOTS MORE SOFTWARE!

Most of the PC scanners and image processing systems currently on the market can handle virtual facsimile transmission, but the user may have to go through a number of cumbersome steps in order to explain to his PC exactly where the image is to be sent, then explain to the PC at the receiving end exactly how to print out the image. "There's a real shortage of software for virtual fax," says Buffham. "The whole thing works easiest with the scanners which were designed with virtual fax in mind, rather than CAD/CAM, OCR, or other image-processing applications," according to the IRD staff, who single out Chorus Data Systems (Merrimack, NH), Dest Corporation (Milpitas, CA), Pitney Bowes (Stamford, CT) and AT&T as having systems particularly easily used for virtual fax.

GammaLink (Palo Alto, CA) has a unique PC add-on board which allows personal computers to talk to facsimile machines, and vice-versa, thus linking the world of virtual facsimile with the world of conventional facsimile machines, and vice-versa, thus linking the world of virtual facsimile with the world of conventional facsimile.

THE BLUE CLOUD — DOES IT HAVE A SILVER LINING?

Describing the IBM entry into the world of virtual facsimile as a blue cloud overhanging the billion-dollar facsimile business, the IRD report points out that there may be a silver lining to this cloud, in the form of increased facsimile usage as a result of the much-larger population of machines (both conventional fax machines and personal computers) which can send and receive image traffic. Conceiably, this could boost interest in fax, and trigger more purchases of fax machines by folks who don't already have personal computers; however, "the PC users are going to go for the scanners, and not for fax machines," assets Buffham.

While vendors such as Wang and AT&T have provided their PC image processing systems with 200 dots-per-inch modes — the same as Group 3 facsimile — other vendors have adopted a variety of different resolutions. Canon's scanner works at 300 dots-per-inch, the same as the company's laser printers. The IBM scanners are mostly geared for 240 dots-per-inch, but certain coarser resolutions can be handled, too. "The IBM scanners aren't compatible with Group 3 facsimile; however they will probably fit into a Group 4 environment because Group 4 printers are supposed to be able to deal with 240 dots-per-inch, even though Group 4 transmission is geared to 400 dots-per-inch," explains Buffham.

While virtual facsimile will be an important application of personal computer image processing equipment, the IRD report explains that the PC image processing user "will typically regard virtual fax as just one of his graphics related applications". The report reviews all of the current and expected future applications of the technology, predicting that today's $340 million market for PC Image Processing hardware and software will leap past the $3 billion level by 1990.

Further details on the $1,850.00 report VIRTUAL FACSIMILE & PC IMAGE CAPTURE/TRANSMISSIO/PROCESSING' including free table of contents and description, are available from IRD at 6 Prowitt Street, Norwalk, CT 06855 U.S.A.; Telephone (203) 866-7800; Telex 64 3452.

Conventional vs. Virtual Facsimile Users
1986-96, U.S.

	1986	1988	1991	1996
	(thousands of units)			
Conventional facsimile				
New placements	180	130	90	70
Year-End Installed Base	540	750	800	700
Number of units in active use (year end)	330	450	600	500
Virtual facsimile				
New placements (scanners)	20	300	450	400
Year-End Installed Base	40	450	1,300	1,700
Number of units in active use (year end)	30	200	600	900
Total				
New placements	200	430	540	470
Year-End Installed Base	580	1,200	2,100	2,400
Number of units in active use (year end)	360	650	1,200	1,400

(SOURCE: INTERNATIONAL RESOURCE DEVELOPMENT INC.) 707

Infominder

Preview

We have decided to make a break with tradition and preview a piece of software which I believe is unparalleled. It arrived shortly before Commodore Business and AMIGA User went to the printers. However, only does it fully exploit many of the hardware facilities of the AMIGA, but the approach it takes and what it can achieve for the user easily qualifies this product for the accolade of so far the Most Innovative AMIGA Software of 1986. So what is about INFOMINDER that causes us to wax lyrical about it. INFOMINDER is, we believe *unique*. INFOMINDER is an **information manager** a system which allows extremely fast retrieval of text and graphical information. But this is not done through the conventional database management system of defining rigid fields, records and file structures — rather by using the inbuilt hierarchical directory structures of AmigaDOS.

INFOMINDER will take a text document created by the user and use it as the basis of a topic. Various components of your text can be made into *subtopics* and related to other documents. For example, let's take the subject of english railway history. The key document would be a general introduction:-

Introduction

Railways in the UK were first started through the driving force of one man, *George Stephenson*. He originated from the *Tyneside* area of England and worked in the *coal mining* industry. His early experiments were financed by a group of colliery owners named the *Grand Allies,* the most prominent member being the *Earl of Londonderry*. Stephenson built on the knowledge of using steam as a *prime mover* from *James Watts*.

Throughout this document several potential topics have emerged which I have underlined. The first one relates to Stephenson, the second to Tyneside and so on. By creating another document specifically dealing with these subtopics a complete information structure can be erected, supplemented if necessary with graphic screens from a paint package such as Aegis DRAW or Deluxe PAINT. The information within each document can be *compiled* by INFOMINDER and together with user-defined *help screens* provides an environment which allows very quick cross-referencing.

There are three elements to INFOMINDER — a display facility, information compiler and finally an online help facility. Most users will probably restrict themselves to the display facility although application developers will make full use of the system. Some potential applications for INFOMINDER could be in a teaching environment — learning how to operate a complex piece of machinery; as an online reference library of book abstracts, phycological testing by analysis of user selections and responses to images; criminal investigations by cross-references to criminal's modes of operation, and the list can go on. INFOMINDER will even allow the Narrator device to speak the text within the document. Couple this with the ability of the Narrator to use phonemes and thus speech idioms and foreign language narration and you begin to appreciate some of this products potential.

Time has precluded any in-depth investigation of INFOMINDER — what we hae seen so far has left us astonished. In the next issue there will be a full review, meanwhile if you have an opportunity to purchase this software then our advice is to do so and be quick about it — the word is going around!

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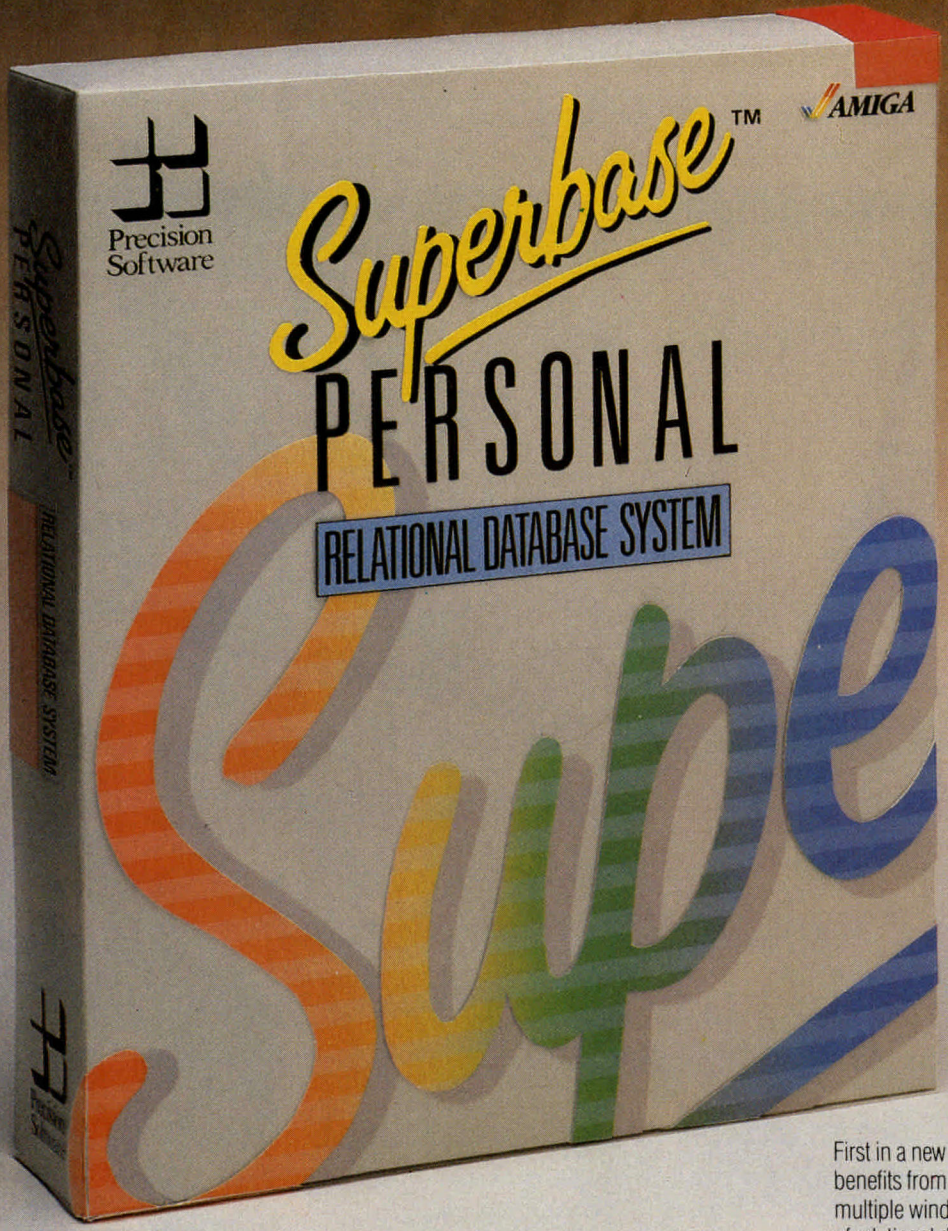

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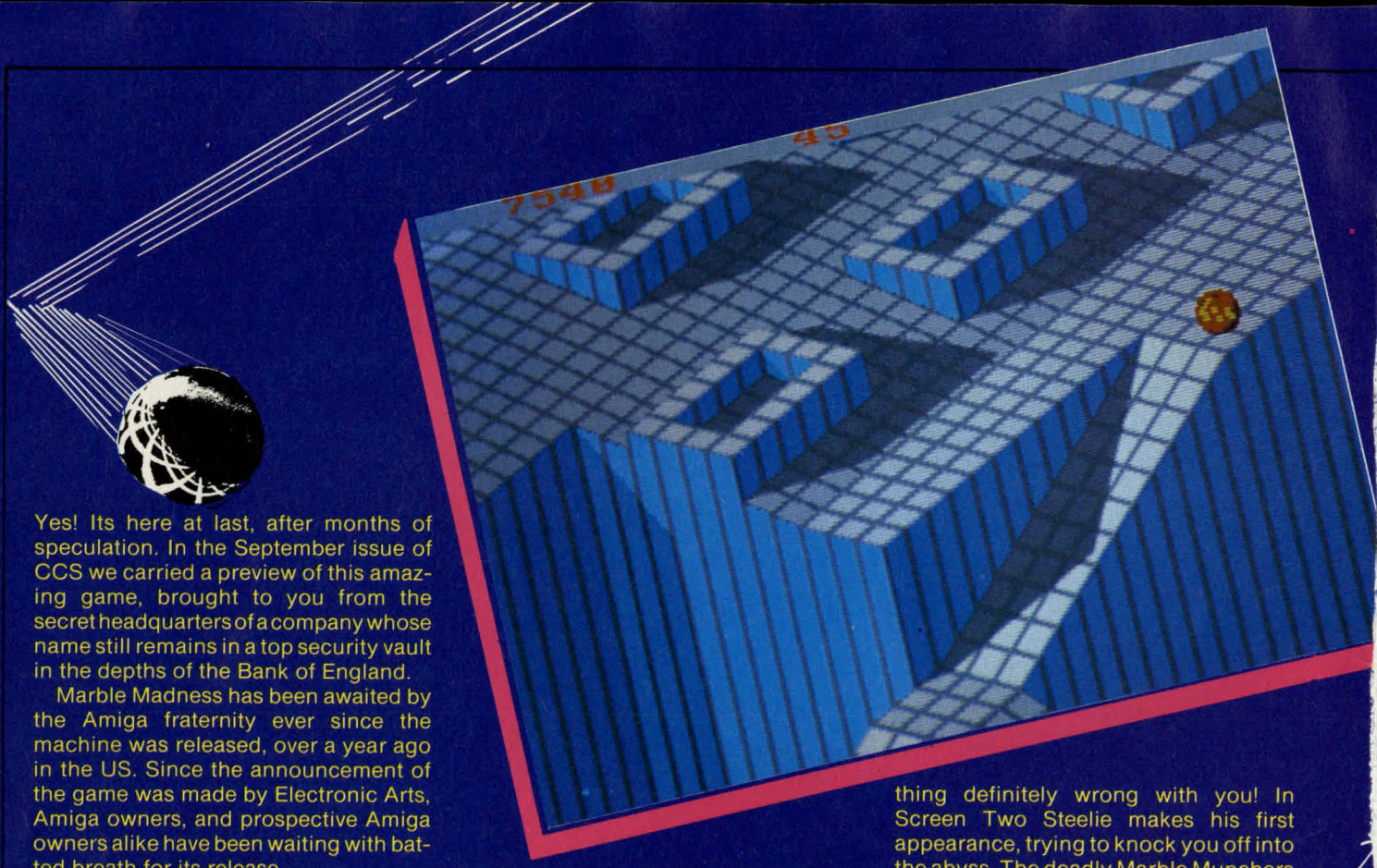


Yes! Its here at last, after months of speculation. In the September issue of CCS we carried a preview of this amazing game, brought to you from the secret headquarters of a company whose name still remains in a top security vault in the depths of the Bank of England.

Marble Madness has been awaited by the Amiga fraternity ever since the machine was released, over a year ago in the US. Since the announcement of the game was made by Electronic Arts, Amiga owners, and prospective Amiga owners alike have been waiting with batted breath for its release.

Marble Madness first appeared as an arcade game from Atari Games Corporation in the spring of '85. It immediately created a cult following, with huge amounts of cash being slotted into the unsatiable maws of these machines. The game featured an amazing stereo sound track, and truly stunning 3D graphics. It was also a totally original concept, which probably also helped considerably in the game's popularity. Up until this point, Electronic Arts had

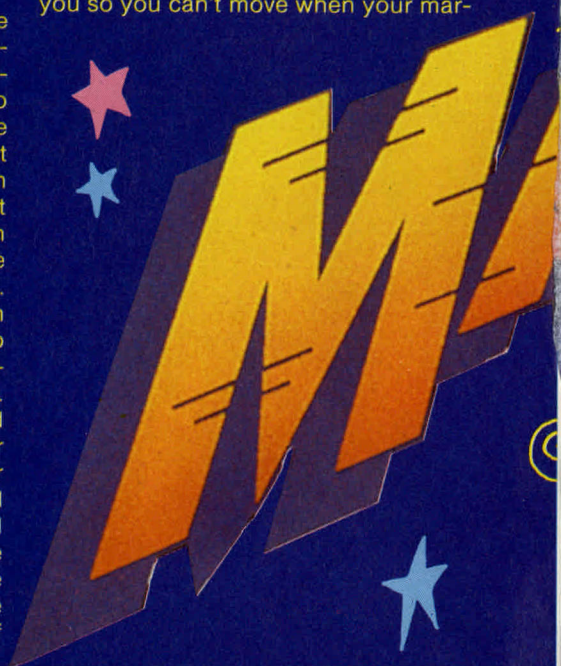
vowed never to copy an idea from another game, or to do arcade conversions. The very fact that they broke this vow to program Marble Madness on the Amiga displays their very high opinion of this game. A version is also being written for the Commodore 64 (due out in October).

Nobody can really pinpoint what makes this game so compulsive and addictive, although many suggestions have been made. Some say it is because of the marvellous sound track that seems to hold you to the game, some the movements of the ball. A suggestion was even made that it was because of the 'cute' way the ball falls apart when it crashes, although I don't think this is very likely.

Marble Madness on the Amiga is the first arcade conversion on any computer to live up to the original. All the features are there, including the stereo sound track, the 3D graphics, and the excellent sound effects. It is in fact a lot easier than the arcade version, although you may change your mind on this point if you play at Level 7! Two players can play simultaneously, one controlling the red ball, and the other the blue ball. Unfortunately it must be said that with two players, game-play does tend to slow down a bit, and both players experience a slight lessening of control. However, you soon get used to this, and normal play resumes! The two-player games are very different to one-player games. For a start, speed is reduced and of course besides Steelie, the black ball who constantly harasses you, you have the other player to contend with! Some of the paths are very narrow, and the only recourse is to knock the player off the playfield . . .

The 1,000 levels previously rumoured are, in fact, only 6. Level 5 is the 'Silly Level' where 'everything you know is wrong!' ramps going down have 'upward pull' and vice versa, so going down is like going up, and going up like going down! It all gets very confusing . . . The final level combines all the obstacles of the previous 5 levels into an incredibly difficult finale. Finish this, and you're good!

The various screens go up in difficulty with every screen-change. Screen One is just a practice, with no obstacles. If you can't finish this, then there's something definitely wrong with you! In Screen Two Steelie makes his first appearance, trying to knock you off into the abyss. The deadly Marble Munchers show themselves here too, first stunning you so you can't move when your marble's hit one, and then leaping up, mouths, if they can be called that, wide open ready to consume you with a satisfied burping noise.



A few bugs have crept in, although that is only to be expected in a game of this size and complexity. They do not affect game-play in any way at all, but are merely cosmetic. The ball when it falls behind an object sometimes appears in front of it. This only happens when you die, so there's no cause for concern there! Apart from that small gripe, I have no complaints about this game whatsoever. It is a gem of a program, and

accurately captures the essence of the arcade game. The sound has been done very well, especially if you are lucky enough to have stereo speakers to get the full effect. Each screen has its own, original sound track which matches the type of screen you are playing. The Silly Level has silly music accompanying it, and some very nice squelchy sound effects. Every screen seems to have its own individual personality which is presented by the obstacles you face, the colour, and the music and sound effects. It is impossible not to enthuse about this game, and even the most hardened sceptics of the Amiga almost gasped in awe when they saw this game. This is one of the few games about which I can honestly say to people 'go out and buy it, whatever the price', and the price is probably going to be a pretty sum! In tne UK, Marble Madness is due to be marketed by Ariolasoft, along with a lot of Electronic Art's other products. It will come in a squashed video-cassette type box, with an almost complete lack of documentation! After all, there isn't a lot of explaining you CAN do with this game — simply get out there, avoid everything, touch nothing except the surface, and get to the goal as fast as possible! Once you've done that, well there's nothing for it but to try to do it again . . . and again . . . and again . . . and .

Shortly before we went to press, we managed to interview the author of Amiga Marble Madness, Larry Reed.

Larry has been involved in programming ever since he was in high school. He first worked on CAD/CAM for Xerox, and later at Versatec. He has worked on several Electronic Arts games in the past, and most recently of course, Marble Madness.

He signed a contract about a year ago, to produce this legendary arcade game for Commodore's 6800 machine. The game has been in development ever since. Although some may wonder why it took so long, take a minute to think how difficult a task it is to program a game like MM!

Madness Marble — the development of

The original arcade machine game was written 95% in 'C', and ran on a 68000 processor (as the Amiga) with a great deal of specialist graphics hardware. What Larry had to do to port the game across to the Amiga was to emulate a lot of this hardware in software. Consequently, the processor is spending a lot of time emulating this hardware, which slows down other operations. So when the game is being played at high speeds, the scrolling becomes temporarily jerky because the processor can't keep up.

The Amiga version is also written in 'C'; in fact, 90% of it is written in 'C'! This is quite an achievement considering how slow, in comparison with straight code, 'C' is. Some of the graphics routines are written in code, but apart from these everything else is in 'C'.

In the US, Marble Madness has taken the Amiga fraternity by storm. Stores are selling them as fast as they can get their hands on them, and just like us, all the US magazines are enthusing over it. We will permit ourselves just this one little ego-boost; CCI was the first magazine in the world to preview this amazing game, even before all the American magazines. A little achievement of our own. Not much, however, compared to the admiration we are sure you will feel when you play Marble Madness yourself.

One-on-One by Electronic Arts

One-on-One is a basketball simulation, featuring two of America's most talented basketball players, Julius Irving and Larry Bird represented on-screen. You can control either one of these, with the Amiga controlling the other, or alternatively, two players can compete. If you want to just sit back and watch, the computer can play itself. This can provide a useful insight into what tactics to employ as each, if computer controlled, have their own style of play, guides to which are provded on the packaging in the form of game design comments.

The Amiga has the shooting-percentages for each player stored. It also knows their favourite shots, and their shooting positions. So playing as J. Irving will be different from playing as L. Bird. Dr. J., as he's called, is quicker on his feet than Larry, and tends to employ fancy footwork. Because of his lightness, he can jump higher and stay up in the air longer. Larry, who is heavier, is a better rebounder, and is intimidating when on the defensive because of his size and power. Knowing these facts, and using them to full advantage can really help you win in this game. Unfortunately, it does take quite a long time to use them instinctively. If you have to stop and think 'now what do I do next?' then you're sunk, and another two points get added to your opponents score!

One-on-One takes into account fouls, and lists reasons for fouling for the non-basketball player. You might also get a 'hot streak' when you know you just can't miss. The computer decides when you get these, so you'll have to sense it!

Of course, even pixels get tired of running and jumping all over the screen, so the fatigue bar will tell you what state you are in physically. To regain strength, dribble slowly or call a time out. Fatigue will really affect your performance in the game. Tired players don't shoot as well, or perhaps more importantly, defend as well.

The game also contains a number of humorous additions. If you shoot the ball hard enough, then the backboard shatters, and a little man comes along and sweeps up the debris. After a particularly good shoot, the computer will show an action replay. The manual gives a good, if short introduction to offensive and defensive moves, and some useful shooting tips.

Some really brilliant sound effects are included. It sounds as if Electronic Arts went along to a real basketball match and actually digitised all the sounds that were going on. If you listen carefully you can even hear a guy in the background selling hotdogs! The graphics aren't too stunning, and I'm sure they could have been vastly improved, but the game has 'feel' to it, which is what makes it so enjoyable to play.

UK Distributor: **Ariolasoft: £29.95.**

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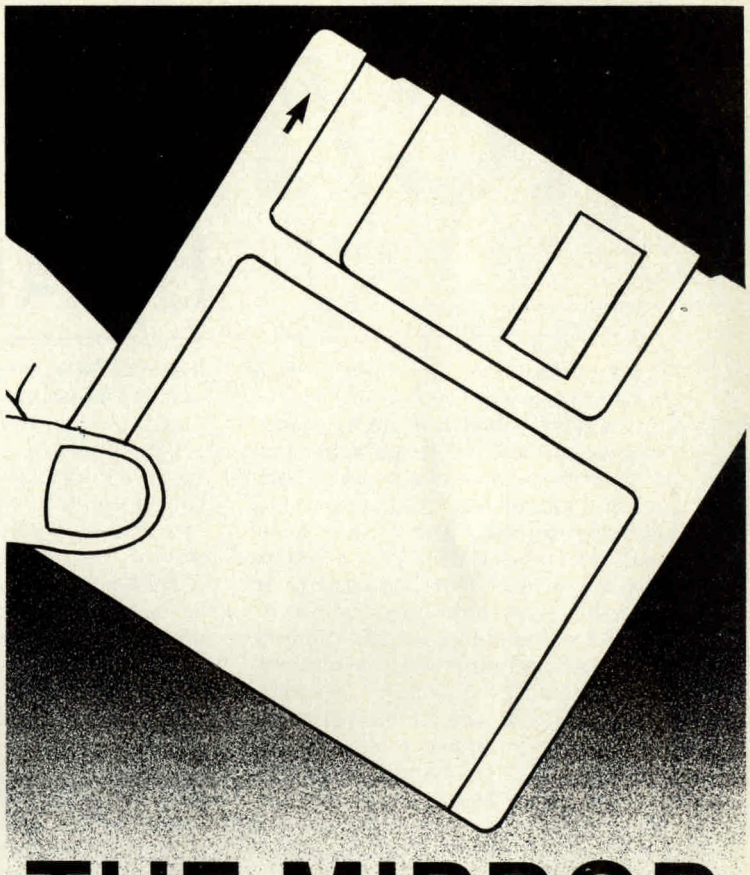

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AC/FORTRAN

by Absoft

MICRO: AMIGA — Minimum 256K & One disk drive $245.00

What was the first High-level language? What was the first language to be standardised by a national standards body (ANSI)? From what language was BASIC originally derived? The answer to all these questions is FORTRAN. So, as you can see, FORTRAN had a very good start to life. It was developed by IBM and released to the public in 1957. Up until then most programming was done in either assembly language or was hand coded. FORTRAN was primarily intended for engineering and scientific use and was designed to handle problems involving large sets of formulae and complex numerical computation. It is from this that its name was contrived FORmula TRANslation. FORTRAN is not an interpreted language like BASIC but is of the compiler variety. What this means is that in order to run a programme it is first necessary to compile it. This involves a resident programme examining each command and statement and translating them into machine language. Some of the benefits of a compiled programme are a much faster run time, a more efficient programme and lower memory requirements at run time. As a Micro user the only major drawback comes when your programme fails to fuction properly and you need to reload the source code, edit it and recompile it each time.

Due to FORTRAN's widespread acceptance and use it became necessary to agree on standardization. Having standard versions of computer languages enables a program written for one type of computer to be run on a different type of computer, assuming that the same language is available for both. The first FORTRAN standards were set in 1966 and from these came FORTRAN IV, often referred to as FORTRAN 66. Over the years numerous extensions to the basic language became available and standardization was again required. In 1977 the new standard FORTRAN 77 was formalised. At the date of writing this was still the current version.

Absoft's AC/FORTRAN is a full implementation of FORTRAN 77 (it can also handle FORTRAN 66 programmes) but with the addition of numerous extensions to permit access to some of the AMIGA's amazing capabilities. It comes on a double sided 3.5 inch Micro Floppydisk and is accompanied by a 170 page ring bound binder containing three manuals. The largest of these is simply entitled "AC/FORTRAN" and is intended as a reference guide for the use of the Absoft implementation of FORTRAN 77. This is subdivided into 4 parts. An introduction, the compiler, the debugging aid and programming in FORTRAN. It is not, however, intended as a tutorial. A list of several books suitable for learning FORTRAN is included in the bibliography at the rear of the manual. The second Manual consists of additional information on the compiler, the linker (a programme which links in external procedures to a programme), the debugger and documentation on a few external FORTRAN subroutines. The first manual is the "FORTRAN 77 Amiga interface Manual". This is probably going to be the most important one of all to the dedicated Amiga freak as it covers a FORTRAN procedure called "amiga.sub" through which access is given to almost all of the AMIGA's ROM routines including the graphics, Dos, exec and intuition libraries. The source code of this procedure has been provided should anyone care to understand its operation or even enhance it.

When writing a programme in AC/FORTRAN the first thing to do is to create a source file. This is done using the system editor "Ed". One problem you may encounter here is that "Ed" is not documented in the literature supplied by either Commodore or Absoft. The source file has to be written in a predefined format. This is due primarily to its ancestry. Programmes were originally entered into computers by means of punched cards. These cards were set out as 80 columns by 12 rows. Each column represented one character and each character would be selected by punching holes in the relevant rows. i.e. the letter "A" would be represented by punching holes in rows 12-0-1-9. I happen to know that several of the big high street banks still use punch cards to a limited extent to this very day. The format required by FORTRAN is as follows: Statements must begin in column 7, while columns 1 to 5 are reserved for statement numbers. Column 6 is used to indicate that it is a continuation of the previous line. Once we have finished writing our source file (deck) we need to compile it. This is achieved by typing 'F77' followed by any options required and then the name of the source. The options are a means by which extra commands can be passed to the compiler. i.e. "-A" will generate an assembler source code, while "-K" will disable case significance. There are nineteen options in total. More than one option may be used at once. i.e. "-ABC". Depending on what options were selected the compiler will, on completion, display the amount of memory used. If the compiler was successful it will show the elapsed time and the lines per minute compiled. If all went well we would now have a file which can be loaded and executed. What do we do if the programme does not work? We have to track down the error/s and fix them. This we can do with the aid of the debugging tool DEBUG. This is a screen orientated symbolic debugging tool for FORTRAN programmes and external procedures. It provides for executing single statements, setting breakpoints, executing blocks of statements and examining and modifying the contents of programme variables. Very useful.

Conclusion

AC/FORTRAN is a full implementation of ANSI FORTRAN 77 but with the ability to make full use of some of the AMIGA's outstanding attributes. It gives near machine code speed whilst retaining a high level language's ease of use. I do feel, however, that the manuals could have been better. They leapt straight into the technical stuff without covering the basics. I found the last manual to be of the most use with the first being the least. Incorporating a step by step guide on the birth to death of a programme would be a boon. Bearing in mind Commodore's shortcomings when it comes to documentation, a paragraph or two on the system editor and CLI and a few more example programmes wouldn't have gone amiss. Overall a nice package which could appeal to both the experienced FORTRAN user and to the Amiga user who would like to enjoy the advantages of a compiler language. Once mastered it becomes a very powerful tool. I like it!

Ian Bennett

K-SEKA ASSEMBLER

This assembler is not the first to appear for the AMIGA although it is the first to be made available for public sale. The only other assembler I am aware of at this time is the Metacomco 68000 Assembler which was originally part of the software development kit provided to registered AMIGA software developers in the UK. The Metacomco assembler is a competent product and although it is now on public sale in the USA, it is not a series of routines or libraries for specific mand sequences necessary to invoke any work from it see to that. In addition there no monitor is present — the 68000 monitor is provided by another software developers product called WACK (short for Westchester Amiga Crash Killer?). Thus the prospective purchaser is faced with buying two separate pieces of software.

Working in assembly language on the AMIGA is not too difficult but is only recommended where absolute speed is essential for the application. With a clock speed in excess of seven times that of previous Commodore machines, even high-level languages such as BASIC are not particularly slow. The operating system of the AMIGA was written in C and this is the recommended approach by Commodore for low-level programming since there are direct hooks into the system software using C. These books are omnipresent and using assembly language means that labels rather than direct addresses are used. For example, the multi-tasking control of the system is carried out by an entity known as EXEC. This is responsible for many things such as memory allocation, placement of your program code, task scheduling and input/output. EXEC is the core of the AMIGA.

The operating system is made up of series of routines or libraries for specific tasks. For example, the disk operating system is controlled by the *DOS* library, EXEC is controlled by the *EXEC* library. In order to get the AMIGA to do anything the you must first *'open'* the *EXEC* library, which in turn provides the *'open'* mechanism or routine to open the other libraries. An abbreviated AMIGA 68000 assembly language fragment would look like this:-

```
move.1 a6,— (sp)              ;save current contents of register a6
move.1 ExecBase, a6           ;move the address of the EXEC library into register a6
lea intuition.library, a1     ;load the effective address of the required library name in this case Intuition library into register a1
jsr OpenLib (a6)              ;call the OpenLib routine from EXEC which now checks to see that the ;library name is in register a1
move.1 d0,IntuitionBase       ;place the address of the library base in register d0
move.1 (sp) +, a6             ;restore register a6 to original value
```

Note how labels are used extensively therefore the correct spelling is essential. Your source code file would look virtually identical to this apart from the setting up of the library version number and the inclusion of any macros. Addresses are always dealt with indirectly, unless of course you wish to abandon the benefits of multi-tasking.

Since the object code relies on relative addresses, the code must be *'linked'* with the existing system software libraries. The process of *'linking'* ensures that at the time of loading the application program code the addesses are correct. For example, when the object code was initially created it would be located at a certain address, let's assume $00A000. However, on the next occasion it is loaded into memory, this address may be occupied by object code from another application — remember the AMIGA is a multi-tasking machine. To overcome this, particularly when branches within the code may absolute to an address, *'linking'* solves this problem. Thus an important feature of assembly language work on the AMIGA involves carrying out the *'linking'* process, although the above example is only part of the function of *'linking'*.

Unprotected

Having briefly looked at the technique of programming, what does the purchaser get for his or her money? The product is supplied on an unprotected disk along with a 35 page manual. The manual make no pretence to learning the semantics of 68000 code generation and is entirely concerned with the operation of the various components. There is a text editor which seemed initially superfluous since AmigaDOS provides the excellent ED or EDIT for this purpose. However, this editor provides a cut-and-paste facility and improved control over the screen output. The commands available consist of the following:-

I (n)	Insert text
T (n)	Target to line (n)
U (n)	Up (n) lines
P (n)	Print (n) lines
L (text)	Locate text
L	Locate next occurrance
H	Query buffer size
E	Edit line
B	Bottom of buffer
D (n)	Down (n) lines
Z (n)	Delete (n) lines
KS	Kill source code
O	Revive source code

Most of these are fairly conventional although some are extremely useful. For example, the *'T'* (target) line command which provides a means of getting around your source code file very quickly. Similarly, the *'H'* (how big?) command which displays the buffer sizes for workspace, linker input, source, relocation stream, object output code and object output data are future indications of a package designed for hard-pressed programmers. A definite pointer in this direction was the inclusion of

the *'O'* (old) function which undoes the last *'KS'* (kill source code buffer) command — a real life-saver.

The assembler itself provides only one command which is naturally enough *'A'* for assemble! Several options are available to cover output to the screen or printer. The remaining two options are designed for program enhancements and include an optimise branches facility and toggle the linkable code generation on or off. This last feature is of particular significance where the code contains a large number of errors, usually at the initial stages. By switching out the linking facility the code can be assembled with errors being trapped on a *'stop-on-error'* approach, which allows a faster cycle of edit/assemble/re-edit to take place until the errors are finally eliminated. A full range of pseudo operators are available based on Motorola 68000 assembler conventions with some additions for specifically invoking exceptions. The assembler is said to be able to operate at a speed of circa 25,000 lines/minute on absolute or linked code. I did not have any source code to hand which approached this quantity although on assembling smaller files I could see no reason to dispute the supplier's claim.

The symbolic debugger or monitor provided symbol table access, arithmetic operation and user input in any number base in addition to the conventional monitor facilities. I found this monitor easier to learn than WACK, the 'official monitor' principally because the commands used the letters of the alphabet more explicitly to signify a function — WACK tends to use choices such as *';'* or *'['* for functions.

Enhancements

However, I felt that some enhancements could be added to the monitor. On the next release of the product. I would like to see use made of the HELP key — this could provide a screen listing all the command keys and their functions. It would have been pleasant to have on display continuously all the 68000 registers, for example in a small window in the upper corner of the screen. It can be both difficult and tedious to keep track of just what value is where during your dealings with a 18 register processor! One final requirement which is peculiar to the AMIGA concerns the special circuit registers i.e. AGNUS, DENISE etc. Some of these cannot be accessed directly without the system becoming very upset and falling over. A method to avoid this is to reduce the display frame size of the monitor, a technique which I have employed successfully with WACK — the present release of K-SEKA does not support this.

I mentioned earlier the ability to leave out linking, a useful timesaver. K-SEKA also allows linking of code modules and assembling a source file simultaneously — another excellent timesaver. All in all K-SEKA is both a useful and above all useable product. Not only does it combine flexibility with speed, it is easy to use. Programming the AMIGA at assembly language level is very definitely not a task for the faint-hearted or impatient programmer — it is far removed from the balmy days of the 6502 processors of yesteryear. Whilst hardware costs may be falling like the proverbial lead plated balloon, software development costs continue to rocket upwards. Indeed, the indications are that this trend is likely to continue for some time to come. Anything a programmer can do to reduce both the learning curve time and compilation/assembly time and thus free him/her to get on with the creative aspects of the software development cycle means greater productivity and therefore an enhancement of the profitability (financial or otherwise) of the whole exercise. K-SEKA is an essential tool to achieving this goal.

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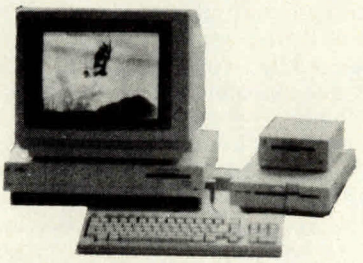

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Aegis

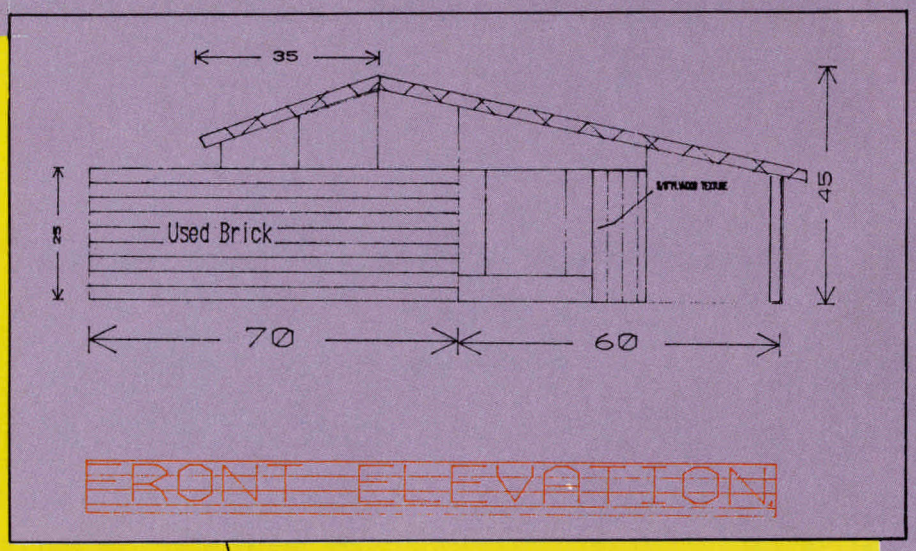
CAD in the computer version stands for *Computer-Aided Design* and a machine such as the AMIGA forms the ideal platform to give life to this concept.

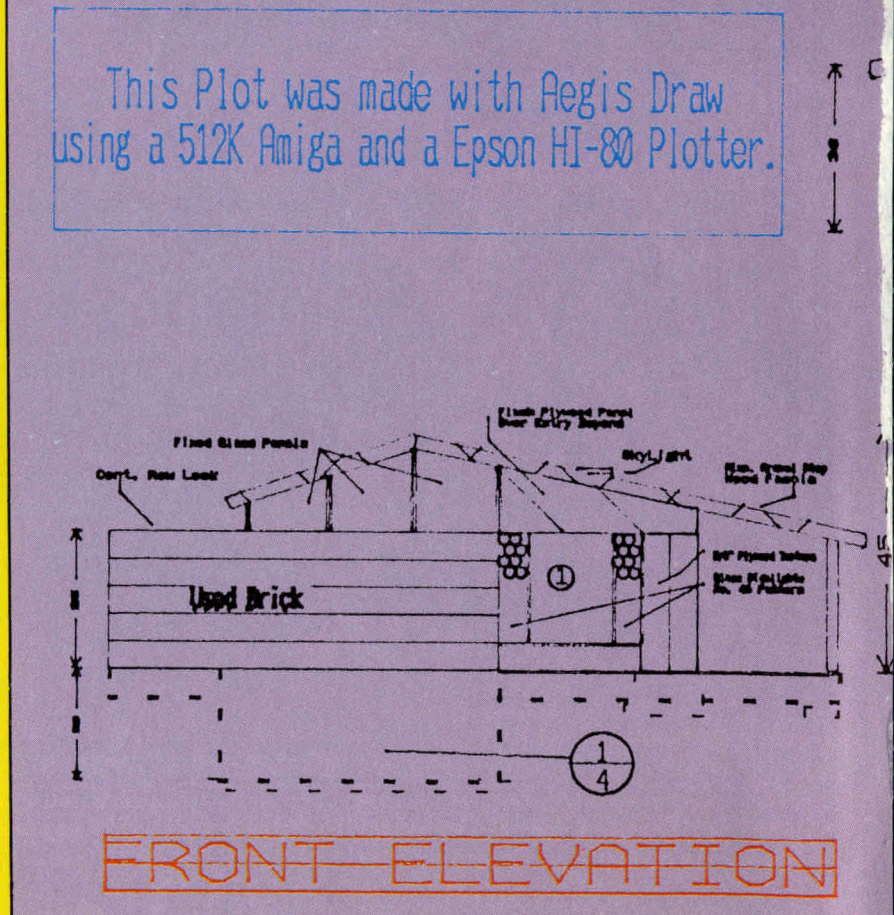
The Aegis DRAW package is supplied on a single disk together with a very extensive manual. The manual not only provides details of the software but also provides an introduction to the concepts of CAD. Whilst the text of the manual gave extensive coverage to the package it seemed rather limited in terms of the screen diagrams. I think the author lost sight of the fact that some of the techniques employed in CAD would be better served by a drawing rather than text. This is, after all a drawing package! A minor criticism since one of the strengths of Aegis DRAW lies in its teaching posibilities and many users could well be without direct supervision from a knowledgeable CAD user.

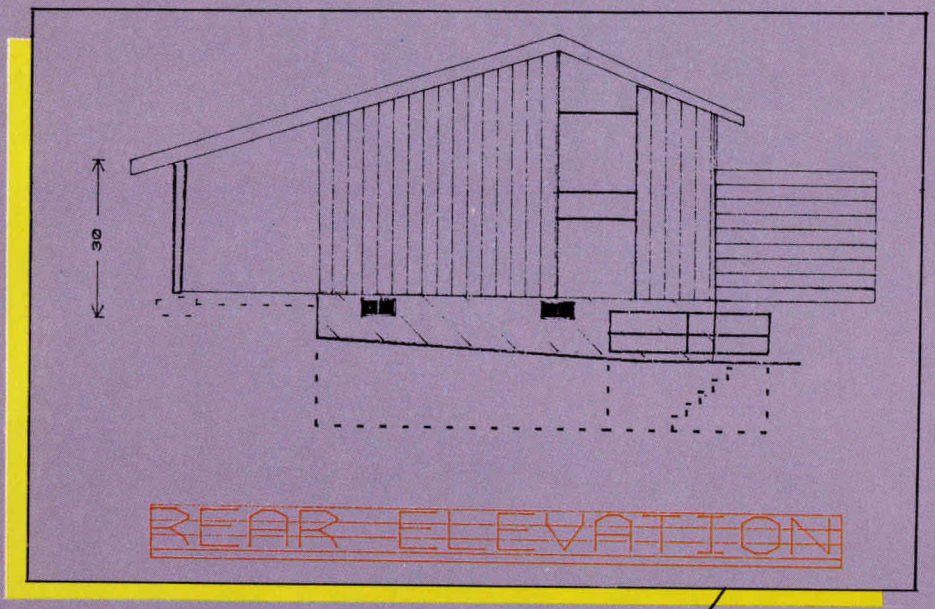
CAD allows the creation of accurately scaled drawings — in effect a database of the various elements of the drawing such as shape, dimension and relationship to other elements, etc. The screen display of the AMIGA serves as a *window* into the drawing although the drawing can have a far higher *resolution* or depth of focus than that being shown on the monitor. This means that the user can *zoom in* on a section of the drawing and make this the new screen display. There are no limits (honestly!) on the zoom facility — you can, if you wish zoom into infinity and could stop with the tiniest screen *pixel* of display dot enlarged into a full-sized screen. This may be rather difficult to swallow but if you watch this being done you will understand the concept.

I am very pleased to report that this package makes full use of both hard disks and any additional RAM the user may have added to their system. On a standard European specification AMIGA of 512K, Aegis DRAW allows two windows simultaneously — remember we are talking of 600 by 200 resolution with 16 colours. My own AMIGA has a total of 2.5 megabytes of RAM and was able to provide a further 3 windows making 5 in total. If you feel that this would be insufficient then invoking the multi-tasking facility of the AMIGA to initiate another Aegis DRAW running provided a further 3 windows before I ran out of memory. I don't think anyone is going to raise their eyebrows in complaint at 8 screens running on 16 bit-planes each. For those users who really want to make the minicomputer crew with their DEC's and VAX's howl and squirm then switch the display into *interlace* mode and take the resolution up to 600 by 400 pixels per screen. I would defy anyone to produce this on an IBM-AT using any hardware add-on and software of their choice for a total cost of less than $8,000.

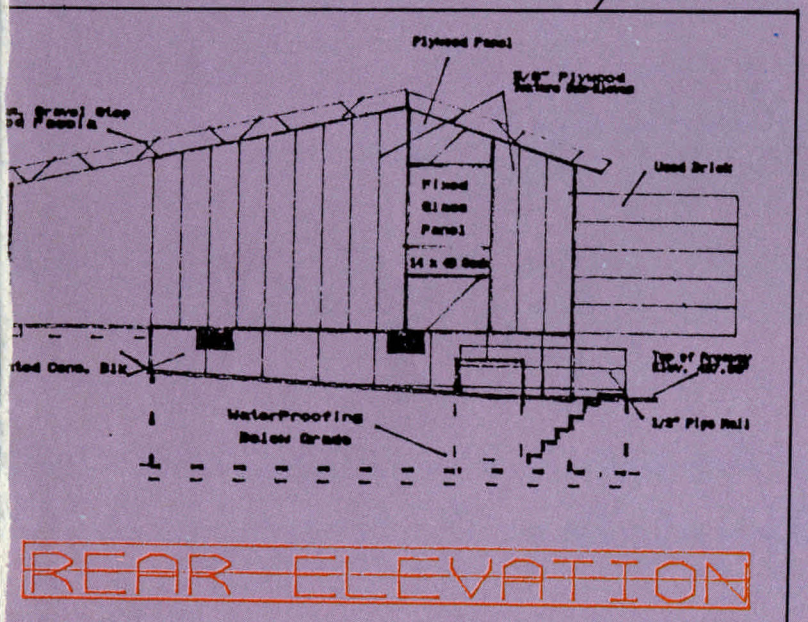
Aegis DRAW relies on using INTUTION







Draw



AEGIS
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as the working environment which gives the user windows, menus and requestors. A requestor is effectively a forced-choice menu — the user has to respond to it. The software is *tool* based and uses conventional terms for a function. This makes using the package extremely easy.

Ther are 7 main headings in the menu bar — **project, edit, tools, display, options, preferences** and **colours.** The options under **project** allow creation and file operations, **edit** allows changes to be made to an existing drawing. This option also contains the very useful **undo** command which will reverse the last editing operation. In the **tools** menu are found the various shapes and option to create a shape on the drawing whilst **display** controls the screen output. The Aegis DRAW uses a continuous grid and ruler on the display, both of which can be re-scaled or removed altogether — selecting the latter improves the already fat re-draw sequence considerably, a classic demonstration of the power of the dedicated graphics hardware of the AMIGA. The **options** menu gives access to the different aspects of the drawing such as line thickness and pattern, grid size and plotter scale. **Preferences** is similar in operation to **options** in that any selection made here is on a *toggle* (on/off) basis. The final menu option is **colour** and Aegis Draw allows selection from 16 colours — these can be altered by means of adjustment of the RGB components. These 16 colours are derived from a master palette of 4,096.

The output from Aegis DRAW can be directed to either dot-matrix printer or plotter and some examples of the latter mode are shown here. The plotter range supported is very extensive. A printer will only provide a print of the screen display and will not have the resolution if the user has been making use of the *zoom* facility. Thus, to obtain the full benefit of this package a plotter is essential. The file format is the standardised IFF which allows a large degree of portability between different applications on the AMIGA.

It is without exaggeration to say that Aegis DRAW is a seminal piece of AMIGA software. The most obvious markets for this product lie in architectural design, building construction activity, electronic component design, quite frankly the list is endless. In effect Aegis DRAW has made professional CAD available to everyone — yet another mainframe/minicomputer monopoly bites the dust. A demonstratioin is strongly recommended. Most viewers will walk away pleasantly astonished especially at the cost.

Price: £147.78 (plus VAT).

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CANON PJ-1080A INKJET PRINTER

Most readers will be familiar with, or indeed probably own and operate a dot-matrix or daisywheel printer. An inkjet printer is more likely to be unknown to them in terms of their technology or price. Happily, the Canon PJ-1080A will provide some welcome relief on the latter factor since it is now very competively priced. However, can an already overcrowded market absorb this interloper? My answer is YES because inkjet printers open another dimension to users who demand quality without running to the current £2000+ levels of laser printers. I have been running the PJ-1080A for some 3 months courtesy of Precision Software on a variety of machines and have learned just what it can and can't do. Here's my report.

In printing terms there are two basic theologies — impact and non-impact. The daisywheel and dot-matrix printers relv on mechanical impact to transfer the nk from it's medium, usually a ribbon to the paper. Such a system demands a high level of mechanical parts with the consequent wear and tear that this entails which is ultimately reflected in the loss of the original manufacturing tolerances after several thousand hours of use. To circumvent this deterioration a system of maintenance is necessary which brings further problems, not least in additional and often unplanned financial costs. A non-impact printer such as an inkjet or laser does not have the equivalent level of mechanical parts (no ribbon to be moved) and they achieve their objective by transfering the ink by contact with rather than *hammering* on the surface of the paper. This ink placement process can take the form of being squirted onto the paper (inkjet) or transfer from a pre-coated roller (laser). The outcome of an impact on the surface of the paper means a disturbance among the fibres which constitute the paper. This can cause a distortion pattern which can lead to the ink *bleeding* or leaking beyond the initial site of impact with a subsequent drop in the resolution of the character.

There are a number of solutions to this which can involve higher viscosity inks, increasing the number of pins in the dot-matrix to spread the mechanical loading on the paper surface making the paper more resistant to the impact although this can lead to higher wear rates on the impacting unit itself. The current line of thinking among the dot-matrix printer manufacturers seems to favour the increased number of pins route. The daisywheel printer can produce good resolution characters although this is at the expense of operational speed and very high dependence on a mechanical infrastructure with all this entails in terms of maintenance and noise emissions.

The CANON PJ-180A produces up to seven basic colours using either paper or overhead-transparency plastic sheet. The Achilles heel of inkjet printers — the drying out of ink in the jet nozzles when the printer is not in use is overcome by a novel technology which allows ink to syphon back to a reservoir. As a secondary precaution the jets are also mechanically capped which also has the benefit of preventing foreign bodies i.e. dust particles, settling on the jets. The seven colours available from the printer are **yellow, magenta, cyan, black, red green** and **blue** — there are actually 8 colours if you include the the paper colour which is usually white. The nozzles for each colour consist of a 0.1mm glas tube with a piezo-electric transducer attached. Applying a voltage to the transducer causes a minute compression on the glass which in turn forces the ink through the nozzle orafice under sufficient pressure to hit the paper. Incidentally, the laser printer uses a form of this — the jet of ink is issued under electronstatic force rather than hydrostatic and since the ink stream is electrically charged it is attracted to the paper which carries an opposite electrical charge. Contrary to popular belief, laser printers do not burn the paper to form the image. The need for an effective capping mechanism is apparant when the size of each nozzle is only 0.065mm — which is about 15% of the size of the fullstop at the end of this line.

The printer as supplied uses the Centronics type interface and appears to be completely EPSON compatible — I say this since I used my existing EPSON printer cable without any problems. Paper handling is done through friction-feed, with the emphasis on using a roll of paper as the machine has a recessed holder for this type of paper. I must confess to avoiding paper rolls and found that standard (80 column) paper would fit provided the perforated tractor-feed edges were removed. By doing this, paper of any length would work satisfactorily and narrow paper i.e. labels and envelopes presented even less of a problem. During the course of this 3 month period the printer produced many copies of graphic output from my AMIGA which placed a severe demand on the quantity of ink required. CANON declare in the excellent User Manual that accompanied the printer that each colour is good for 3.5 million characters and based on my own experience I would feel this to be an understatement.

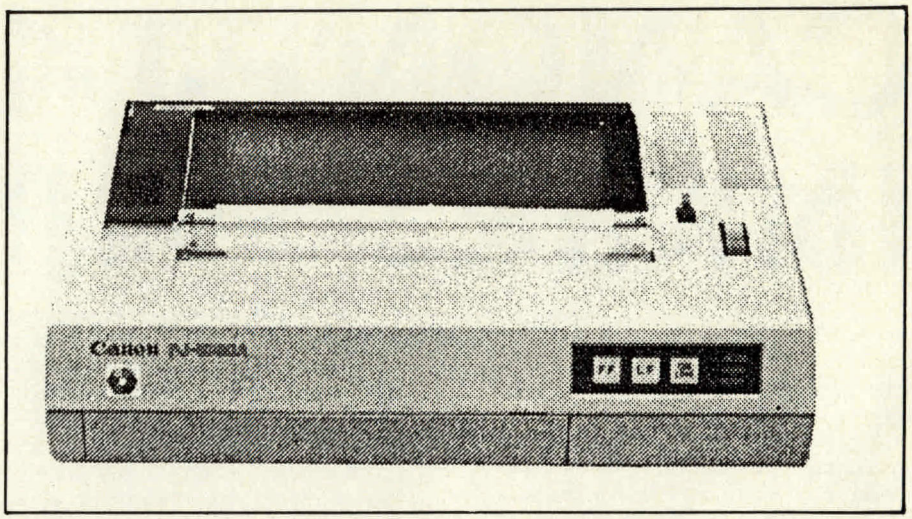
There are two basic modes of operation 2 text and graphics. Text mode provides a total of 96 characters at a claimed speed of 37 characters/second with access to 8 ASCII international character sets. These are **USA, UK, FRANCE, GERMANY, DENMARK, SWEDEN, ITALY** and **JAPAN**. These are all identical to the EPSON character set. The matrix size is 5 by 7 in standard characters and 10 by 7 in enlarged characters. The characters can be underlined, emboldened and printed in a type of *reverse video*, that is the paper being printed in a different colour from the characters themselves. There was no support for italics and the printed characters lacked true-descenders thus ruling the CANON out for serious work as a word processing printer although the true strength of the machine lay in its graphics abilities.

With a resolution of 640 by 560 dots, the CANON PJ-1080A is perfectly matched for use with the AMIGA. The line scan is bi-directional and printout taking about 2 minutes on average although this is obviously dependent on the degree of complexity of the screen image. There is a small internal buffer which provides a slight advantage in overall operational speed although the multi-tasking facility of the AMIGA made this unnecessary. The output obtained from this hardware combination was spectacular to say the least. Naturally there are limitations — where one device can provide 4.096 colour and the other 7 colours, there has to be constraints. However, it should be realised that to accurately reproduce the screen display of the AMIGA by a terminal prin-

ter would shift the cost element by a massive amount — certainly well past the cost of the AMIGA itself.

One problem that could concern potential buyers relates to the ink itself. This is handled in cartridge form, a leakproof plastic bag to be precise which is inserted into a special tray in the printer. Hypodermic needles then penetrate the cartridge and the printer obtains its supply (or fix!) of ink with complete protection for the user from getting ink everywhere. A very simple but effective idea. This was also one area that I fixed upon rapidly, since running costs tend to be ignored or forgotten by many users, and discovered that the cost of the ink cartridge is less than £20.00, although no doubt this could be improved by shopping around. Obviously it would be difficult to forecast with complete accuracy the annual running costs in terms of consumable items since this depends on usage. I mentioned earlier that I had heavily used this printer for 3 months on both my AMIGA and C128D and I could not detect any decrease in performance by the end of this period.

So what is the market for the CANON PJ-1080A? The obvious one is business graphics since the combination of AMIGA/CANON/LOGISTIX is unbeatable in this application. Other uses could be cartography, graphic design and art — the range is potentially extremely wide. EPSON compatability is important not just from the character viewpoint since most graphic software drivers also use EPSON control codes. The only other competition for the CANON comes from EPSON themselves (who else!) with their JX-80 printer and the OKIMATE Colour Printer. These will be tested in forthcoming issues of Commodore Business and AMIGA User.



For graphics and other uses, particularly at its present price the CANON PJ-1080A unquestionably provides excellent value.

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The Amiga System: An Introduction — Bill Donald Precision Books £9.95.

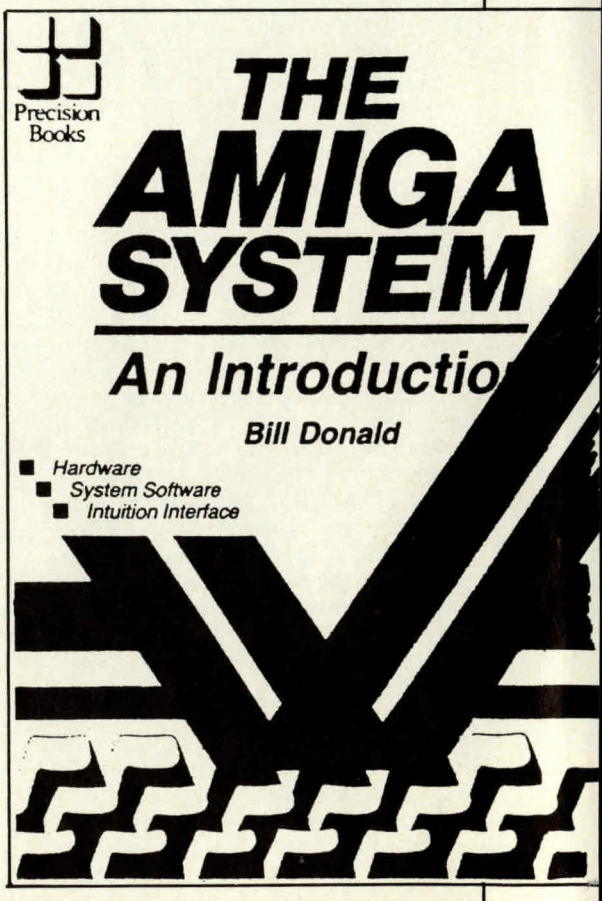
Bill Donald is acknowledged as one of the outstanding experts on the Amiga. A frequent contributor to this magazine and possessor of one of the first Amigas in private ownership outside the USA, he has followed all the developments connected with the Amiga with close attention. It was therefore no surprise when he was commissioined by Precision Software — the most important distributor of Amiga Software — to create a totally authoritative book on the Commodore computer.

THE MACHINE
Starting with the hardware, the author describes the Amiga's 68000 based CPU and the other special chips that handle graphics and animation, relating the sophisticated visual capabilities of the machine to its underlying architecture. *The Amiga System: An Introduction* also provides detailed guidance on controlling the Amiga mouse, light pen, and disk drives, as well as the serial and parallel I/O interfaces. The hardware discussion culminates in a fascinating account of the Amiga's audio facilities.

INTUITION
Intuition is the name of the Amiga's attractive mouse driven multi-windowing interface. Bill Donald shows how the elements of Intuition fit together to form a friendly and easily manipulated operating environment, and discusses the routines for programming Intuition effectively.

AmigaDOS
The Amiga's Operating System, AmigaDOS, is probably the first genuine multi-processing operating system on a microcomputer, allowing users to run several programs, or "processes" at once. *The Amiga System: An Introduction* covers the Command Line Interpreter (CLI), the filing system, special devices, and the command editor, with many examples of essential everyday housekeeping operations.

Bill Donald's book, *The Amiga System: An Introduction*, is full of useful information. It will provide anyone who already owns an Amiga, or prove to anyone considering its purchase, just what may be achieved.



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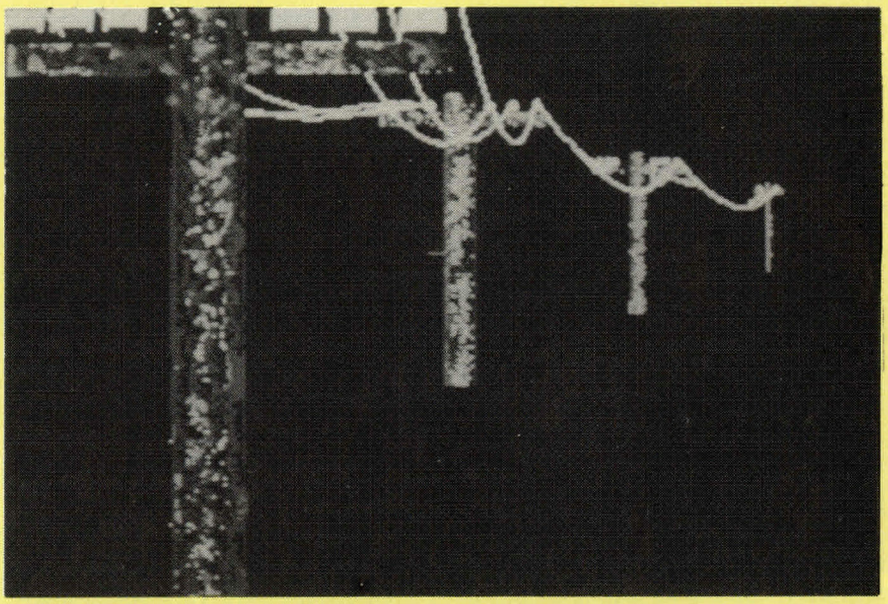
Amiga Comms



The rapid growth in the UK and USA of inter-computer communication in the form of public and private data transmission systems has been matched by an ever-growing range of communication peripherals and software. In this article I will be looking at the software available for the AMIGA in the data transmission field. I have three straightforward communication packages. These are TELECRAFT, ONLINE! and AMIGATERM — the remaining product being BBS-PC, a bulletin board system.

First the comms software — these follow a similar route in terms of the *front-end* or screen display. Each uses the WORKBENCH environment of windows and menus to display the very large number of functions available to the user. Indeed, a criticim could be leveled at each of these products for having rather too many facilities causing confusion to the novice. There is a fundamental problem here between what the user wants and what the software can give. Comms software appears to cater for two basic types of user — one will simply want to carry out specific and unchanging tasks. In the UK these tasks could well be sending telexes via TELECOM GOLD, reading the CITISERVICE pages on PRESTEL or possibily logging on to one of the large public databases located in the USA. The other type of user is a true techno-gourmet. For him (or her) sampling the intricacies of baud rates, tasting the effects of even parities or even slipping into the delights of duplex are like food and drink. With this level of patience, knowledge and determination it is no doubt possible to have your AMIGA talking to the distributor cap on a Ford Granada located on the third floor of a multi-storey car park in Wellington, New Zealand.

Comms software can be either for a specific purpose or for the user to choose the requirement. The three pieces under review here belong to the latter category. This is fine IF you know what to do. In a situation where the user does not care to become involved in the setting-up of files and communication protocols then these packages are sufficiently powerful and flexible enough to enable the retailer to achieve this quickly and efficiently for the purchaser. Once this has been done, then a simple 'crib card' containing the operating instructions would suffice.

For example, let us assume that the settings file has already been created for you. This file contains all of the communication information such as transmit and receive rates, protocols, screen colours, telephone number and password relevant to your application. This is loaded into the AMIGA from the menu selection 'LOAD SETTINGS'. Having done this the machine then prompts for a file name — obviously it pays to name these files in such a way that they bear a meaningful relationship to the individual database you wish to contact. The software automatically assigns a 'settings' suffix to these files after definement so you are kept within the settings directory, avoiding possible errors on selecting the wrong type of file. Once the settings file is in the machine, the next step is to open a buffer. At this point the uninitiated may start thinking in terms of wrestling with a component of railway rolling stock. No, the buffer is simply a designated area of memory to receive or transmit the data from. Imagine your AMIGA as a telegraphist (as seen in Wild West movies), the buffer is simply the telegraphist's notepad upon which the message is placed.

The next stage is to dial the telephone number of the database you require and listen for a continuous whistling tone indicating that the computer at the remote end is ready. The final stage in this process is to switch the modem to ONLINE, unless of course you have one of those mega-modems that does all of this for you. Data is then received or transmitted from the buffer. It probably reads a lot more complicated than it actually is. Once the foundations, the settings, have been laid, then even unskilled operators may use the AMIGA supported by sophisticated autodial modems as a effective communciations terminal.

Packages

Each of the three comms packages we used provide an extremely comprehensive range of functions for data transfer across telephone lines using a direct connect modem. The more advanced features include telephone number directories and function key definement to character string commands. This latter function is another step in the direction of saving the user time — for example key F1 could be assigned the following command string:-

922111 4444444444 4444

Amiga Comms

cont

This would allow a user in the local call area of Maidstone, Kent to access British Telecom's PRESTEL public demonstration frames. The first sequence being the telephone number, the second sequence the logon number and the final sequence serving as the password. The time saving this makes is considerable and each settings file can contain up to 10 function key command strings. Incidentally, the publication of the telephone number and codes above are quite legal!

The second element of these packages is the file transfer facility. By this I mean direct coupling of the AMIGA and another machine through an RS-232 link. The RS-232 port of the AMIGA is well documented in the User Manual and supports transmission rates of up to 19,200 baud. A baud represents one bit per second and in general terms a screen character is made up of eight bits. Thus 19,200 baud equates to 2,400 characters per second or just over one full screen of 80 columns by 25 lines (2000 characters).

The direct transfer of files is very important to users who have large volumes of data on another disk format running under different software. This is a topic on which I feel well qualified to speak since I recently transferred all of my wordprocessing files to the AMIGA using one of these packages. All of these files were under SUPERSCRIPT 128, 1571 disk format — some of them extending back to EASYSCRIPT in my C64 days. They were transmitted from my C128D running SUPERSCRIPT using a Brainboxes RS-232 interface through to the AMIGA running AMIGATERM. The transfers were not fast nor were they slow. I was limited to a baud rate of 1200 since the technique I used was to have SUPERSCRIPT configured for an RS-232 printer. Using the SUPERSCRIPT *print* command the file was then sent ostensibly to the 'printer' which was a previously opened buffer on the AMIGA. As far as the C128D was concerned it was talking to a RS-232 printer. Easy and simple really, the only drawbacks being as I mentioned early, SUPERSCRIPT will only support a baud rate of 1200.

Indeed, the C128D will only go to a maximum of 2400 baud because RS-232 is merely emulated by the operating system. The obvious answer is to use my old friend the PLUS/4 which contains a 6551 ACIA i.e. the RS-232 operation is driven by hardware. On the PLUS/4 this will support a baud rate of 19,200 although the only problem being the lack of a suitable RS-232 interface (Brainboxes — please note) to raise the voltage at the PLUS/4 User Port from TTL levels of 5 volts to 12 volts necessary for direct connection to the AMIGA. Owners of the Commodore 700 or B-series machines as they are known in the USA will have no problems at all with voltage level conversion since these also contain a 6551 ACIA and more importantly have a dedicated RS-232 port with the correct voltage levels. This would also apply to other makes of computers such as IBM and APPLE. One of the software development environments for the AMIGA is the trusty IBM-PC and registered software developers in the UK have ben issued with the LATTICE C 8086 to 68000 cross-compiler running under PC-DOS. By now, I hope that you can see that comms software has a lot going for it beyond that of simply looking at databases and bulletin boards. Given either of these three packages the AMIGA is unlikely to represent a stumbling block to attaining your goal in this direction.

BBS-PC

This takes me nicely into the final piece of software called BBS-PC which is a bulletin board package. Bulletin boards are similar in concept to amateur radio. Someone decides to start broadcasting local news or information and anyone can listen in. Obviously both parties require the necessary equipment to do this — in radio terms a transmitter and a receiver. Transferring this concept to personal computers, the equipment necessary apart from a computer at either end of the chain is the software and telephonic link. A modem is a device which allows a casting locomputer to communicate using a telephone line. Generally the link is made over public telephone lines (PSTN) although private networks may be used for security reasons.

Public bulletin boards vary from the mundane and trivial to amusing and informative. By and large, they are very computer orientated and run by enthusiasts — those which are run as commercial entities also tend to be biased toward computers/electronics. BBS-PC allows you to create your own bulletin board. I must admit that up until reviewing this package my experience had been entirely that of a user of bulletin boards. It was therefore something of a surprise to realise just how much is involved behind the scenes. The setting up of the various files necessary to support a bulletin board is taken care of by the package. I found that the major problem was one of creation and selection of actually what to put up on display. It would be advisable to plan very carefully the style and layout of your board before anything else. One facet of BBS-PC I found invaluable in this pursuit of content and style was the ability to enter the board through the 'back door' and view what the users themselves would actually see on the bulletin board.

BBS-PC also allows your AMIGA to function as a terminal similar to the previous three packages, although with fewer functions. The manual supplied is very good and covers the software extensively in the course of about 200 pages. A black mark for having no index. However, when chapters such as 'Principles of operating a BBS' or an appendix containing detils of interfacing a variety of different makes of modem is included, the authors can be forgiven. The manual itself is a mine of information obviously culled from many years of practical experience of USA bulletin board practices.

I have no qualms in recommending this package even if it has been translated for the AMIGA from the realm of MS-DOS machines. It is robust and has been well and truly put through the mill. On reflection it would probably be an astute move to purchase BBS-PC rather than the other packages. This would then alllow you to move into bulletin boards at some future date whilst fulfilling the terminal function albeit with fewer facilities then TELECRAFT, ONLINE! or AMIGATERM. Alternatively, if you are a real comms nut then only one of these three need suffice. Once more a demonstration in knowledgeable hands would be called for.

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